

DC-3 Type Rating

Welcome to DC-3 Airways. I have assembled six flights to give you the range of experience to earn your DC-3 “Type Rating”. **These are mandatory flights and MUST be flown in numerical order before you can become a pilot with DC-3 Airways.** Total flying time of these six flights is just three and a half hours from take off to landing. The elapsed flight time for each flight must be reported **in minutes** in the usual manner through the PIREP reporting system. **At the completion of the six DC-3 Type Rating flights, and the submission of a correctly formatted pilot's report (PIREP) for each flight, DC-3 Airways will award you 10 hours of flight time as a bonus, and an additional bonus will be promotion to 2nd Officer.**

Preferably, print this document, along with the included Approach Plates and route map information in their entirety, and get on with the fun.

Purpose.

These flights are not a test. No video recording will be requested. There is no bar to hurdle. Simply fly the flights to the best of your ability and watch your proficiency and understanding of the DC-3 increase. And with that, your enjoyment of the flight-simming experience.

Aircraft.

You are free to fly the Type Rating flights in your choice of either of the two DCA Training DC-3's. However, DC-3 DCA-Training-1 with its Sperry Autopilot, is highly recommended as you will learn and understand much more of the conditions in which these aircraft flew during their heyday of the 1930's and 1940's.

The flights are short, you can easily fly them all in two to three sessions, or up to six if you prefer. I recommend that you save each flight as you enter the approach phase, usually the last five to ten minutes of the flight. You can then easily repeat the approach simply by pressing the shift-semi-colon keys.

What's included here.

- Instructions on how to properly manage the throttle and prop controls.
- Recap of Sperry Autopilot operation.
- Flight descriptions and information for the six flights.
- Approach plates and route maps.

More information.

The explanations here are more summary than details. For complete information on navigation procedures by DC-3 Airway's founder, Charles Wood, go to

Note: Before beginning the type-rating flights, be sure to read the “FS DC-3 Flying” section of the VA, which may be viewed via the ‘TECH’ tab in the main menu. It contains important information needed to properly fly and control the DC-3.

The flights.
These MUST be flown in numerical order.

1201. A VFR flight, CAVU weather conditions (Ceilings and Visibility Unlimited), from Martha’s Vineyard, Massachusetts to Hanscom Field in Bedford, Massachusetts. This flight, like the first three, ends with an ILS approach. You fly right over Boston Logan’s Rwy 33! **Fly this flight manually, without using the Autopilot.** 77 NM.

1202. Another VFR flight, CAVU, from Wiscasset, Maine to Bangor, Maine. **Use the Autopilot for this flight.** Record and report the total elapsed time when overflying the three airports. Ends with ILS approach to Bangor. 88 NM

1203. Your first IFR flight, Pawtucket, Rhode Island to Westhampton Beach, Long Island, New York. Recommend that you **pilot this flight manually and then use the Autopilot for the ILS approach** at Gabreski airport. 85 NM

1204. This, too, is an IFR flight, but ends with a VOR approach. Although this flight will keep you busy, the VOR approach is easy. The flight begins at Bedford, Massachusetts and ends at Keene, New Hampshire. Recommend that you **pilot this flight manually and then use the Autopilot for the VOR approach** at Dillant-Hopkins. 61 NM

1205. A very short flight from Stow, Massachusetts to Concord, New Hampshire. This IFR flight ends with an NDB approach, which you will find very un-mysterious and quite easy to accomplish. I recommend that you **use the Autopilot for the entire flight.** 46 NM

1206. CAT II ILS Yes, I know that CAT II ILS approaches didn’t exist in the early 1950s. This is an interesting flight from Bridgeport, Connecticut to Windsor Locks, Connecticut. What a sensation – breakout of the overcast 150 ft. above the field! Will you be lined up with the runway? **Use the Autopilot all the way.** 55 NM.

Managing the DC-3 throttles and propeller controls

Too many flight-simmers miss the enjoyment of properly flying aircraft equipped with constant speed props. Constant speed props have been on airliners since the DC-3 and no longer is an aircraft "stuck in 2nd gear"—it can shift into "first gear" to climb or into "3rd gear" for best cruise.

The CS prop adds a propeller control lever to the power quadrant and a manifold-pressure gauge to the instrument panel.

The propeller control sets the RPMs of the engine, not by varying the amount of fuel that is fed to the engine, but by varying the load on the engine. The more load put on an engine, it slows down, the less load, the RPMs increase. The prop control changes the load by changing the pitch of the propeller. We set the prop control by monitoring the tachometer.

On the keyboard Ctrl-F1 and Ctrl-F4 are full-low and full-high RPM. Ctrl-F2 and Ctrl-F3 lower and raise the RPMs in increments.

Since we set the prop control with the tachometer, we need another indicator to set the throttle. That's the manifold pressure gauge, which monitors the pressure in the engine's intake manifold. Manifold pressure can't rise above 30 in., atmospheric pressure, unless the engine is supercharged.



