

PPL (H) - Navigation



**CIVIL AVIATION DIRECTORATE
OF THE REPUBLIC OF SERBIA**

FLIGHT CREW LICENSING DEPARTMENT

Theoretical Knowledge Examination for obtaining PPL (H)

Subject: NAVIGATION

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NOTE:

The correct answer is under letter **a**. During exam the order of answers will be different

Theoretical Knowledge Test of the Form of Earth

1. What is the angle of inclination of the Earth's axis to its orbital plane?
 - a. $66\frac{1}{2}^{\circ}$.
 - b. $23\frac{1}{2}^{\circ}$.
 - c. 90° .
 - d. $33\frac{1}{2}^{\circ}$.

2. The meridian passing through Greenwich is known as:
 - a. Prime Meridian.
 - b. Main Meridian.
 - c. Equator.
 - d. Great Meridian.

3. A Rhomb Line is:
 - a. A regularly curved line on the Earth's surface which cuts all meridians at the same angle.
 - b. A regularly curved line on the Earth's surface which cuts all parallels of Latitude at the same angle.
 - c. A line showing True North.
 - d. A line of the surface of the Earth whose center and radius are those of the Earth.

4. Variation is the angle between:
 - a. True North and Magnetic North.
 - b. True North and the nearest line of Longitude.
 - c. Magnetic North and the aircraft's Magnetic heading.
 - d. Magnetic North and the aircraft's True heading.

5. An Isogonal is a line joining points of:
 - a. Equal magnetic variation.
 - b. Equal magnetic deviation.
 - c. Zero magnetic variation.
 - d. Zero magnetic deviation.

6. Which points on the Earth's surface determine the Earth's axis?
 - a. North and south geographic pole.
 - b. North geographic pole and north magnetic pole.
 - c. North and south magnetic pole.
 - d. Equator-hemisphere. N-0001.

7. The circumference of the Earth along the Equator is approximately:

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- a. 40,075 km.
 - b. 21,600 NM.
 - c. 30,000 NM.
 - d. 24,000 km.
8. The Earth's diameter, when compared to the Earth's axis, is:
- a. Longer by 43km.
 - b. Twice as much greater.
 - c. The same.
 - d. Shorter by 42km.
9. Which of the following statements, regarding rotation of the Earth around the Sun, is correct? The Earth:
- a. Encircles the Sun in one year.
 - b. Encircles the Sun one time during summer and one time during winter.
 - c. Does not circle around the Sun because it is stationary with the Sun circling around it.
 - d. Encircles the Sun in one day.
10. The Earth globe rotates:
- a. Around its axis in the direction from the west to the east.
 - b. Around so-called Sun's tropic.
 - c. Together with the Sun in the direction from the east to the west.
 - d. Around its axis in the direction from east to the west.
11. The orbit of the Earth is:
- a. An ellipse with the Sun at one of the foci.
 - b. A circle with the Sun at the center.
 - c. An ellipse with the Sun at different point inside it.
 - d. A circle around which the Sun rotates.
12. What is the characteristic of the Rhomb Line?
- a. It cuts meridians under constant angle.
 - b. It is the Great Circle.
 - c. It is the shortest distance between two points on the Earth's globe.
 - d. It cuts meridians under various angles.
13. An aircraft over Belgrade is headed exactly to the south. It is 1200 UTC. What is the Relative bearing of the Sun?
- a. Right of the aircraft's nose.
 - b. Exactly straight-in.
 - c. Left of the aircraft's nose.
 - d. May be left or right of the aircraft's nose, with regard to the season.
14. What is the cause of the Earth's seasons?
- a. The tilt of the Earth's axis.

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- b. Irregular movement of the Earth around the Sun.
 - c. Uneven temperatures in space.
 - d. A circle around the Sun rotates.
15. The shortest distance between two points on the Earth's globe is called:
- a. Great circle.
 - b. Lambdrome.
 - c. Rhumb line.
 - d. Small circle.
16. Great circle(s) on the Earth's surface is(are):
- a. The equator, meridians and orthodroms.
 - b. The equator only.
 - c. The equator and meridians.
 - d. The equator, meridians and parallels of altitude.
17. The equator is the Great Circle which plane:
- a. Divides the Earth's globe into the north and south hemisphere.
 - b. Divides the Earth's globe into the east and west hemisphere.
 - c. Is parallel to the Earth's axis.

