NOTE: Text that should be deleted from the outline is displayed with a line through the text. New text is shown with a blue background.

If you should see any additional content on your knowledge test not represented in this update, please share that information with Gleim so that we can continue to provide the most complete knowledge test preparation experience possible. You can contact our aviation team at aviation@gleim.com. Thank you in advance for your help!

Study Unit 3 – Federal Aviation Regulations: Part 121

Page 103, Question 86: This question was updated to include more current dates.

86. If a flight crewmember completes a required annual flight check in December 1987 and the required annual recurrent flight check in January 1989, the latter check is considered to have been taken in

A. November 1988
B. December 1988
C. January 1989

Answer (B C) is correct. (FAR 121.401)  

DISCUSSION: Whenever a flight crewmember is required to take recurrent training, a flight check, or a competence check, and takes the check or completes the training in the calendar month before or after the calendar month in which that training or check is required, (s)he is considered to have taken or completed it in the calendar month in which it was required.

Answer (C A) is incorrect. The check taken in January is considered to have been taken in December, the month the flight check was due. The annual flight check can be taken 1 month after the month due.

Answer (A B) is incorrect. The check taken in January is considered to have been taken in December, not November. The annual flight check can be taken 1 month before the month due.
Study Unit 4 – Federal Aviation Regulations: Part 135

Page 168, Question 144: This question was edited to provide different incorrect answer foils and more thorough answer explanations.

144. (Refer to Figure 1 on page 167.) What is the maximum landing distance that may be used by a turbine-engine-powered, small transport category airplane to land on Rwy 6 (wet) at the destination airport?
   A. 5,460 9,100 feet.
   B. 5,880 6,279 feet.
   C. 6,088 5,460 feet.

Answer (A C) is correct. (FAR 135.385)
DISCUSSION: FAR 135.397 prescribes that FARs 135.385 and 135.387 are applicable to turbine-engine-powered small airplanes. FAR 135.385 requires a turbine-engine-powered airplane to be able to land in 60% of the effective length of a dry (or a wet) runway at the destination airport.

The effective length of Rwy 6 on Fig. 1 is 9,100 ft. (10,350 – 1,250). The effective runway length begins at the point where the obstruction clearance plane intersects the centerline of the runway. Thus, the maximum landing distance is 5,460 ft. (9,100 × 60%).

Answer (B A) is incorrect. This is 100%, not 60%, of the effective runway length. Answer (C B) is incorrect. This is 60% of 10,150 feet, which would be required for landing a turbojet airplane, not a turbine-engine-powered airplane, on Rwy 6 (wet) at the destination airport. Only turbojet airplanes are required to increase the available runway length for landing on a wet runway.

Page 171, Question 152: This question was edited to add the word “planning” to the stem.

152. (Refer to Figure 1 on page 167.) What is the maximum planning landing distance that may be used by a turbopropeller-powered, small transport category airplane to land on Rwy 24 (dry) at the alternate airport?
   A. 5,490 feet.
   B. 6,210 feet.
   C. 6,405 feet.

Answer (C) is correct. (FAR 135.387)
DISCUSSION: FAR 135.397 prescribes that FARs 135.385 and 135.387 are applicable to turbine-engine-powered small airplanes. FAR 135.387 requires a turbopropeller-powered airplane to be able to land in 70% of the effective length of the runway at an alternate airport.

The effective length of Rwy 24 on Fig. 1 is 9,150 ft. (10,350 – 1,200). The effective runway length begins at the point where the obstruction clearance plane intersects the centerline of the runway. Thus, the maximum planning landing distance is 6,405 ft. (9,150 × 70%).