**DC-3 Climb power settings: 2350 RPM, left,
and 36 in. Manifold Pressure, right.**

Although the prop control sets the RPMs, it also affects the manifold pressure. As RPMs are lowered, MP increases. Put your aircraft in cruise, reduce the RPMs with the prop control and watch the MP gauge climb. This interaction of RPMs and MP creates a potential hazard.

The combination of low RPMs and high MP heavily stresses an engine & -- sometimes to the extent of engine failure. So the pilot must follow the correct sequence of prop-throttle adjustments to avoid the danger zone of low RPM and high MP.

Understand that advancing the throttle increases the manifold pressure; advancing the prop control towards "High RPM" lowers the MP because, like shifting to low gear in a car, this reduces the load on the engine. Here's the prop-throttle sequence rule:

Always adjust the control first that reduces manifold pressure.

When you need more engine power, i.e., for take-off, climbing from level flight, increasing cruise speed, or adding power when gear and flaps are lowered, always increase the RPMs first (lowers the MP) then increase the throttle (increases the MP).

When reducing power to descend, or reducing from take-off power to climb power, or reducing to slow flight, always reduce the throttle first (lowers the MP) then reduce the RPMs (increases the MP). A second throttle adjustment is almost always necessary on power reductions to finalize the desired MP.

When climbing to cruise altitude, the manifold pressure decreases with altitude (air gets thinner) so increase the throttle as needed. The reverse is true on descending ... monitor the MP gauge!

On final approach, or coming down the glide slope, advance the prop control to full RPM. Then, if a go-around is necessary, you only need to advance the throttle for full power. Adjust rate of descent with the throttle.

At low engine speeds, engine manufacturers recommend that RPMs (in hundreds) and MP be close to each other, i.e., for DC-3 descend, 1700 RPM and 18 in. MP.

Power settings from the 1953 Piedmont DC-3 flight manual

Take-off	2700 RPM	48 in. MP
Climb	2350 RPM	36 in. MP
Cruise	2050 RPM	30 in. MP
Descend	2050 RPM	20 in. MP

One last thing. These tables look really good in this text, but aren't much help when you're flying. Do what I do, and make a placard of your own. Simply write the table of numbers onto the cardboard flap of a carton. By using brown cardboard, you can locate it easily and with large numbers you can quickly read the settings during flight.

Using the Sperry Autopilot



1. On-Off indicator
2. Heading Adjustment
3. Pitch Adjustment
4. Autopilot heading
5. Aircraft Heading ... same as DG heading
6. AP On-Off switch
7. Correction Control to synchronize DG with compass reading
8. AP Pitch Reference Window
9. Actual Aircraft Pitch
10. Horizon Reference
11. Attitude reference knob ... adjust to show level flight
12. AP Caging knob ... this knob locks the AP gyros so they won't be damaged in heavy turbulence. Notice that there is also a caging knob on the Artificial Horizon on the main panel, for the same reason.

You will find that the Sperry Autopilot is very easy to understand, and a very straightforward instrument, once you have read these operation procedures. It's a lot of fun piloting an aircraft with the Sperry engaged because you are actively in control at all times. You won't be dozing at the controls at all.

The Sperry Autopilot Controls



1. The Heading Control

The real Sperry Autopilot, and those modelled by third-parties in versions earlier than FS2004, maintained heading by rudder control, not by aileron control. For reasons known only to Microsoft they have inaccurately modelled the FS2004 Sperry to perform like a modern Autopilot for heading control. That is a disappointment, but we're stuck with it.

The operation of the Heading Control unit is very simple. Control #1 in the upper right corner adjusts the autopilot heading hold. You may set the autopilot heading either by left-clicking on knob #1 or by moving the heading bug on your Directional Gyro, if one exists on your panel.

As you adjust knob #1 to change the AP heading hold, the upper scale in the AP window, #2, will rotate to indicate the selected heading.

The lower scale portion of the heading indicator (4) is a directional gyro similar to the primary directional gyro on the aircraft panel.

In the real Sperry, with the AP disengaged, the pilot manually turned the aircraft to the desired heading, then rotated the heading knob, #1, so that scales 2 and 3 in the window were exactly aligned, then engaged the autopilot. The real Sperry maintained a heading, did not turn an aircraft to a heading.

With the FS2004 Sperry one can select the desired heading with knob 1 and the aircraft will bank and turn to the desired heading.

Each mouse-click of the heading knob, plus or minus, will change the selected heading by one degree. That is the procedure, for example, to keep the localizer needle centered while flying the ILS.

2. Pitch Control



Controlling aircraft pitch with the Sperry autopilot is easy. “Rotate” the “Pitch” knob, #4, by clicking on it. The plus sign that appears when the mouse is on the knob indicates a positive climb, while the negative sign indicates reducing the climb or an actual descent.

Adjusting the Sperry for a climb moves the AP Attitude Reference window, #3, in a downward direction. The horizon bar, #2, will move down into the reference window. This increases the distance between the aircraft wings, #1, and the horizon indicating a climb.