Theoretical Knowledge Test of Time

18. How many Great Circles (orthodroms) can be determined on the Earth's surface?
- a. An infinite number.
 - b. 90.
 - c. 180.
 - d. 360.
19. The Great Circle on the Earth's globe is the cross-section of the Earth's surface and the plane passing through:
- a. The center of the Earth and is tilt to the Earth's axis at any angle.
 - b. The center of the Earth and is always rectangular to the Earth's axis.
 - c. The center of the Earth and is always oblique to the Earth's axis.
 - d. Any of two points on the Earth's surface; the cross-section with the Earth's surface is the shortest distance between these points.
20. Which of the following circles on the Earth's globe does not have the center at the Earth's center?
- a. Small Circle.
 - b. Orthodrome.
 - c. Great Circle.
 - d. Equator.
21. Which circles, forming the graticule, are at the same time Great Circles and Rhumb Line?

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- a. Meridians and equator.
 - b. Parallel of latitude only.
 - c. Meridians only.
 - d. Equator only.
22. The Sun travels across the sky an arc of 5° in:
- a. 20 minutes.
 - b. 60 minutes.
 - c. 30 minutes.
 - d. 4 minutes.
23. What time is needed for the Sun's azimuth to change by 27 arc degrees?
- a. 108 minutes.
 - b. 30 minutes.
 - c. 90 minutes.
 - d. 135 minutes.
24. The Coordinated Universal Time (UTC) is:
- a. The time on the longitude 0 degrees.
 - b. The local time.
 - c. The Zone Time.
 - d. The Mid European Time.

Theoretical Knowledge Test of Direction, Speed, Distance and Time

25. 13:00 accordingly to the Mid European Summer Time is:
- a. 1100 UTC.
 - b. 1200 UTC.
 - c. 1400 UTC.
 - d. 0100 UTC.
26. The attached map distance between points A and B is 9 cm. how many Nm is it? (See Figure PPL Nav-2)
- a. 9.66.
 - b. 18.
 - c. 4.5.
 - d. 1.8.
27. The distance between the points ALFA and BRAVO is 107 NM. If an aircraft covers first 16 NM in 10 minutes, what time does it take to travel the entire route ALFA-BRAVO with the same groundspeed?
- a. 1 hour and 6 minutes.
 - b. 1 hour and 3 minutes.
 - c. 1 hour and 1 minute.
 - d. 59 minutes.

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28. How far will an aircraft travel with 32 gal of usable fuel with fuel consumption 7,1 gal/h at the groundspeed 108kts? (Allow 1-hour final reserve fuel)
- 379 NM.
 - 384 NM.
 - 420 NM.
 - 487 NM.
29. How far will an aircraft travel with 27 gal of usable fuel with fuel consumption 6,8 gal/h at the groundspeed 93kts? (Allow 6-gallons final reserve fuel)
- 287 NM.
 - 292 NM.
 - 301 NM.
 - 308 NM.
30. How many gallons of usable fuel should be on board of an aircraft for a distance flight of 300 NM at the groundspeed 120 kts and average fuel consumption 7,3 gal/h? (Allow 1-hour fuel reserve).
- 25.6 gal.
 - 15.0 gal
 - 18.3 gal.
 - 21.4 gal.
31. The geographic latitude is the distance of a point on the Earth's surface from the:
- Equator, measured in arc degrees.
 - Equator, measured in statute miles.
 - Prime Meridian, measured in arc degrees.
 - Prime Meridian, measured in geographic miles.
32. A distance in meters could be converted to feet using the formula:
- $(m \times 3) + 10\%$.
 - $m \times 0.3$.
 - $(m : 10) \times 3$.
 - $(m \times 3) : 10$.
33. An altitude Of 1,500 meters is approximately:
- 4,900 ft.
 - 3,600 ft.
 - 4,000 ft.
 - 4,500 ft.
34. On a chart we read the obstacle altitude 275 meters. Regarding the rule of height clearance 1,000 feet over obstacles, what is the lowest altitude for overflying the obstacle?
- 1,900 ft.
 - 2,230 ft.
 - 2,130 ft.