Answer (A) is incorrect. This is 60%, not 70%, of the effective runway length. Answer (B) is incorrect. This is 60% of the actual, not the effective, runway length.
Study Unit 5 – Aerodynamics and Airplanes

Page 180, Subunit 5.14: The following material was added to the outline to provide additional information on landing approaches.

g. Takeoff % N1 Chart (see Figure 239 on page 215) provides limit N1 percentages. The percentage value should be adjusted if engine bleeds for packs are off.

h. Stab Trim Settings limited weight (see Figure 240 on page 216) can be determined for different flap settings, takeoff weight, and CG position.

i. The standard glidepath for landing approach is 3°.
   1) A landing approach above this angle, at a constant approach speed, will shorten landing distance.
   2) An approach below this angle, at a constant approach speed, will lengthen landing distance.
   3) Each degree above or below the normal glidepath can be assumed to add or subtract about 500 feet to the landing distance, as appropriate.

j. Approach speed plays an obvious role in landing distance as well.
   1) The established V<sub>REF</sub> approach speed should be used for landing approach.
   2) For every 10 knots above the V<sub>REF</sub> speed, you can expect a delay of about 2,500 feet prior to touchdown due to increased float. You can also expect an increase of about 300 feet in the landing roll.

Page 188, Subunit 5.4: This question was added to cover the release of additional information from the FAA.

Upon landing, spoilers

A. decrease directional stability on the landing rollout.
B. function by increasing tire to ground friction.
C. should be extended after the thrust reversers have been deployed.

Answer (B) is correct. (AFH Chap 15)

DISCUSSION: When spoilers are deployed on landing, most of the wing’s lift is destroyed. This action transfers the airplane’s weight to the landing gear so that the wheel brakes are more effective.

Answer (A) is incorrect. Spoilers increase, not decrease, directional stability on the landing rollout by transferring the airplane’s weight to the landing gear so the wheel brakes and nosewheel steering are more effective.

Answer (C) is incorrect. Upon landing, spoilers should be extended immediately after touchdown, not after the thrust reversers have been deployed.
Page 201, Subunit 5.14: The following three questions were added to cover the release of additional information from the FAA.

Approaching the runway 1° below glidepath can add how many feet to the landing distance?

A. 250 feet.
B. 500 feet.
C. 1,000 feet.

Answer (B) is correct. *(AC 91-79)*

**DISCUSSION:** If the pilot crosses the threshold at an angle shallower than the normal 3°, the shallow approach angle effectively increases the landing distance and should be avoided. An approach angle of 2° instead of a recommended 3° will add 500 feet to landing distance.

Answer (A) is incorrect. Approaching the runway 0.5° below glidepath, not 1° below glidepath, can add approximately 250 feet to the landing distance. Answer (C) is incorrect. Approaching the runway 2° below glidepath, not 1° below glidepath, can add approximately 1,000 feet to the landing distance.

Arriving over the runway 10 knots over \(V_{\text{REF}}\) would add approximately how many feet to the dry landing distance?

A. 800 feet.
B. 1,700 feet.
C. 2,800 feet.

Answer (C) is correct. *(AC 91-97)*

**DISCUSSION:** Ten knots of excess airspeed will delay touchdown by approximately 2,500 feet due to floating in the flare and add approximately 300 feet to the ground roll after touchdown on a dry runway. Thus, the total amount added to the dry landing distance would be approximately 2,800 feet.

Answer (A) is incorrect. Arriving over the runway 3 knots over \(V_{\text{REF}}\), not 10 knots, would add approximately 800 feet to the dry landing distance. Answer (B) is incorrect. Arriving over the runway 6 knots over \(V_{\text{REF}}\), not 10 knots, would add approximately 1,700 feet to the dry landing distance.

You are rolling out after touchdown and decide you really need to abort your landing, and takeoff. Your airplane is at 116 knots and your engines have spooled down to 71% idle. You need a \(V_2\) of 142 to safely lift off and climb. The airplane will require 6 seconds to accelerate after the engines spool up to takeoff thrust, which requires 4 seconds. How much runway will you require for a safe landing abort from your decision point? (Use an average of 129 knots ground speed.)

A. 1,738 feet.
B. 2,178 feet.
C. 3,601 feet.

Answer (B) is correct. *(PHAK Chap 15)*

**DISCUSSION:** Given that 1 NM = 6,076.1 feet, use the following formula to determine the distance covered during the 10 seconds required for the engines to spool up to takeoff thrust and for the airplane to accelerate to \(V_2\):

\[
\frac{(\text{Average speed in knots}) \times 6,076.1 \text{ feet per NM}}{3,600 \text{ seconds per hour}} \times (\text{Number of seconds}) = \text{Distance in feet}
\]

\[
\frac{129 \times 6,076.1}{3,600} \times 10 = 2,177.3 \text{ feet}
\]

Answer (A) is incorrect. A runway length of 1,738 feet would be required if 8 seconds, not 10 seconds, were required for the engines to spool up to takeoff thrust and for the airplane to accelerate to \(V_2\). Answer (C) is incorrect. A runway length of 3,601 feet would be required if 16.5 seconds, not 10 seconds, were required for the engines to spool up to takeoff thrust and for the airplane to accelerate to \(V_2\).
Study Unit 6 – Airspace and Airports

Page 239, Subunit 6.3, 1.: This edit corrects the type of sign being described.