Here are three examples of the AP Pitch for various flight situations.



Level Flight



Climb
Aircraft is above horizon



**Descend
Aircraft is below horizon**

- 1) Using the Sperry when climbing ... Adjust power settings for climb configuration, 36 in MP and 2350 RPM. Adjust the Sperry pitch control to set the airspeed at 105 kts, the Best Rate of Climb airspeed.
- 2) Using the Sperry when descending from cruise altitude ... Adjust the power settings for descent configuration, about 18 in MP and 2050 RPM. Adjust the Sperry pitch control for desired descent speed, usually about cruise speed, and then adjust power to maintain 500 fpm descent.

Flight Plans and Approach Plates for the Type Rating Flights

As already mentioned, the type-rating consists of six flights; 1201 through 1206. Each flight is accompanied by an approach plate and route guidance maps in a choice of pdf or Gif format displaying the route and associated navigational aids. As a ready reference during the flights I advise printing the images using a graphics viewer. **DO NOT USE PC PAINT** for this as it will do it all wrong! If you do not have a good graphics viewer, download IRview, a very popular freeware program.

Go to <http://www.dc3airways.com/useful/irfanview/irfanview.htm> for complete information on the Irfan graphics viewer.

Now the flights!

FLIGHT 1201, ILS Approach

Fitchburg, Massachusetts to Windsor Locks, Connecticut

NOTE: For Prepar3d v4 and 5, and for X-Plane, the outer marker for runway 33 at KBOS is no longer valid. As an alternative, you may either intercept the localizer at approximately five miles or tune BOS VOR 128.800 and fly direct.

NOTE: For X-Plane, NDB SKR no longer exists. Intercept ILS at intersection JAYSE.

Flight Synopsis

Flight 1201, 77 NM, starts at Martha's Vineyard, Massachusetts and ends at Hanscom Field, Bedford, Massachusetts. The route of flight is from Runway 6 at Martha's Vineyard, KMOVY, overfly Plymouth Airport, to Rwy 33 LOM (Locator Outer Marker) NDB at Boston, Logan and continuing northwest to intercept the ILS for Hanscom Field, followed by a straight-in ILS approach to Runway 29 at Hanscom, KBED. Flight time is approx 35 minutes.

Read all of the flight information and view the route maps before starting the flight. Don't need any surprises after the flight has started.

Here is the pertinent information from the three panels on the ILS Runway 29 approach plate, Hanscom Field, Bedford Massachusetts. Review this with your approach plate.

From Top panel

Localizer frequency, 111.15 MHZ

Field Elevation: 133 ft.

Length of runway 29: 7001 ft

From Lower Right panel

Approach course, 293°

Minimums: S-ILS 29 (Straight-in ILS approach to Rwy 29) **428³/₄**

Decision height, Category A aircraft (DC-3) **428 ft**

Cannot descend below 428 ft on the glideslope unless the runway is in sight.

Minimum visibility required: **3/4 mile**.

Do not descend below **1800 ft** until Glideslope needle centers ... 1800

Minimum altitude to intercept the glideslope is **1800 ft**. ... 1800

NOTE: If you intercept the glideslope at 2000 ft you'll be OK

Width of runway 29: 150 ft

Flight 1201, KMOV–KBED; Plate: bed-ILS_29.gif

- Set weather to CAVOK/CAVU and position your aircraft at KMOV.
- Retract flaps to the zero position, and then neutralize view, SPACE–BAR or CTRL– SHIFT.
- Stop panel timer and reset to zero.
- If you have no Rudder Pedals, Turn Auto-Coordination ON.
- Set Sperry Autopilot in the OFF position.
- Turn ON Mkr Bcn switch.
- Set Nav radios
 - Nav, 114.50 MHZ, OBS at 006°– MOV VOR.
 - ADF, 346 KHZ – LI NDB (Boston Logan LOM Rwy 33L)
- Set Elevator Trim to neutral.
- Release parking brake.
- Slowly advance throttle full forward – and start panel timer.
- 500 ft above ground, **turn left to 355°** intersect and fly the **006°** radial of MOV VOR.
- Climb to 3000 ft.
- At Plymouth Airport, 31 DME from MOV, **turn left to about 355°** and fly direct to LI NDB (see above note regarding navaid availability).
- Tune Nav receiver to the Hanscom ILS, 111.15 MHz.
- ILS approach course is 293°– set OBS to this value as reminder of runway heading.
- At LI NDB, **turn left to 331°, overfly Logan**, descend to 2000 ft and intercept Hanscom localizer.
- Tune ADF to 251 kHz, SKR NDB (See above note regarding navaid availability).
- Maintain 2000 ft altitude until glide slope needle centers, then follow the glide slope down with aircraft in approach configuration, 450 fpm rate of descent for 85 kts approach speed.
- FAF is SKR NDB, when RMI needle reverses. At 85 kts approach speed, 3 min; 02 secs to reach MAP.
- **Field Elevation: 133 ft.** Stop timer at end of landing rollout.