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- d. 1,230 ft.
35. Altitude 6,000 ft is approximately:
- 1,800 m.
 - 1,200 m.
 - 3,000 m.
 - 12,000 m.
36. Approximately what QNH pressure corresponds to the QFE pressure 1000 hPa on an airfield with the elevation 200 meters?
- 1025 hPa.
 - 985 hPa.
 - 990 hPa.
 - 1035 hPa.
37. If a pilot changes the altimeter setting from 996 hPa to 1033 hPa, the altitude indication will:
- Increase.
 - Not change.
 - Decrease at low temperatures and increase at high temperatures.
 - Decrease for 1,000 ft.
38. What is the latitude of a point on the Equator?
- 0°.
 - 90°N.
 - 180°S.
 - 90°S.
39. Longitude change between point A (04° 14' 28" E) and B (02° 30' 30" E) on the Earth's globe is:
- 01° 43' 58".
 - 06° 44' 58".
 - 02° 44' 58".
 - 02° 16' 02".
40. What is the difference between the latitude of the point A and the point B, which are located on following parallels of latitude:
- A: 15° 54' 30" N
B: 10° 33' 30" S
- 26° 28' 00".
 - 05° 21' 00".
 - 25° 27' 00".
 - 05° 28' 00".
41. Determine the latitude of the point B, located 240 NM north of the point A with the latitude 62° 33' 00" N.

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- a. $66^{\circ} 33' 00''$ N.
 - b. $58^{\circ} 33' 00''$ N.
 - c. $86^{\circ} 33' 00''$ N.
 - d. $64^{\circ} 33' 00''$ N.
42. The distance between the parallel of latitude 10° N and the parallel of latitude 11° N, measured along the meridian, is:
- a. 111 km.
 - b. 60 SM.
 - c. 60 km.
 - d. 111 NM.
43. The geographic coordinates of the point A are: (See Figure PPL Nav-1)
- a. $N 44^{\circ} 59, 6'$ and $E 19^{\circ} 33,5'$.
 - b. $N 44^{\circ} 59, 6'$ and $W 19^{\circ} 33,5'$.
 - c. $E 44^{\circ} 59, 6'$ and $N 19^{\circ} 33,5'$.
 - d. $W 44^{\circ} 59, 6'$ and $N 19^{\circ} 33,5'$.
44. The geographic coordinates of the point B are: (See Figure PPL Nav-1)
- a. $N 45^{\circ} 05, 9'$ and $E 19^{\circ} 46, 1'$.
 - b. $N 45^{\circ} 05, 9'$ and $S 19^{\circ} 46, 1'$.
 - c. $N 45^{\circ} 05, 9'$ and $W 19^{\circ} 46, 1'$.
 - d. $N 45^{\circ} 05, 5'$ and $N 19^{\circ} 46, 1'$.
45. The geographic coordinates of the point C are: (See Figure PPL Nav-1)
- a. $N 45^{\circ} 00, 9'$ and $E 19^{\circ} 45,0'$.
 - b. $N 45^{\circ} 00, 9'$ and $S 19^{\circ} 45,0'$.
 - c. $N 45^{\circ} 00, 9'$ and $W 19^{\circ} 45,0'$.
 - d. $N 45^{\circ} 00, 9'$ and $N 19^{\circ} 45,0'$.
46. Which point has the geographical coordinates $N 44^{\circ} 33, 2'$ and $E 20^{\circ} 59, 0'$? (See Figure PPL Nav-4)
- a. MIHAL.
 - b. DUBRA.
 - c. YEZAV.
47. The geographic coordinates of the point DUBRA are: (See Figure PPL Nav-4)
- a. $N 44^{\circ} 41,3'$ and $E 21^{\circ} 04,1'$.
 - b. $N 44^{\circ} 41,3'$ and $W 21^{\circ}04,1'$.
 - c. $S 44^{\circ} 41,3'$ and $E 21^{\circ} 04,1'$.
 - d. $S 44^{\circ} 41,3'$ and $W 21^{\circ}04,1'$.
48. 11 km north of the geographic coordinates $N 44^{\circ} 41.3'$ 'E and $21^{\circ} 04.1'$ is the place? (See Figure PPL Nav-4)
- a. Gaj
 - b. Skorenovac

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- c. Radinac
- d. Kovin.