6.3 AIRPORT MARKINGS AND SIGNS

1. A **holding position mandatory instruction** sign has a white inscription on a red background.
   
a. The image below shows a holding position sign and is listed as Figure 228 in the ATP FAA Test Supplement and in color on page 386 of this book. The sign denotes an entrance to a runway from a taxiway.

![Figure 228. – TWY-RWY Hold Position.](image)

Page 241, Subunit 6.4, 9.: New material was added to provide information on RWSL systems.

7. A military airport is identified by a green and white beacon light with dual flashes of the white.

8. A lighted heliport is identified by a green, yellow, and white beacon light.

9. The Runway Status Light System (RWSL) is a fully automated system that provides runway status information to pilots and surface vehicle operators to clearly indicate when it is unsafe to enter, cross, take off from, or land on a runway.
   
a. The RWSL system processes information from surveillance systems and activates runway entrance lights (REL), takeoff hold lights (THL), runway intersection lights (RIL), and the final approach runway occupancy signal (FAROS) in accordance with the position and velocity of the detected traffic.
Page 249, Subunit 6.3: Two questions were added to cover the release of additional information from the FAA.

(Refer to Figure 228 below.) The sign shown is an example of

A. a mandatory instruction sign.
B. runway heading notification signage.
C. an airport directional sign.

Answer (A) is correct. (AIM Para 2-3-8)

**DISCUSSION:** The image depicts a runway holding position sign, which is a type of mandatory instruction sign. These signs have a red background with a white inscription and are used to denote the entrance to a runway or critical area and areas where aircraft are prohibited from entering.

Answer (B) is incorrect. Though a runway holding position sign shows the designation of the intersecting runways, the purpose of this type of mandatory instruction sign is to denote the entrance to a runway, not to notify the pilot of the associated runway headings. Answer (C) is incorrect. The sign shown is an example of a mandatory instruction sign, not a direction sign. Direction signs have a yellow background with a black inscription that identifies the designations of the intersecting taxiways leading out of the intersection.

Figure 228. – TWY-RWY Hold Position.

(Refer to Figure 156 on page 251.) When you see this pavement marking from the cockpit, you

A. can taxi past this point at your own risk.
B. must hold short until “Cleared” to taxi onto or past the runway.
C. may not cross the line until ATC allows you to “enter” or “cross” by instruction.

Answer (A) is the best answer. (AIM Paras 2-3-9 and 4-3-20)

**DISCUSSION:** Though the question refers to a “pavement marking,” the image depicts a runway boundary sign. This sign, which faces the runway and is visible to the pilot exiting the runway, is located adjacent to the holding position marking on the pavement. The runway boundary sign is intended to provide pilots with another visual cue, which they can use as a guide in deciding when they are clear of the runway. After landing, pilots are expected to taxi clear of the runway unless otherwise directed by ATC. An aircraft is considered clear of the runway when all parts of the aircraft are past the runway edge and there are no restrictions to its continued movement beyond the runway holding position markings.

Answer (B) is incorrect. The image depicts a runway boundary sign, not a runway holding position marking. After landing, pilots are expected to taxi clear of the runway unless otherwise directed by ATC. The runway boundary sign is intended to provide pilots with another visual cue, which they can use as a guide in deciding when they are clear of the runway. Additionally, in order to preclude misunderstandings in radio communications, ATC will not use the word “cleared” in conjunction with authorization for aircraft to taxi.

Answer (C) is incorrect. The image depicts a runway boundary sign, not a runway holding position marking. After landing, pilots are expected to taxi clear of the runway unless otherwise directed by ATC. The runway boundary sign is intended to provide pilots with another visual cue, which they can use as a guide in deciding when they are clear of the runway.
Page 258, Question 58: This question was edited to correct the right answer and provide more thorough answer explanations.