Elapsed time: about 35 minutes.

Submitting a PIREP

Congratulations on completing the first of the DC-3 Type Rating flights. You are now required to correctly submit a PIREP for the flight. May I suggest ‘minimising’ this document, and then opening the document titled “**Submitting a PIREP**”. The document will guide you through how to submit a correctly formatted PIREP. Afterwards return to this point and continue with the Type Rating flights.

FLIGHT 1202, ILS Approach

Wiscasset, Maine to Bangor, Maine

NOTE: For Prepar3d v5, airport 07B is present but closed. NDB BG no longer exists in P3D5 or X-Plane. Intercept ILS at TOTTE intersection for P3D5 or CUVOT intersection for XP11

Flight Synopsis

Flight 1202, 88 NM, starts at Wiscasset, Maine and ends at Bangor Int'l airport, Bangor, Maine. The route of flight is from Runway 7 at Wiscasset, KIWI to Bangor, KBGR. The route overflies three airports, Knoxville County Regional, Stonington Muni, Blue Hill airport and then a straight-in ILS approach to Runway 33 at Bangor Int'l airport. Flight time is approx 44 minutes.

Read all of the flight information and view the route maps before starting the flight. Don't need any surprises after the flight has started.

Here is the pertinent information from the three panels on the ILS Runway 33 approach plate, Bangor Int'l, Bangor, Maine. Review this with your approach plate.

From Upper panel

Localizer frequency, 109.50 MHZ

Length of runway 33: 11,431 ft

Field Elevation: 192 ft.

From Lower Right panel

Approach course, 333°

Minimums: S-ILS 33 (Straight-in ILS approach to Rwy 33) **363/24**

Decision height, Category A aircraft (DC-3) **363 ft**

You must not descend below 363 ft on the glide slope unless the runway is in sight.

Minimum visibility required: **2400 ft**, about ½ mile.

Can't descend below **2300 ft** until intercepting the glide slope ... 2300

Minimum altitude to intercept the glide slope is **2200 ft**. ... With a 2500 ft flight altitude you will intercept the glide slope before reaching the Outer Marker.

Width of runway 33: 200 ft ... But MS entered the wrong runway width into their fs9 database, and the flight-sim shows the width as 300 ft.

Runway width of the real airport is 200 ft.

Flight 1202, KIWI–KBGR; Plate: bgr_ILS_33_FSX.gif

Use the Sperry Autopilot with this flight to become familiar with it.

- Select “**Load**” either from the menu bar on the FSX opening page, or, if you have FSX already open, select ‘**Flights**’ from the menu bar, and then select ‘**Load**’. In the ‘**Category**’ window select ‘**My Saved Flights**’. In the ‘**Title**’ window, scroll down to and highlight the entry titled “**DCA Training flight 1202**”. Clicking on ‘**FLY NOW**’ will transport you to Wiscasset, ID KIWI, and onto runway 7. The aircraft is the DC-3 DCA-Training-1 which features the Sperry Gyro.

You may at this point prefer to select the DC-3 DCA-Training-2 version which features a more modern autopilot. However, Flight Description instructions have been written for the Sperry Gyro, you must therefore be prepared to adapt the Flight Description instructions to suit the more modern autopilot.

- The weather theme has been automatically set to **Fair Weather** for this flight.
- Retract flaps to the zero position, and then neutralize view, SPACE-BAR or CTRL - SHIFT.
- Stop panel timer and reset to zero.
- If you have no Rudder Pedals, Turn Auto-Coordination ON.
- Set Sperry Autopilot in the OFF position.
- Set Nav radios
 - Nav, 109.50MHZ, Bangor ILS – OBS to 333°for reminder of runway heading.
 - ADF, 227 KHz – BG LOM (Locator, Outer Marker - see note above).
- Set Elevator Trim to neutral.
- Set Sperry Autopilot Rudder control (Hdg) to 095°.
- Release parking brake.
- Slowly advance throttle full forward – and start panel timer.
- 500 ft above ground, slight right turn to 095°for course to KRKD, Knox County Regional.
- Turn ON Sperry Autopilot, turn OFF Auto Coord. Adjust Elev. knob to maintain climb rate.
- Climb to 5500 ft. – adjust throttles to maintain 36 in. MP during climb.
- At KRKD, record time, and **turn left to 087°**for course to 93B, Stonington Muni.
- Also at KRKD airport begin 500 fpm descent to 2500 ft – monitor MP pressure and adjust throttles to maintain desired value.
- At 93B, record time, and **turn left to 034°**for course to 07B, Blue Hill airport.
- At 07B, record time, and **turn left to 004°**to intercept the Bangor ILS localizer.
- On localizer intercept, **turn left to 333°**– the runway heading for Bangor’s Runway 33.
- Maintain 2500 ft altitude until the glide slope needle centers, then follow the glide slope down with aircraft in approach configuration. Keep needles centered with Sperry Autopilot, 450 fpm rate of descent for 85 kts approach speed.
- At the outer marker, the ADF needle should reverse direction, showing passage of the LOM.
- Turn OFF Autopilot, turn ON Auto Coord if no Rudder Pedals, land manually. **Field**

Elevation: 192 ft. DH is 363 ft. Stop timer at end of landing rollout.
Elapsed time: about 44 minutes.