49. The distance of 1 NM is equivalent to:
- a. The distance of one arc minute on a Meridian.
 - b. Exactly the 40-thousandth part of the Earth's perimeter.
 - c. The distance between a Meridian and the pole.
 - d. The perimeter of a Polar Circle.

Theoretical Knowledge Test of Aeronautical Charts, Chart-Marking, Measuring Track Angle and Map Reading

50. The distance of 1 NM equals to:

- a. 1,852 m.
- b. 1,111 m.
- c. 1,432 m.
- d. 1,609 m.

51. The formula for a quick calculation from kilometers to nautical miles is:

- a. $(\text{km} : 2) + 10\%$.
- b. $(\text{km} \times 2) - 22\%$.
- c. $(\text{km} : 2) - 10\%$.
- d. $(\text{km} \times 2) - 10\%$.

52. Approximately how many kilometers are in 70 nautical miles?

- a. 130 km.
- b. 135 km.
- c. 140 km.
- d. 145 km.

53. The distance of 1 statute mile is equal to:

- a. 1,609 m.
- b. 1,852 m.
- c. 1,432 m.
- d. 1,111 m.

54. How many kilometers are in 50 SM (statute miles)?

- a. Approximately 80 km.
- b. Approximately 92 km.
- c. Exactly 100 km.
- d. Little less than 75 km.

55. Where on the chart can the distance between the two points be determined, which has been callipered by a pair of compasses or marked on the edge of a piece of paper?

- a. On each Meridian or on the scale ribbon on the edge of the chart.
- b. On each Meridian.

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- c. Only on the Meridian at the midpoint between points.
 - d. Only on the scale ribbon on the edge of the chart.
56. Which mark on the wind triangle represents a magnetic heading? (See Figure PPL Nav-13)
- a. Mark 2.
 - b. Mark 1.
 - c. Mark 3.
 - d. Mark 4.
57. Which mark on the wind triangle sketch denotes a compass heading? (See Figure PPL Nav-13)
- a. Mark 1.
 - b. Mark 2.
 - c. Mark 3.
 - d. Mark 4.
58. Which mark on the wind triangle represents a wind correction angle? (See Figure PPL Nav-13)
- a. Mark 5.
 - b. Mark 2.
 - c. Mark 3.
 - d. Mark 4.
- 59.59. Which mark on the wind triangle represents a magnetic variation? (See Figure PPL Nav-13)
- a. Mark 9.
 - b. Mark 3.
 - c. Mark 5.
 - d. Mark 10.
60. Which mark on the wind triangle represents a compass deviation? (See Figure PPL Nav-13)
- a. Mark 10.
 - b. Mark 5.
 - c. Mark 8.
 - d. Mark 9.
61. Which mark on the wind triangle represents an aircraft's true airspeed (TAS)? (See Figure PPL Nav-13)
- a. Mark 8.
 - b. Mark 5.
 - c. Mark 6.
 - d. Mark 7.

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62. Which mark on the wind triangle represents an aircraft's ground speed (GS)? (See Figure PPL Nav-13)
- Mark 6.
 - Mark 5.
 - Mark 7.
 - Mark 8.
63. When set to 1008 hPa, an aircraft's altimeter indicates 1,600 ft. What would be the indication if setting is changed to 1009 hPa?
- 1,630 ft.
 - 1,610 ft.
 - 1,570 ft.
 - 1,590 ft.
64. If a pilot changes the altimeter setting from 1010 hPa to 1000 hPa, what is the approximate change in indication?
- Altimeter will indicate 300 ft lower.
 - Altimeter will indicate 300 ft higher.
 - No change in indication.
 - Variously, dependent on QNH.

Theoretical Knowledge Test of Dead Reckoning, Visual Air Navigation

65. What does a measuring unit knot used in aviation mean?
- NM/h.
 - SM/h.
 - Km/h.
 - m/h.
66. The wind velocity of 10 m/sec approximately equals to:
- 20 kts.
 - 40 kts.
 - 5 kts.
 - 2,5 kts.
67. Which mark on the wind triangle represents a wind vector? (See Figure PPL Nav-13)
- Mark 7.
 - Mark 5.
 - Mark 6.
 - Mark 8.
68. On a chart, 6 cm represents the distance 15 km. What is the scale of the chart?
- 1:250 000.
 - 1:300 000.
 - 1:400 000.
 - 1:500 000.