58. Taxi lead-off lights associated with the centerline lighting system

A. alternate green and yellow lights curving from the centerline of the runway to the centerline of the taxiway.
B. alternate green and yellow lights curving from the centerline of the runway to a point of the taxiway.
C. alternate green and yellow lights curving from the centerline of the runway to the edge of the taxiway.

Answer (C) is correct. (AIM Para 2-1-5)

**DISCUSSION:** The taxiway lead-off lights associated with the centerline lighting system curve from the centerline of the runway to the edge of the taxiway. These lights terminate at the limit of the runway environment; they do not extend onto the taxiway. They begin on the runway centerline and extend to one centerline light beyond the runway holding position, or the ILS/MLS critical area holding position.

Answer (A) is incorrect. The taxiway lead-off lights do not leave the runway environment to meet the taxiway centerline. They terminate at the limit of the runway environment. Although taxi lead-off lights lead from the centerline of the runway to the centerline of the taxiway, they do not end where they encounter the centerline of the taxiway. Rather, they extend beyond the runway holding position, or the ILS/MLS critical area holding position.

Answer (B) is incorrect. The taxiway lead-off lights do not transition to the taxiway at all. Taxi lead-off lights do not end at the edge of the taxiway. They extend beyond the runway holding position, or the ILS/MLS critical area holding position.

Page 255, Subunit 6.4: Two questions were added to cover the release of additional information from the FAA.

THL is the acronym for

A. Takeoff hold lights.
B. Taxi holding lights.
C. Terminal holding lights.

Answer (A) is correct. (AIM Para 2-1-6)

**DISCUSSION:** The Runway Status Light System (RWSL) is a fully automated system that provides runway status information to pilots and surface vehicle operators to clearly indicate when it is unsafe to enter, cross, take off from, or land on a runway. The RWSL system processes information from surveillance systems and activates runway entrance lights (REL), takeoff hold lights (THL), runway intersection lights (RIL), and the final approach runway occupancy signal (FAROS) in accordance with the position and velocity of the detected traffic.

Answer (B) is incorrect. THL is the acronym for takeoff hold lights, not taxi holding lights. Answer (C) is incorrect. THL is the acronym for takeoff hold lights, not terminal holding lights.

REL is the acronym for

A. Runway exit lights.
B. Runway entrance lights.
C. Ramp entry lights.

Answer (B) is correct. (AIM Para 2-1-6)

**DISCUSSION:** The Runway Status Light System (RWSL) is a fully automated system that provides runway status information to pilots and surface vehicle operators to clearly indicate when it is unsafe to enter, cross, take off from, or land on a runway. The RWSL system processes information from surveillance systems and activates runway entrance lights (REL), takeoff hold lights (THL), runway intersection lights (RIL), and the final approach runway occupancy signal (FAROS) in accordance with the position and velocity of the detected traffic.

Answer (A) is incorrect. REL is the acronym for runway entrance lights, not runway exit lights. Answer (C) is incorrect. REL is the acronym for runway entrance lights, not ramp entry lights.
Study Unit 7 – Air Traffic Control

Page 264, Subunit 7.3, 8. and 9.: New material was added to provide coverage on ASDE-X and hot spots.

6. A **gate hold** requires the pilot to contact ground control prior to starting engines for sequencing.
   a. When gate hold procedures are in effect, turbine-powered aircraft are expected to be ready for takeoff when they reach the runway or warm-up block.

7. A pilot should state his/her position on the airport when calling the tower for takeoff from a runway intersection, at all times.

8. If operating at an airport with Airport Surface Detection Equipment – Model X (ASDE-X), transponders should be transmitting continuously with altitude reporting while moving on the airport surface.
   a. ASDE-X is a multi-sensor surface surveillance system the FAA is acquiring for airports in the United States.

9. An airport surface hot spot is a location on an airport movement area with a history or potential risk of collision or runway incursion. Heightened attention by pilots and drivers is necessary.
   a. Hot spots are depicted on airport diagrams as open circles or polygons and designated as “HS 1,” “HS 2,” etc.