FLIGHT 1203, ILS Approach

Pawtucket, Rhode Island to Westhampton Beach, Long Island, N.Y.

Flight Synopsis

Flight 1203, 85 NM, starts at Pawtucket, Rhode Island and ends at Gabreski Airport, Westhampton Beach, Long Island, New York. The route of flight is from Runway 23 at North Central, KSFZ to Norwich VOR, ORW, to Groton VOR, GON, and then a straight in ILS approach to Runway 24 Gabreski airport, Westhampton Beach, New York, KFOK. Flight time is approx 43 minutes.

Read all of the flight information and view the route maps before starting the flight.
Don't need any surprises after the flight has started.

Here is the pertinent information from the three panels on the ILS Runway 24 approach plate, Gabreski airport, Westhampton Beach, New York. Review this with your approach plate.

From Upper left panel

Field Elevation: 67 ft.
Length of runway 24: 9000 ft
Localizer frequency, 111.70 MHZ
Approach course, 236°

From Lower right panel

Minimums: S-ILS 24 (Straight-in ILS approach to Rwy 24) **560 – ½**
Decision height, Category A aircraft (DC-3) **560 ft**
Cannot descend below 560 ft on the glide slope unless the runway is in sight.
Minimum visibility required: **one-half mile**.
Can't descend below **1700 ft** until intercepting the glide slope ... 1700
Minimum altitude to intercept the glide slope is **1500 ft.** ... 1500 This places you outside the Outer Marker on intercept.

Width of runway 24: 150 ft.

Flight 1203, KSFZ–KFOK; Plate: FOK_ILS_24_FSX.gif

Pilot the flight manually, using the Sperry AP only for the ILS approach.

• Select “**Load**” either from the menu bar on the FSX opening page, or, if you have FSX already open, select ‘**Flights**’ from the menu bar, and then select ‘**Load**’. In the ‘**Category**’ window select ‘**My Saved Flights**’. In the ‘**Title**’ window, scroll down to and highlight the entry titled “**DCA Training flight 1203**”. Clicking on ‘**FLY NOW**’ will transport you to Pawtucket, ID KSFZ, and onto runway 24. The aircraft is the DC-3 DCA-Training-1 which features the Sperry Gyro.

You may at this point prefer to select the DC-3 DCA-Training-2 version which features a more modern autopilot. However, Flight Description instructions have been written for the Sperry Gyro, you must therefore be prepared to adapt the Flight Description instructions to suit the more modern autopilot.

• The weather theme has been automatically set to **700 ft. overcast, 2 mi. visibility, and calm wind.**

• Stop panel timer and reset to zero.

• If you have no Rudder Pedals, Turn Auto-Coordination ON.

• Set Sperry Autopilot in the OFF position.

• Set the Nav radio

Nav, 110.00 MHZ, Norwich VOR, ORW – OBS to 241°.

• Set Elevator Trim to neutral.

• Set Sperry Autopilot Rudder control (Hdg) to 236°, ILS heading for Gabreski Runway 24.

• Release parking brake.

• Slowly advance throttle full forward – and start panel timer.

• 500 ft above ground, **turn slightly right to 241°** for course to Norwich VOR, ORW.

• Climb to 6000 ft. – adjust throttles to maintain 36 in. MP during climb.

• At ORWVOR, **turn left to 204°** change Nav to GON VOR, 110.85. Set OBS to 204°. Fly to GON VOR.

• At GON VOR, **turn right to 236°** change Nav to 111.70 MHz, KFOK localizer. Set OBS to 236° as reminder of Runway 24 heading.

• Fly **236°** hdg until Localizer needle appears then **Intercept the localizer.**

• Begin descent to 3500 ft at GON VOR – monitor MP pressure and adjust throttles to maintain desired value.

• If no Rudder Pedals, turn OFF Auto Coordination, Turn ON Sperry Autopilot.

• Set rate of descent at 500 fpm. This is an unpressurized aircraft, don’t pop the passenger’s ears. Allow two minutes for every one-thousand feet of descent.

• Maintain 3500 ft altitude until the glide slope needle centers, then follow the glide slope down with aircraft in approach configuration. Keep needles centered with Sperry Autopilot. 450 fpm rate of descent for 85 kts approach speed. DH is 560 ft.

- Turn OFF Autopilot, if you have no Rudder Pedals, Turn Auto-Coordination ON, and land manually. **Field Elevation: 67 ft.** Stop timer at end of landing rollout.
Elapsed time: about 43 minutes.

FLIGHT 1204, VOR Approach

Bedford, Massachusetts to Keene, New Hampshire

NOTE: For X-Plane with updated AIRAC, Intersection COREE no longer exists and VOR/DME EEN is now only a DME. Perform ILS approach into KEEN. Recommend cross intersection CAHOW. See included XP11 flight plan for overview.