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69. The scale of the chart is 1:500 000. How many centimeters represent the distance 105km?
- 21.0 cm.
 - 10.5 cm.
 - 42.0 cm.
 - 84.0 cm.
70. The scale of the chart is? (See Figure PPL Nav-3)
- 1:250 000.
 - 1:300 000.
 - 1:200 000.
 - 1:500 000.
71. The scale of the chart is 1:300 000. How many centimeters represent the distance 210km?
- 70 cm.
 - 63 cm.
 - 6.3 cm.
 - 7 cm.
72. What is the meaning of the term "drift angle" in navigation?
- The difference between a direction of the true air speed of an aircraft and a desired track.
 - The angle between an aircraft's longitudinal axis and an actual path.
 - The difference between a magnetic course and a wind direction.
 - The difference between an angle under wind blows to the vector of an actual true air speed and a direction of an aircraft's longitudinal axis.
73. A Wind Correction Angle is the angle difference between:
- True heading and desired true course.
 - Desired true and desired magnetic course.
 - True and magnetic heading.
 - Magnetic and compass heading in no wind condition.
74. Which azimuth corresponds to the general direction WNW?
- 292.5°.
 - 247.5°.
 - 337.5°.
 - 202.5°.
75. Wind velocity 5kts is approximately:
- 10 km/hour.
 - 5 statute miles/ hour.
 - 20 m/sec.
 - All of the above is correct.

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76. A velocity 120 km/h, expressed in knots, is:
- a. 65kts.
 - b. 50kts.
 - c. 58kts.
 - d. 60kts.

Theoretical Knowledge Test of Altimeter Settings and Flight Planning

77. If a vertical speed indicator of a towing aircraft shows 500 ft/min, the approximately aero tow's rate of climb in meters per second is:
- a. 2,5 m/sec.
 - b. 1,5 m/sec.
 - c. 3,5 m/sec.
 - d. 5 m/sec.
78. What is the ground speed (GS) of an aircraft, covering in 40 minutes the distance that represents 10.8 cm on a 1:500 000 chart?
- a. 81 km/h.
 - b. 81kts.
 - c. 100 mph.
 - d. 100 km/h.
79. An aircraft would cover a 120 km-distance in no wind condition in 2 hours and 40 minutes, however in actual meteorological conditions the flight lasted 3 hours and 5 minutes. What was the longitudinal wind component on route?
- a. 6 km/h headwind.
 - b. 16kts tailwind.
 - c. 16 km/h headwind.
 - d. 6kts tailwind.
80. The distance of the route from the point **X** to the point **Y** via the control point **Z** is 84 km. If an aircraft covers the first segment **X-Z** (35 km) in 50 minutes, what will be the total time of flight between the points **X** and **Y**?
- a. 2 hours.
 - b. 45 minutes.
 - c. 50 minutes./80
 - d. 1 hour and 10 minutes.
81. How far will an aircraft travel in 2-1/2 minutes with a groundspeed of 98 knots?
- a. 4.08 NM.
 - b. 2.45 NM.
 - c. 3.35 NM.
82. 100 kg is how many pounds?
- a. 220 lbs.

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- b. 180 lbs.
 - c. 200 lbs.
 - d. 250 lbs.
83. 90 pounds is how many kilograms?
- a. 41 kg.
 - b. 37 kg.
 - c. 45 kg.
 - d. 52 kg.
84. 25 US gallons is how many liters?
- a. 95 l.
 - b. 98 l.
 - c. 100 l.
 - d. 105 l.
85. Which mark on the wind triangle represents a true course? (See Figure PPL Nav-13)
- a. Mark 4.
 - b. Mark 3.
 - c. Mark 2.
 - d. Mark 1.
86. Which mark on the wind triangle represents a true heading?
- a. Mark 3.
 - b. Mark 4.
 - c. Mark 2.
 - d. Mark 1.
87. Which element of the wind triangle has a null value if a magnetic heading equals compass heading?
- a. Compass deviation.
 - b. Inclination.
 - c. Drift.

