SESSION 59: PRECISION APPROACHES — ILS COMPONENTS, SEGMENTS, AND MINIMUMS

1. The Instrument Landing System (ILS) provides the pilot with:

A. Both lateral (localizer) and vertical (glideslope) guidance to the runway

B. Vertical guidance only

C. Distance information only

D. Lateral guidance only

2. The localizer transmitter is normally located:

A. At the approach end of the runway

B. At the far (departure) end of the runway, transmitting back toward the approach

C. Abeam the touchdown zone

D. At the middle marker

3. The localizer provides course guidance aligned with the:

A. Runway centerline extended

B. Glideslope angle

C. Missed approach track

D. Circling area

4. The localizer course is typically how sensitive compared to a VOR, at full-scale deflection?

A. Identical to a VOR (10 degrees)

B. Half as sensitive

C. Twice as sensitive

D. About four times more sensitive (roughly 2.5 degrees full scale)

5. The glideslope transmitter is located:

A. At the far end of the runway

B. At the middle marker

C. Near the approach end, offset to the side of the runway, defining the descent angle

D. At the localizer antenna

6. The standard ILS glideslope angle is approximately:

A. 1.5 degrees

B. 6 degrees

C. 9 degrees

D. 3 degrees

7. "False glideslopes" can exist above the true glideslope because the glideslope signal:

A. Is broadcast only at night

B. Reverses near the runway

C. Is affected by the localizer

D. Produces additional lobes at higher angles (e.g., near 9 degrees) that can be mistaken for the true 3-degree path

8. To avoid capturing a false glideslope, the pilot should:

A. Intercept the glideslope from below at the published intercept altitude

B. Capture it from above

C. Descend before reaching the glideslope

D. Ignore the published intercept altitude

9. The "ILS critical area" near the antennas is protected because:

A. It improves the glideslope angle

B. Vehicles or aircraft in that area can distort the localizer or glideslope signal

C. It is where the marker beacons are located

D. It shortens the localizer course

10. When ILS critical area protection is in effect (typically low ceiling/visibility), ATC will:

A. Hold aircraft/vehicles clear of the critical areas to protect the signal

B. Cancel the approach

C. Reduce the glideslope angle

D. Raise the DA

11. A localizer back course provides lateral guidance:

A. From the localizer signal on the opposite side, without glideslope, to the reciprocal runway

B. With a usable glideslope

C. Only for the front course

D. With DME-based vertical guidance

12. Marker beacons on an ILS provide:

A. Lateral corrections

B. Glidepath adjustments

C. Continuous distance

D. Aural/visual indications at specific points (outer and middle markers)

13. Many ILS installations now use a DME or a fix in lieu of the outer marker to identify the:

A. Missed approach point

B. Circling area

C. Final approach fix / glideslope intercept point

D. Threshold

14. The approach lighting system (ALS) assists the pilot by:

A. Providing the glideslope

B. Providing a visual transition from instruments to the runway environment near minimums

C. Replacing the localizer

D. Indicating the wind

15. A pilot may descend below the DA on an ILS only when:

A. The aircraft reaches the MAP

B. ATC clears the descent

C. The glideslope is captured

D. The required visual references (per §91.175) are in sight and the aircraft can land normally

16. The localizer signal is identified by:

A. A DME readout

B. The glideslope needle

C. A Morse code identifier (three letters, often preceded by "I")

D. The marker beacon tone

17. A "Category I" ILS typically provides a DH as low as:

A. 50 feet

B. 200 feet HAT

C. 500 feet

D. 1,000 feet

18. Lower minimums (Category II/III) ILS approaches require:

A. Only a current chart

B. A higher DH

C. Special aircraft equipment, crew authorization, and ground equipment

D. No additional requirements

19. A pilot intercepting the localizer should:

A. Capture the glideslope first

B. Descend immediately

C. Establish on the localizer course, then intercept the glideslope at the published altitude from below

D. Fly through the localizer to verify it

20. Localizer course width is set so the full course width at the runway threshold is approximately:

A. 10 degrees

B. 20 degrees

C. Fixed at 5 degrees regardless of runway

D. Tailored (typically 3–6 degrees) to produce about 700 feet total width at the threshold

21. If the glideslope fails during an ILS approach, the pilot may:

A. Continue as a precision approach

B. Circle only

C. Continue as a localizer (non-precision) approach to the LOC MDA, if able

D. Descend below DA without references

22. The glideslope needle showing "fly down" (needle below center) indicates the aircraft is:

A. On the glideslope

B. Below the glideslope

C. Above the glideslope; descend to recapture it

D. Left of course

23. A primary limitation of the ILS is that it:

A. Works only with GPS

B. Requires the aircraft to remain within the protected coverage volume for reliable guidance

C. Provides no vertical guidance

D. Cannot be flown at night

24. Reverse sensing on the localizer back course (with a conventional CDI) is avoided by:

A. Using DME

B. Setting the front-course inbound heading on an HSI, or applying back-course technique

C. Capturing the glideslope

D. Flying faster

25. The fundamental value of the ILS, and the discipline its limitations demand, is that it:

A. Eliminates the need for a missed approach

B. Provides precise lateral and vertical guidance to low minimums, requiring the pilot to use the correct intercept, identify the signals, and respect the system's coverage and error sources

C. Replaces the need for charts

D. Allows landing in any weather

ANSWER KEY & EXPLANATIONS — SESSION 59

1. A. Lateral + vertical — The ILS provides both lateral (localizer) and vertical (glideslope) guidance to the runway.

2. B. Far end — The localizer transmitter is located at the far (departure) end of the runway, transmitting back toward the approach.

3. A. Centerline extended — The localizer provides course guidance aligned with the runway centerline extended.

4. D. ~4× / 2.5° — The localizer is about four times more sensitive than a VOR (roughly 2.5 degrees full scale).

5. C. Near approach end, offset — The glideslope transmitter is near the approach end, offset to the side, defining the descent angle.

6. D. 3 degrees — The standard ILS glideslope angle is approximately 3 degrees.

7. D. Higher-angle lobes — False glideslopes exist because the glideslope signal produces additional lobes at higher angles (e.g., near 9 degrees) that can be mistaken for the true 3-degree path.

8. A. Intercept from below — To avoid a false glideslope, intercept the glideslope from below at the published intercept altitude.

9. B. Signal distortion — The ILS critical area is protected because vehicles or aircraft there can distort the localizer or glideslope signal.

10. A. Hold clear — When critical area protection is in effect, ATC holds aircraft/vehicles clear of the critical areas to protect the signal.

11. A. Opposite side, no GS — A localizer back course provides lateral guidance from the localizer signal on the opposite side, without glideslope, to the reciprocal runway.

12. D. Aural/visual at points — Marker beacons provide aural/visual indications at specific points (outer and middle markers).

13. C. FAF/GS intercept — A DME or fix is often used in lieu of the outer marker to identify the final approach fix / glideslope intercept point.

14. B. Visual transition — The approach lighting system provides a visual transition from instruments to the runway environment near minimums.

15. D. Visual references per §91.175 — A pilot may descend below the DA only when the required visual references are in sight and the aircraft can land normally.

16. C. Morse identifier — The localizer is identified by a Morse code identifier (three letters, often preceded by "I").

17. B. 200 ft HAT — A Category I ILS typically provides a DH as low as 200 feet HAT.

18. C. Special equipment/authorization — Cat II/III ILS approaches require special aircraft equipment, crew authorization, and ground equipment.

19. C. LOC then GS from below — The pilot establishes on the localizer course, then intercepts the glideslope at the published altitude from below.

20. D. Tailored ~700 ft — Localizer course width is tailored (typically 3–6 degrees) to produce about 700 feet total width at the threshold.

21. C. LOC non-precision — If the glideslope fails, the pilot may continue as a localizer (non-precision) approach to the LOC MDA, if able.

22. C. Above GS — A "fly down" glideslope needle (below center) means the aircraft is above the glideslope; descend to recapture it.

23. B. Coverage volume — A primary ILS limitation is that the aircraft must remain within the protected coverage volume for reliable guidance.

24. B. HSI front-course/technique — Back-course reverse sensing is avoided by setting the front-course inbound heading on an HSI, or applying back-course technique.

25. B. Precise guidance + discipline — The ILS provides precise lateral and vertical guidance to low minimums, requiring the pilot to use the correct intercept, identify the signals, and respect the system's coverage and error sources.