Page 264, Subunit 7.4, 6.: New material was added to provide additional coverage on ATC instructions.

4. If a pilot is within 3 min. of a clearance limit and a further clearance has not been received, the pilot should start a speed reduction to holding speed in preparation for holding.

5. Pilots should report time and altitude upon arriving at or leaving clearance limits.

6. Due to the prevalence of runway incursions at controlled airports, pilots should pay special attention to ATC taxi instructions.
   a. Specifically, pilots should listen for the key words “hold short of” and “cross” as they relate to operations near taxiway intersections with runways or other taxiways.

Page 270, Subunit 7.3: The following three questions were added to cover the release of additional information from the FAA.

When should transponders be operated on the ground while taxiing?

A. Only when ATC specifically requests your transponder to be activated.
B. Any time when the airport is operating under IFR.
C. All the time when at an airport with ASDE-X.

**Answer (C) is correct. (AIM Para 4-1-20)**

**DISCUSSION:** If operating at an airport with Airport Surface Detection Equipment - Model X (ASDE-X), transponders should be transmitting continuously with altitude reporting while moving on the airport surface. ASDE-X is a multi-sensor surface surveillance system the FAA is acquiring for airports in the United States.

Answer (A) is incorrect. If you are operating at an airport with ASDE-X, your transponder should be transmitting continuously with altitude reporting while moving on the airport surface, not only when ATC specifically requests your transponder to be activated. Answer (B) is incorrect. If you are operating at an airport with ASDE-X, your transponder should be transmitting continuously with altitude reporting while moving on the airport surface, not only when the airport is operating under IFR.
When taxiing on an airport with ASDE-X, you should

A. operate the transponder only when the airport is under IFR or at night during your taxi.
B. operate the transponder with altitude reporting all of the time during taxiing.
C. be ready to activate the transponder upon ATC request while taxiing.

Answer (B) is correct. (*AIM Para 4-1-20*)

**DISCUSSION:** If operating at an airport with Airport Surface Detection Equipment - Model X (ASDE-X), transponders should be transmitting continuously with altitude reporting while moving on the airport surface. ASDE-X is a multi-sensor surface surveillance system the FAA is acquiring for airports in the United States.

Answer (A) is incorrect. When taxiing on an airport with ASDE-X, you should operate the transponder with altitude reporting all the time during taxiing, not only when the airport is under IFR or at night. Answer (C) is incorrect. When taxiing on an airport with ASDE-X, you should operate the transponder with altitude reporting all the time during taxiing, not just upon ATC request.

Hot Spots are depicted on airport diagrams as

A. squares or rectangles around “HS and a number.”
B. circles or polygons around “HS and a number.”
C. triangles or blocks filled with “HS” and a number.

Answer (B) is correct. (*IAP Legend*)

**DISCUSSION:** An airport surface Hot Spot is a location on an airport movement area with a history or potential risk of collision or runway incursion. Heightened attention by pilots and drivers is necessary. Hot Spots are depicted on airport diagrams as open circles or polygons and designated as “HS 1,” “HS 2,” etc.

Answer (A) is incorrect. Hot Spots are depicted on airport diagrams as open circles or polygons, not squares or rectangles, and designated as “HS 1,” “HS 2,” etc. Answer (C) is incorrect. Hot Spots are depicted on airport diagrams as open circles or polygons, not triangles or blocks, and designated as “HS 1,” “HS 2,” etc.

Page 272, Subunit 7.4: The following three questions were added to cover the release of additional information from the FAA and include two new corresponding figures.

As you call for taxi instructions, the key words to understand are

A. cleared to runway.
B. hold short of or “cross.”
C. taxi to and “expedite.”

Answer (B) is correct. (*AIM Para 4-3-18*)

**DISCUSSION:** When giving taxi instructions, ATC will specify the destination on the airport, issue a taxi route, and state any hold short instructions or runway crossing clearances if the taxi route will cross a runway. A clearance must be obtained prior to crossing any runway, and pilots should always read back any instruction to hold short of or cross a specific runway. Therefore, the key words to understand are “hold short of” and “cross.”