Flight Synopsis

Flight 1204, 61 NM, starts at Bedford, Massachusetts and ends at Dillant-Hopkins Airport, Keene, New Hampshire. The route of flight is from Runway 29 at Hanscom Field, KBED, to Gardner VOR, GDM, to COREE Intersection, to Keene VOR, EEN, and then a straight-in (no procedure turn) VOR approach to Runway 2, Dillant Hopkins Airport, KEEN. Flight time is approx. 32 minutes.

Read all of the flight information and view the route maps before starting the flight.
Don't need any surprises after the flight has started.

Here is the pertinent information from the three panels on the VOR Runway 2 approach plate, Dillant-Hopkins airport, Keene, New Hampshire. Review this with your approach plate.

From Upper panel

VOR frequency, 109.40 MHZ

Approach course, 024°

Length of runway 2: 6201 ft

Field Elevation: 488 ft.

From Lower Left panel

Minimums: S-2 (Straight-in VOR approach to Rwy 2) **2100-1¼**

Minimum Descent Altitude, MDA, Category A aircraft (DC-3) **2100 ft**

Cannot descend below 1600 ft unless the runway is in sight.

Minimum visibility required: **1¼ miles.**

Can't descend below **2600** ft until reaching the EEN VOR ... 2600

Width of runway 2: 100 ft

Flight 1204, KBED–KEEN; Plate: een_VOR_02.gif

Pilot the flight manually, using the Sperry AP only for the VOR approach.

• Select “**Load**” either from the menu bar on the FSX opening page, or, if you have FSX already open, select ‘**Flights**’ from the menu bar, and then select ‘**Load**’. In the ‘**Category**’ window select ‘**My Saved Flights**’. In the ‘**Title**’ window, scroll down to and highlight the entry titled “**DCA Training flight 1204**”. Clicking on ‘**FLY NOW**’ will transport you to Bedford, ID KBED, and onto runway 29. The aircraft is the DC-3 DCA-Training-1 which features the Sperry Gyro.

You may at this point prefer to select the DC-3 DCA-Training-2 version which features a more modern autopilot. However, Flight Description instructions have been written for the Sperry Gyro, you must therefore be prepared to adapt the Flight Description instructions to suit the more modern autopilot.

- This is an **IFR flight**. The weather theme has been automatically set to **2000 ft overcast, 3 mi. vis., and calm wind**.
- Retract flaps to the zero position, and then neutralize view, SPACE–BAR or CTRL–SHIFT.
- Stop panel timer and reset to zero.
- If you have no Rudder Pedals, Turn Auto-Coordination ON.
- Set Sperry Autopilot in the OFF position.
- Set Nav radios
Nav, 110.60 MHZ, Gardner VOR, GDM – OBS to 293°
- Set Elevator Trim to neutral.
- Set Sperry Autopilot Rudder control (Hdg) to 024°, VOR Approach heading, KEEN Runway 2.
- Release parking brake.
- Slowly advance throttle full forward – and start panel timer.
- 500 ft above ground, maintain runway heading of 293° for Gardner VOR, GDM.
- Climb to 4000 ft. – adjust throttles to maintain 36 in. MP during climb.
- At GDM **turn right to 323°** for course to COREE Intersection.
- Begin descent to 2600 ft. Maintain 2600 ft attitude until reaching EEN VOR.
- Change **VOR OBS to 323°**
- When heading stabilizes at 323 °change Nav **receiver to 109.40 MHZ**, EEN VOR.
- Set **OBS to 024°**, runway heading for the VOR approach to Keene Runway 2.
- As the VOR needle centers, **turn right to 024°** the heading for the VOR approach.
- Turn OFF Auto Coord, turn ON the Sperry Autopilot.

- Save the flight when level at 2600 ft so you can repeat just the final approach if unsatisfied.
 - Slow to approach speed and configure the aircraft for final approach.
 - At the EEN VOR, start the timer, and **descend to 2100 ft, the MDA.**
 - Runway is 5.7 NM away. At 85 kts, 4 min, 2 sec to reach the runway.
 - With 3 miles visibility, you should SIGHT the runway in 1 min, 50 sec.
 - Do not descend below 2100 ft, the MDA, until sighting the runway.
 - On sighting the runway, turn OFF the Autopilot, turn ON Auto Coord, and land manually.
 - **Field Elevation: 488 ft.**
 - You need to descend 1612 ft., from 2100 ft down to 488 ft., in the last 2:12 of the approach, after you sight the runway. That's about 750 fpm, don't let your speed get out of control.
- Elapsed time: about 32 minutes.

NOTE: VOR and NDB approaches are often called “Dive and Drive” approaches. Once you reach the FAF, Final Approach Fix, i.e., the VOR or NDB, you DIVE for the MDA, and then DRIVE along at that altitude until you sight the runway. They are enjoyable approaches to execute.

