SESSION 53: NAVIGATION — STARS, DESCENTS, AND CROSSING RESTRICTIONS

1. A Standard Terminal Arrival (STAR) is a published procedure that:

A. Provides obstacle clearance on departure

B. Establishes the missed approach

C. Connects the en route structure to a fix from which an approach can be initiated, simplifying arrival clearances

D. Replaces the approach chart

2. A "descend via" STAR clearance authorizes the pilot to:

A. Descend to comply with all published altitude (and speed) restrictions on the STAR

B. Descend at will, ignoring restrictions

C. Maintain the last assigned altitude

D. Climb to the STAR's top altitude

3. Without a "descend via" clearance or a specific altitude amendment, a pilot on a STAR must:

A. Descend to meet all published crossing restrictions

B. Maintain the last assigned altitude until ATC amends it

C. Begin descent at pilot's discretion

D. Descend to the lowest published altitude

4. A published "cross WAYPT at or above 6,000" restriction on a STAR requires the aircraft to:

A. Cross at exactly 6,000

B. Cross below 6,000

C. Be at or above 6,000 crossing the waypoint

D. Descend to 6,000 after the waypoint

5. A published "cross WAYPT at or below FL240" requires the aircraft to:

A. Be at or below FL240 crossing the waypoint

B. Cross at exactly FL240

C. Be above FL240

D. Climb to FL240 after the waypoint

6. A "cross WAYPT at and maintain 8,000" requires the aircraft to:

A. Cross at or above 8,000

B. Cross at or below 8,000

C. Descend to 8,000 only after the waypoint

D. Cross at exactly 8,000 and maintain that altitude

7. A "descend via" clearance that also includes "descend via the XYZ arrival, except cross ABCD at 10,000" means the pilot:

A. Ignores all published restrictions

B. Maintains the last assigned altitude

C. Descends at pilot's discretion

D. Complies with the STAR restrictions but uses the amended 10,000 crossing at ABCD

8. Top-of-descent (TOD) planning answers the question of:

A. The required fuel reserve

B. The alternate minimums

C. Where to begin the descent to meet a crossing restriction at the target altitude

D. The transponder code

9. To descend 10,000 feet at a 500 fpm rate requires approximately:

A. 20 minutes

B. 10 minutes

C. 5 minutes

D. 40 minutes

10. A common rule of thumb to compute the distance needed to descend is to multiply the altitude to lose (in thousands of feet) by:

A. 1

B. 3 (the "3-to-1" rule — 3 NM per 1,000 feet)

C. 5

D. 10

11. Using the 3-to-1 rule, descending from 12,000 to 6,000 (6,000 feet to lose) requires beginning the descent about:

A. 6 NM out

B. 12 NM out

C. 9 NM out

D. 18 NM out

12. A required descent rate (fpm) to meet a crossing restriction can be estimated from the:

A. Bank angle

B. Airspeed in mph

C. Altitude to lose, the distance available, and the groundspeed

D. Transponder code

13. A published speed restriction on a STAR (e.g., "250 KIAS") must be:

A. Disregarded under "descend via"

B. Applied only above FL180

C. Complied with as part of the "descend via" clearance, unless ATC amends it

D. Treated as advisory only

14. When ATC issues "descend via the arrival" then later "descend and maintain 8,000," the pilot should understand the 8,000 as:

A. Cancelling the lateral routing

B. An advisory altitude

C. Cancelling all speed restrictions

D. A hard altitude assignment, while the STAR lateral routing continues

15. A pilot on a STAR who is told "cancel speed restrictions" may:

A. Descend below the published altitudes

B. Disregard the published speed restrictions while still complying with altitude restrictions

C. Ignore the lateral routing

D. Climb at will

16. Anticipating descents on a STAR is important because:

A. The aircraft cannot descend in IMC

B. STARs never have crossing restrictions

C. ATC always provides the descent rate

D. Failing to plan the descent can leave the aircraft too high to meet a crossing restriction safely

17. "Climbing/descending via" procedures reduce ATC workload by:

A. Eliminating the need for a clearance

B. Removing all altitude restrictions

C. Replacing the en route chart

D. Letting a single clearance convey a complex vertical and lateral profile the pilot then flies

18. A pilot crossing a "at or above" restriction may cross:

A. Only at exactly the published altitude

B. At the published altitude or any higher altitude consistent with the clearance

C. Below the published altitude

D. Only at the lowest STAR altitude

19. A STAR transition is:

A. A specific entry route from a particular point in the en route structure onto the main STAR

B. The missed approach

C. The takeoff segment

D. A holding pattern

20. When flying a "descend via" with a "expect" altitude removed, the pilot should:

A. Maintain the last assigned altitude regardless

B. Descend to comply with the published restrictions on the arrival as cleared

C. Climb to the top of the STAR

D. Disregard the STAR

21. A pilot at 250 knots groundspeed (about 4 NM per minute) needing to descend 4,000 feet over 20 NM requires a descent rate of about:

A. 1,000 fpm

B. 800 fpm

C. 500 fpm

D. 1,500 fpm

22. The first step when assigned a STAR is to:

A. Review the STAR chart — the route, transitions, crossing restrictions, and speeds

B. Set the transponder to 1200

C. Cancel IFR

D. Disregard the textual notes

23. A pilot unable to comply with a STAR crossing restriction should:

A. Descend below the restriction anyway

B. Comply partially and continue

C. Increase speed to make the crossing

D. Advise ATC "unable" before the restriction so ATC can amend the clearance

24. "Descend via" combines lateral and vertical guidance such that the pilot:

A. Flies the published lateral track and descends to meet each published altitude (and speed) restriction in sequence

B. Flies only the lateral track

C. Descends at will with no restrictions

D. Maintains a single altitude throughout

25. The fundamental purpose of STARs and the "descend via" concept is to:

A. Replace the approach

B. Eliminate the need for charts

C. Provide an efficient, standardized, obstacle- and traffic-managed transition from the en route structure to the approach environment

D. Establish the takeoff minimums

ANSWER KEY & EXPLANATIONS – SESSION 53

1. C. Connects en route to approach — A STAR connects the en route structure to a fix from which an approach can be initiated, simplifying arrival clearances.

2. A. Comply with restrictions — "Descend via" authorizes descending to comply with all published altitude (and speed) restrictions on the STAR.

3. B. Maintain last assigned — Without "descend via" or a specific amendment, the pilot maintains the last assigned altitude until ATC amends it.

4. C. At or above 6,000 — "Cross at or above 6,000" requires being at or above 6,000 crossing the waypoint.

5. A. At or below FL240 — "Cross at or below FL240" requires being at or below FL240 crossing the waypoint.

6. D. Exactly 8,000, maintain — "Cross at and maintain 8,000" requires crossing at exactly 8,000 and maintaining that altitude.

7. D. Comply except amended — "Descend via... except cross ABCD at 10,000" means comply with the STAR restrictions but use the amended 10,000 crossing at ABCD.

8. C. Where to start descent — TOD planning determines where to begin the descent to meet a crossing restriction at the target altitude.

9. A. 20 minutes — Descending 10,000 feet at 500 fpm takes 10,000 ÷ 500 = 20 minutes.

10. B. 3-to-1 — The rule of thumb multiplies the altitude to lose (thousands of feet) by 3 (3 NM per 1,000 feet).

11. D. 18 NM — 6,000 feet to lose ÷ 1,000 × 3 = 18 NM.

12. C. Altitude/distance/groundspeed — The required descent rate is estimated from the altitude to lose, the distance available, and the groundspeed.

13. C. Comply unless amended — A published STAR speed restriction must be complied with as part of the "descend via" clearance, unless ATC amends it.

14. D. Hard altitude, lateral continues — "Descend and maintain 8,000" is a hard altitude assignment, while the STAR lateral routing continues.

15. B. Disregard speeds only — "Cancel speed restrictions" allows disregarding the published speed restrictions while still complying with altitude restrictions.

16. D. Avoid being too high — Anticipating descents matters because failing to plan can leave the aircraft too high to meet a crossing restriction safely.

17. D. One clearance, full profile — "Climb/descend via" reduces ATC workload by letting a single clearance convey a complex vertical and lateral profile the pilot then flies.

18. B. Published or higher — An "at or above" restriction may be crossed at the published altitude or any higher altitude consistent with the clearance.

19. A. Entry route to STAR — A STAR transition is a specific entry route from a particular point in the en route structure onto the main STAR.

20. B. Comply as cleared — Flying a "descend via," the pilot descends to comply with the published restrictions on the arrival as cleared.

21. B. 800 fpm — 4,000 feet over 20 NM at 4 NM/min = 5 minutes; 4,000 ÷ 5 = 800 fpm.

22. A. Review STAR chart — The first step when assigned a STAR is to review the chart — route, transitions, crossing restrictions, and speeds.

23. D. Advise "unable" — A pilot unable to comply with a STAR crossing restriction should advise ATC "unable" before the restriction so ATC can amend the clearance.

24. A. Lateral track + each restriction — "Descend via" combines guidance so the pilot flies the published lateral track and descends to meet each published altitude (and speed) restriction in sequence.

25. C. Efficient managed transition — The purpose of STARs and "descend via" is an efficient, standardized, obstacle- and traffic-managed transition from the en route structure to the approach environment.