Answer (A) is incorrect. In order to preclude misunderstandings in radio communications, ATC will not use the word “cleared” in conjunction with authorization for aircraft to taxi. Answer (C) is incorrect. The key words to understand are “hold short of” and “cross,” not “taxi to” and “expedite.”

(Refer to Figure 242 on page 15 of this update.) You received these ATC taxi instructions: “Taxi to Runway 30 via Lima and hold short of Runway 25L.” Your airplane is on the ramp by the terminal and NWS on the east side of the airport. Your taxi route

A. requires crossing of Runway 25L at Lima.
B. involves transiting HS 4.
C. requires crossing Runway 34R en route to the assigned runway.

Answer (A) is correct. (*IAP Legend*)

**DISCUSSION:** While ATC has instructed you to hold short of Runway 25L, your taxi route to Runway 30 will eventually require you to cross Runway 25L at taxiway Lima.

Answer (B) is incorrect. Your taxi route will keep you west of Runway 34R at all times, but hot spot 4 (HS 4) is east of Runway 34R. Answer (C) is incorrect. Your taxi route requires you to cross Runway 25L, not Runway 34R, en route to Runway 30.
As you rolled out long on Runway 30 after landing at Long Beach (LGB), you slowed and turned left on very wide pavement and now see Taxiway D signs on both sides of your pavement. You notice your heading is about 250°. Tower is urging you to turn left on D, cross 16R/34L, then taxi to G and hold short of Runway 30. You now know you

A. exited onto Runway 25R and transited HS 2.
B. exited onto Taxiway G.
C. exited at Taxiway J and transited HS 4.

Answer (A) is correct. (IAP Legend)

DISCUSSION: Runway 25R, which is 150 feet wide, intersects Runway 30 near the departure end. If you turned left onto Runway 25R from Runway 30, you would initially see the intersection of Taxiway D, which crosses the runway at an angle. Before the intersection, both sides of the runway would be marked with direction signs featuring a black “D” on a yellow background. Turning left onto Taxiway D and crossing Runway 16R/34L would require you to transit hot spot 2 (HS 2).

Answer (B) is incorrect. If you had exited on Taxiway G, ATC would not have instructed you to turn left onto Taxiway D and cross Runway 16R/34L. Answer (C) is incorrect. Exiting at Taxiway J near hot spot 4 (HS 4) would require exiting near the midpoint of Runway 30, not near the end, as would be the case after a long rollout.

Study Unit 8 – IFR Navigation Equipment, Holding, and Approaches
Page 289, Subunit 8.8, 15.: New material was added to provide coverage on declared distances for Part 139 airports. Existing outline levels were renumbered accordingly.

12. TWEB is also available on selected NDB frequencies and is depicted in the NDB communication box in the same manner as with a VOR, except the color of the circle is brown.
   a. Availability of TWEB can be confirmed by checking the A/FD.

13. A series of dots that overlay an airway on the en route chart means that the airway penetrates a restricted or prohibited airspace.

14. To determine the minimum number of aircraft rescue and fire-fighting vehicles and the type and amount of fire-fighting agents that a FAR Part 139 airport is required to have, you must
   a. Look up the aircraft rescue and fire-fighting (ARFF) index for that airport in the A/FD.
   b. Next, use the required equipment table at the bottom of Legend 15 on page 329.
   c. EXAMPLE: An FAR Part 139 airport with an ARFF Index of A is required to have one vehicle and 500 lb. of dry chemical (DC) or HALON 1211 or 450 lb. DC plus 100 gal. of water (H₂O).

15. All Part 139 airports are required to report declared distances for each runway to ensure FAA runway clearance areas are preserved.
   a. Declared distances for a runway represent the maximum distances available and suitable for meeting takeoff and landing distance performance requirements.
   b. These distances are determined in accordance with FAA runway design standards by adding to the physical length of paved runway any clearway or stopway and subtracting from that sum any lengths necessary to obtain the standard runway safety areas, runway object free areas, or runway protection zones.

16. The amount that a runway threshold is displaced is in the runway data of the A/FD.

17. The maximum gross weight of any particular type of aircraft on a given runway will be included in the Airport Remarks section of the A/FD.

18. The highest spot elevation is shown in bold on the planview section of an NOS IAP chart.
Weather data source at an airport is listed in the A/FD.

