

## Lebanon, N.H., Muni airport to Springfield, Vt. Airport

It's time to notch up the excitement a little. This flight has several new aspects: the FAF is a DME reading, the Localizer back course must be flown to set up the approach, a procedure turn is needed to get turned around, and it all ends with a localizer approach to Runway 5, then circling around to land on Runway 23.

The flight begins at Lebanon Muni airport, KLEB, Lebanon, New Hampshire, with a destination of Hartness State airport, KVSF, Springfield, Vermont. A localizer approach to Runway 5 and circling to land at Runway 23 ends it all. Download the flight-information package, leb-vsfc.zip.

The zip-file includes the IFR chart, the approach plate for LOC-A at Springfield, and this text description of the flight.

Recall that if an approach plate name ends in a letter, like LOC-A, rather than a runway number, then a circling approach is required. Looking at Springfield's LOC-A approach plate, you will notice that the localizer takes you right down the throat of Runway 5; a 050° localizer course to Runway 5 which is aligned to 050°. So what's the problem with a straight-in approach to Runway 5?

Your elevation above the runway threshold is the problem. The field elevation is 577 ft. and the MDA is 1660 ft., nearly 1100 ft. above the end of the runway. That's too high to safely descend and land, thus a circling approach is called for.

We proceed south-bound from Lebanon Muni, intercept the 228° radial from Lebanon VOR, intercept Springfield's Localizer and pass over the Springfield airport. We fly outbound on the localizer and enter a standard left procedure turn two minutes after passing the SXD NDB. We return to the airport on the localizer, with SXD NDB the FAF for the approach. Descend to the MDA, circle the airport on sighting it, and land on Runway 23.

As usual, do nothing until you have gone through the step-by-step details of the flight with this text and your charts. Only by doing this will you both understand the purpose of each step, but you will visualize them in your mind, a critical part of instrument flight.

**NOTE: Fly the Instrument Approach portion with your Nav-2 Receiver for better needle visibility.**

**You will also use the DME to establish the FAF.**

- Set the flight simulator weather conditions to 1900 ft overcast, cloud tops at 10,000 ft., and two miles visibility. The wind is calm.
- Move the aircraft to Lebanon's Runway 18, airport KLEB, and retract the flaps to 0°.
- Tune the Nav-1 receiver to the Lebanon VOR, 113.7 MHz., ident LEB.

- Set the VOR-1 OBS to 228°, the Lebanon radial to Springfield airport.
- Tune the Nav-2 receiver to the Springfield Rwy 5 localizer, 111.3 MHz., ident i-VSF.
- Set the VOR-2 OBS to 230°, the back course to Springfield's Rwy 23.
- Tune the ADF to the Springfield NDB, 265 KHz., ident SXD.
- Reset the timer to zero.
- Takeoff from Runway 18, climbing out with a modest right turn to 190°.
- ATC has cleared you to 6000 ft. Climb at 90 kts., then cruise at 110 kts. after reaching your assigned altitude.
- Intercept the Lebanon 228° radial with a right turn. Observe that a FROM flag is showing and then ident the VOR, LEB.
- Track the 228° radial to Springfield.

When your Nav. receiver picks up the Springfield Localizer you will be flying on the back course. This localizer is set up to guide you on a 050° heading to the vicinity of Runway 5 for the approach. But you will be tracking the localizer in the opposite direction, on a 230° heading. **THE LOCALIZER NEEDLE OPERATES IN THE REVERSE DIRECTION WHEN YOU FLY THE BACK COURSE OF A LOCALIZER.**

Instead of turning toward the needle if you drift off course, on the back course you must turn *away* from the needle.

- Adjust your heading to intercept the back course of the localizer. With no wind it should be 230°. Ident the localizer, I-VSF.
- Note the ADF needle. It should be on 230° and pointing towards the nose of the aircraft. Ident the NDB; SXD.
- Begin your descent to 4500 ft.
- Fly over the airport and continue outbound. At station passage of the NDB, when the ADF needle swings and points to your tail, start the timer.
- Fly outbound for three minutes. We have a lot of altitude to lose on the way back in. Continue to be aware of the reverse sensing of the needle. Reduce your speed to 75 kts.
- At three minutes enter the left procedure turn, heading 185°
- Reset and restart the timer.

- Reset OBS-2 to 050° the localizer heading.
- After one minute in the procedure turn, turn right 180° to 005° and return to the localizer course. Descend to 4000 ft.
- Reset the timer.
- As the needle centers turn right to 050° to intercept and track the localizer inbound. From here in you turn towards the needle to correct for drift, being on the front course of the localizer. Be certain that your DME is switched to Nav-2 receiver.
- Again, with no wind, the ADF needle should be pointing to 050° right on the nose of the aircraft.
- Drop one notch of flaps. Keep the localizer needle centered without chasing the needle.
- When the DME reads 11.8 begin 300 fpm descent to 2900 ft. Watch the minimum altitudes shown on the Approach Plate for various DME readings.
- At the FAF, DME 6.8, start the timer and begin your descent to 1660 ft.
- At 75 kts., 5 min., 26 secs. will elapse to cover the 6.8 NM from the FAF to the airport.
- You should spot Runway 5 after 3 min. 50 secs. with two miles visibility.
- On sighting the field, which will be nearly 1100 ft. below you, jog to the right and enter the left downwind leg to land on Runway 23.
- Descend to the 1400 ft pattern altitude then execute a normal left turn approach to Runway 23.
- Left base leg will be 320°. Land normally, being aware of the 100-ft. trees on either side of the runway.
- Give yourself a well-deserved pat on the back.
- Flight time: about 35 minutes.