FLIGHT 1205, NDB Approach

Stow, Massachusetts to Concord, New Hampshire

Flight Synopsis

Flight 1205, 46 NM, starts at Stow, Massachusetts and ends at Concord Muni, Concord, New Hampshire. The route of flight is from Runway 3 at Minute Man Field, 6B6, to Manchester VOR, MHT, to DMMHK Intersection, to EPSOM LOM, CO, and then a straight-in (no procedure turn) NDB approach to Runway 35 Concord Muni, KCON. Flight time is approx. 26 minutes.

Read all of the flight information and view the route maps before starting the flight. Don't need any surprises after the flight has started.

Here is the pertinent information from the three panels on the ILS Runway 35 approach plate, Concord Muni, Concord, New Hampshire. Review this with your approach plate.

From Upper panel

LOM frequency, 216 KHZ

Field Elevation: 346 ft.

Length of runway 35: 6005 ft

From Lower Left panel

Approach course, 352°

Minimums: S-35 (Straight-in NDB approach to Rwy 35) **1060/1**

Decision height, Category A aircraft (DC-3) **1060 ft**

Cannot descend below 1060 ft unless the runway is in sight.

Minimum visibility required: **1 mile**.

Can't descend below **2000** ft until reaching the LOM ... 2000

Width of runway 35: 100 ft

Flight 1205, 6B6-KCON; Plate: con_NDB_35.gif

Use the Sperry Autopilot for the entire flight.

- Select "**Load**" either from the menu bar on the FSX opening page, or, if you have FSX already open, select '**Flights**' from the menu bar, and then select '**Load**'. In the '**Category**' window select '**My Saved Flights**'. In the '**Title**' window, scroll down to and highlight the entry titled "**DCA Training flight 1205**". Clicking on '**FLY NOW**'

will transport you to Minute Man Field, ID 6B6, and onto runway 3. The aircraft is the DC-3 DCA-Training-1 which features the Sperry Gyro.

You may at this point prefer to select the DC-3 DCA-Training-2 version which features a more modern autopilot. However, Flight Description instructions have been written for the Sperry Gyro, you must therefore be prepared to adapt the Flight Description instructions to suit the more modern autopilot.

- This is an **IFR flight**. The weather theme has been automatically set to **1500 ft overcast, 2 mi. vis., and calm wind**.
- Stop panel timer and reset to zero.
- If you have no Rudder Pedals, Turn Auto-Coordination ON.
- Set Sperry Autopilot in the OFF position.
- Set Nav radios
 - Nav, 114.40 MHZ, Manchester VOR, MHT – OBS to 031°
 - ADF, 216 KHz, Concord LOM
- Set Elevator Trim to neutral.
- Set Sperry Autopilot Rudder control (Hdg) to 031°.
- Release parking brake.
- Slowly advance throttle full forward – and start panel timer.
- Fly direct to Manchester VOR, MHT.
- Turn OFF Auto Coord, turn ON the Sperry Autopilot.
- Climb to 4000 ft. – adjust throttles to maintain 36 in. MP during the climb.
- At MHT **turn left to 021°** for course to DMMHK Intersection.
- Change **VOR OBS to 021°**
- Begin descent to 2000 ft – monitor MP pressure and adjust throttles to maintain desired value.
- Set rate of descent at 500 fpm. This is an unpressurized aircraft, don't pop the Passenger's ears. Allow two minutes for every one-thousand feet of descent.
- As the NDB needle indicates 352°, **turn left to 352°** the heading for the NDB approach.
- Maintain 2000 ft. Maintain this attitude until reaching the LOM, CON NDB.
- Save the flight when level at 2000 ft so you can repeat just the final approach if unsatisfied.
- Slow to approach speed and configure the aircraft for final approach.
- At the LOM, start the timer, and descend to 1060 ft, the MDA.
- Runway is 4.9 NM away. At 85 kts, 3 min, 27 sec. to reach runway.
- With 2 miles visibility, you should SIGHT the runway in 2 min, 04 sec.
- Do not descend below 1060 ft, the MDA, until sighting the runway.
- On sighting the runway, turn OFF the Autopilot, turn ON Auto Coord if no Rudder Pedals, and land manually.
- **Field Elevation: 346 ft.**
- You need to descend 714 ft., from 1060 ft down to 346 ft., in the last one minute of

the approach, after you sight the runway. Don't let your speed get out of control.
Elapsed time: about 21 minutes.

NOTE: VOR and NDB approaches are often called "Dive and Drive" approaches. Once you reach the FAF, Final Approach Fix, i.e., the VOR or NDB, you DIVE for the MDA, and then DRIVE along at that altitude until you sight the runway. They are enjoyable approaches to execute.

FLIGHT 1206, CAT II ILS

Bridgeport, Connecticut to Windsor Locks, Connecticut

NOTE: In P3D5 and XP11, Waterbury TBY NDB no longer exists. Substitute intersection ZATMI and fly as described.