- **LAWRS** means a limited aviation weather reporting station where observers report cloud height, weather, obstructions to vision, temperature, dew point, surface winds, altimeter, and pertinent remarks.

On a low-altitude en route chart, a LF/MF oceanic route is depicted by a thin, dark brown line.

An ARTCC remote communications site is depicted by a blue serrated-edged box with the discrete VHF and UHF frequencies listed in the box.

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**Page 292, Subunit 8.12, 1.:** New material was added to provide additional information on RNAV (RNP) approaches.

### 8.12 GPS APPROACHES

1. Authorization to conduct any GPS operation under IFR requires, in part, that
   
   - Procedures must be established for use in the event that the loss of receiver autonomous integrity monitoring (RAIM) capability is predicted to occur.
     1) In such an event, you must rely on other approved navigation equipment, delay departure, or cancel the flight.
   
   - Air carrier and commercial operators must meet the appropriate provisions of their approved operations specifications.
   
   - Aircraft navigating by GPS are considered to be RNAV-equipped aircraft and must use the appropriate equipment suffix in the flight plan.
   
   - Pilots must be able to retrieve RNAV/RNP approach procedures by name from the aircraft navigation database.
   
   - To conduct an LPV approach, the aircraft must be equipped with an approach-certified system with a required navigation performance (RNP) of 0.3.
   
   - To conduct RNAV (RNP) approaches, special aircrew and aircraft authorizations are necessary.
     1) RNP approach procedures often require the ability to fly curved flight tracks within precisely defined airspace.
     2) These approaches require the FMS/GPS to have the capability to receive GPS signals and to fly radius-to-fix (RF) segments.
       a) This is indicated by the statement “RF and GPS REQUIRED” in the notes section of the approach chart.

2. GPS instrument approach operations outside the U.S. must be authorized by the appropriate sovereign authority (country or governmental unit within that country).
Page 294, Subunit 8.13, 3.d.: New material was added to provide additional information on LPV approaches.

3. GPS/WAAS NOTAMs

a. The term “unreliable” (UNRELBL) is an advisory to pilots indicating that the expected level of WAAS service may not be available.

b. The term “unavailable” (UNAVBL) is an advisory to pilots indicating that satellite signals are not available.

1) The name of the satellite and the words “SATELLITE UNAVBL” will be included in the NOTAM (i.e., “ATLANTIC SATELLITE UNAVBL”).

c. The time parameters of GPS/WAAS NOTAMs are stated in two-digit blocks as the year, month, day, hour, and minute (time is Zulu).

1) For example, WEF 0703121415-0703121700 indicates that the NOTAM will be effective from 1415-1700 on March 12, 2007.

d. If, however, you arrive at the initial fix for an LPV approach and your WAAS avionics indicate LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service.

1) Should an outage occur during the approach, reversion to LNAV minimums may be required.

Page 320, Subunit 8.8: This question was added to cover the release of additional information from the FAA.

All 14 CFR Part 139 airports must report

A. accident and incident data annually.
B. noise complaint statistics for each departure procedure or runway.
C. declared distances for each runway.

Answer (C) is correct. (AIM Para 4-3-6)

DISCUSSION: Declared distances for a runway represent the maximum distances available and suitable for meeting takeoff and landing distance performance requirements. These distances are determined in accordance with FAA runway design standards by adding to the physical length of paved runway any clearway or stopway and subtracting from that sum any lengths necessary to obtain the standard runway safety areas, runway object free areas, or runway protection zones. All 14 CFR Part 139 airports report declared distances for each runway.

Answer (A) is incorrect. The operator of an aircraft that is involved in an accident or incident, not a 14 CFR Part 139 airport, must file a report within 10 days of the accident or incident, not annually. Answer (B) is incorrect. Individual airports, not all 14 CFR Part 139 airports, are responsible for determining noise abatement requirements, establishing their own operating procedures, tracking complaints, and conducting their own enforcement.
Page 353, Subunit 8.12: This question was added to cover the release of additional information from the FAA and include a new corresponding figure.

(Refer to Figure 251 on page 16 of this update.) You are cleared to HNL and plan to use the RNAV (RNP) RWY 26L approach. Assuming you have received the training, you

A. should be prepared to program the FMS/GPS with the radio frequency to fly this approach.

B. can use the GPS and radio frequency communications to fly this approach to minimums.

C. know your FMS/GPS must have GPS and radius-to-fix capability.

Answer (C) is correct. *(IPH Chap 5)*

**DISCUSSION:** A key component necessary to realize the benefits of RNP approaches is the ability to fly curved flight tracks within a precisely defined airspace area. Accordingly, RNP approach procedures require the FMS/GPS to have the capability to receive GPS signals and to fly radius-to-fix (RF) segments. This is indicated by the statement “RF and GPS REQUIRED” in the notes section of the approach chart.

Answer (A) is incorrect. GNSS Landing System (GLS) approaches such as those using the Local Area Augmentation System (LAAS), not RNAV (RNP) approaches, require the pilot to select a five-digit channel number associated with the approach. RNAV (RNP) approaches use standard GPS signals and do not require tuning a specific radio frequency or channel. Answer (B) is incorrect. Precision Approach Radar (PAR) and ILS with Precision Runway Monitoring (ILS-PRM) approaches, not RNAV (RNP) approaches, require the use of radio communications. RNAV (RNP) approaches use standard GPS signals and do not require tuning a specific communication frequency other than the frequency assigned by ATC.

Page 359, Subunit 8.13: This question was added to cover the release of additional information from the FAA.

You arrive at the initial fix for the LPV approach into XYZ. The preflight briefer issued you an unreliable advisory on the approach before you took off. Your avionics indicates good signals and full GPS service is available. You

A. know you can fly the approach down to LPV minimums.

B. cannot use that approach because of the advisory from FSS.

C. must revert to another approach system such as VOR.

Answer (A) is correct. *(AIM Para 1-1-20)*

**DISCUSSION:** WAAS UNRELIABLE NOTAMs are predictive in nature and published for flight planning purposes only. Upon arrival at a location that has been NOTAMed WAAS UNRELIABLE, if the WAAS avionics indicate LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the approach, reversion to LNAV minimums may be required.

Answer (B) is incorrect. WAAS UNRELIABLE NOTAMs are predictive in nature and published for flight planning purposes only. Upon arrival at a location that has been NOTAMed WAAS UNRELIABLE, if the WAAS avionics indicate LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. Answer (C) is incorrect. WAAS UNRELIABLE NOTAMs are predictive in nature and published for flight planning purposes only. Upon arrival at a location that has been NOTAMed WAAS UNRELIABLE, if the WAAS avionics indicate LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service.
### New images for questions in Subunit 7.4:

<table>
<thead>
<tr>
<th>CITY/PORT</th>
<th>HOT SPOT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAGLESBAD, CA</td>
<td>HS 1</td>
<td>Large Jams may decrease the visibility of small aircraft.</td>
</tr>
<tr>
<td>CHINO, CA</td>
<td>HS 1</td>
<td>T awkward proximity to Hwy 90 and 101.</td>
</tr>
<tr>
<td>HAWTHORNE, CA</td>
<td>HS 1</td>
<td>Hwy 25 N is at cross.</td>
</tr>
<tr>
<td>LONGBEACH, CA</td>
<td>HS 1</td>
<td>Hwy 25 N is at cross.</td>
</tr>
<tr>
<td>LOS ANGELES, CA</td>
<td>HS 1</td>
<td>Hwy 25 N is at cross.</td>
</tr>
<tr>
<td>PALM SPRINGS, CA</td>
<td>HS 1</td>
<td>Hwy 10 and Hwy 138.</td>
</tr>
<tr>
<td>RIVERSIDE, CA</td>
<td>HS 1</td>
<td>Hwy 395 N and Hwy 395 S.</td>
</tr>
<tr>
<td>SAN DIEGO, CA</td>
<td>HS 1</td>
<td>Hwy 101 N and Hwy 101 S.</td>
</tr>
<tr>
<td>SANTA ANA, CA</td>
<td>HS 1</td>
<td>Hwy 101 N and Hwy 101 S.</td>
</tr>
</tbody>
</table>

(See continuation page for more listings.)

Figure 241—Hot Spots.
Figure 242—Airport Diagram.