Flight Synopsis

Flight 1206, 55 NM, starts at Bridgeport, Connecticut and ends at Bradley Field, Windsor Locks, Connecticut. The route of flight is from Runway 6 at Sikorsky Memorial field, KBDR, to the Waterbury NDB then intersect the ILS for a CAT II approach to Runway 6, Bradley Int'l airport, KBDL. Flight time is approx. 29 minutes.

Read all of the flight information and view the route maps before starting the flight. Don't need any surprises after the flight has started.

Here is the pertinent information from the three panels on the ILS Runway 6 CAT II Approach plate, Bradley Int'l, Windsor Locks, Connecticut. Review this with your Approach plate.

From Upper panel

Localizer frequency, 111.10 MHZ.

From Lower Left panel

Approach course, 058°

Minimums: S-ILS 6 (Two decision heights are shown, depending on experience).

324/16 ... 324 ft (150 ft above end of runway) and 1600 ft. Visibility.

274/12 ... 274 ft (100 ft above end of runway) and 1500 ft. Visibility.

We'll stay above **324/1600** since it's likely your first CAT II approach.

Cannot descend below 324 ft unless the runway is in sight.

Minimum visibility required: **1600 ft or 0.3 mile.**

Can't descend below **2700** ft until reaching the PENNA Intersection ... 2700. We'll maintain 2700 ft. until intercepting the glide slope to meet that requirement.

Width of runway 6: 200 ft
Length of runway 6: 9502 ft
Field Elevation: 174 ft.

Flight 1206, KBDR–KBDL; Plate: kbdl-ILS-cat2.gif

Use the Sperry Autopilot for the entire flight.

• Select “**Load**” either from the menu bar on the FSX opening page, or, if you have FSX already open, select ‘**Flights**’ from the menu bar, and then select ‘**Load**’. In the ‘**Category**’ window select ‘**My Saved Flights**’. In the ‘**Title**’ window, scroll down to and highlight the entry titled “**DCA Training flight 1206**”. Clicking on ‘**FLY NOW**’ will transport you to Bridgeport, ID KBDR, and onto runway 6. The aircraft is the DC-3 DCA-Training-1 which features the Sperry Gyro.

You may at this point prefer to select the DC-3 DCA-Training-2 version which features a more modern autopilot. However, Flight Description instructions have been written for the Sperry Gyro, you must therefore be prepared to adapt the Flight Description instructions to suit the more modern autopilot.

- This is an **IFR flight**. The weather theme has been automatically set to **400 ft overcast, 0.5 miles visibility, and calm wind**.
- Retract flaps to the zero position, and then neutralize view, SPACE–BAR or CTRL–SHIFT.
- Stop panel timer and reset to zero.
- If you have no Rudder Pedals, Turn Auto-Coordination ON.
- Set Sperry Autopilot in the OFF position.
- Set Nav radios
Nav, 111.10 MHZ, Bradley Int’l ILS, I-BDL – Set OBS to 058°– KBDL Rwy 6 Hdg.
ADF, 257 KHz, Waterbury NDB
- Set Elevator Trim to neutral.
- Set Sperry Autopilot Rudder control (Hdg) to 011°, the initial heading.
- Release parking brake.
- Slowly advance throttle full forward – and start panel timer.
- 500 ft above ground, **turn left to 011°** and home with ADF to Waterbury NDB, TBV.
- Turn OFF Auto Coord, turn ON the Sperry Autopilot.
- Climb to 5000 ft. – adjust throttles to maintain 36 in. MP during climb.
- At TBV **turn right to 040°** to intersect Bradley’s ILS. Keep the NDB needle on 220°.
- Begin descent to 2700 ft – adjust throttles to maintain desired MP pressure.
- Set rate of descent at 500 fpm. This is an unpressurised aircraft, don’t pop the passengers’ ears. Allow two minutes for every one-thousand feet of descent.
- On intersecting the Localizer turn right to 058°
- Maintain 2700 ft. until the glide slope needle centers.

- Save the flight when level at 2700 ft and centered on the localizer so you can repeat just the final approach if unsatisfied.
 - Slow to approach speed and configure the aircraft for final approach.
 - When the glide slope needle centers, begin descent down the glide slope. For standard 3° glide slope, control the rate of descent to 450 fpm with the Sperry for 85 knt approach speed.
 - You should sight the runway at the DH of 324 ft.
 - Do not descend below the 324 ft DH unless runway in sight – if not – Missed Approach.
 - On sighting the runway, turn OFF the Autopilot; turn ON Auto Coord, and land manually.
 - Turn off timer at end of landing rollout.
- Elapsed time: about 29 minutes.

Congratulations, you are now DC-3 Type Rated and eligible to fly any of the Charters, Routes and all other flights that are available for your flying pleasure at DC-3 Airways.

You will now be rewarded with an additional Ten Hours (600 minutes) bonus, but do not claim this yourself; it will be credited to your account by the airline admin staff. Additionally, you are now promoted to Second Officer.

Very well done and enjoy your flying with DC-3 Airways.