Theoretical Knowledge Test of Navigation Features and Computer

88. The true heading for a flight between two points of a route is 270° and the wind correction angle is -10° . What will be the true heading for a return flight between the same points?
- a. 100° .
 - b. 090° .
 - c. 180° .
 - d. 110° .
89. Which statement is true about homing when using ADF?
- a. Homing allows flying along curved path only, which leads to the NDB station.

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- b. Homing is a practical navigational method, usable for flying to and away from the NDB station.
 - c. Homing requires an ADF with the automatic or at least manually adjusting compass rose.
90. To use a VHF/DF facilities for assistance in location an aircraft's position, the aircraft must have a:
- a. VHF transmitter and receiver.
 - b. 4096-code transponder.
 - c. VOR receiver and DME.
91. A NDB normally transmits on which frequency band?
- a. 190 to 535 KHz.
 - b. 400 to 1020 Hz.
 - c. 962 to 1213 MHz.
92. As shown by ADF A, the relative bearing TO the station is: (See Figure PPL Nav-10)
- a. 240°.
 - b. 030°.
 - c. 210°.
93. As shown by ADF B, the relative bearing TO the station is: (See Figure PPL Nav-10)
- a. 235°.
 - b. 190°.
 - c. 315°.
94. As shown by ADF D, the relative bearing TO the station is: (See Figure PPL Nav-11)
- a. 340°.
 - b. 020°.
 - c. 060°.
95. As shown by ADF E, the relative bearing TO the station is: (See Figure PPL Nav-11)
- a. 315°.
 - b. 045°.
 - c. 180°.
96. As shown by ADF F, the relative bearing TO the station is: (See Figure PPL Nav-11)
- a. 090°.
 - b. 180°.
 - c. 270°.
97. As shown by ADF G, the relative bearing TO the station is: (See Figure PPL Nav-11)
- a. 180°.
 - b. 090°.
 - c. 270°.

Theoretical Knowledge Test of Practical Navigation

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98. As shown by ADF A, the magnetic bearing TO the station is: (See Figure PPL Nav-10)
- 210°.
 - 030°.
 - 180°.
99. If receiving ADF indication B, what magnetic heading should the aircraft be turned to fly directly to the NDB station? (See Figure PPL Nav-10)
- 190°.
 - 010°.
 - 145°.
100. If receiving ADF indication B, what approximate magnetic heading should the aircraft be turned to intercept the 180° bearing TO the station? (See Figure PPL Nav-10)
- 040°.
 - 220°.
 - 160°.
101. If an ADF indicator in the cockpit corresponds to the figure C, the magnetic bearing FROM the station is: (See Figure PPL Nav-10)
- 115°.
 - 025°.
 - 295°.
102. Which of the figures corresponds to an ADF indicator of an aircraft, flying TO the station with a right crosswind? (See Figure PPL Nav-10)
- D.
 - A.
 - B.
103. What is the magnetic bearing FROM the station of an aircraft with an ADF indication, depicted in figure A? (See Figure PPL Nav-10)
- 030°.
 - 150°.
 - 180°.
104. On a magnetic heading of 320° and with an ADF indication as figure H, the magnetic bearing TO the station is: (See Figure PPL Nav-11)
- 185°.
 - 005°.
 - 225°.
105. On a magnetic heading of 035° and with an ADF indication as figure I, the magnetic bearing TO the station is: (See Figure PPL Nav-11)
- 035°.
 - 180°.

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- c. 215°.
106. On a magnetic heading of 120° and with an ADF indication as figure J, the magnetic bearing TO the station is: (see Figure PPL Nav-11)
- 165°.
 - 045°.
 - 270°.
107. If the magnetic bearing of an aircraft TO the station is 240°, what is the magnetic heading if the ADF indicator corresponds to the figure J? (See Figure PPL Nav-11)
- 195°.
 - 045°.
 - 105°.
108. If the magnetic bearing of an aircraft TO the station is 030°, what is the magnetic heading if the ADF indicator corresponds to the figure K? (See Figure PPL Nav-11)
- 120°.
 - 060°.
 - 270°.
109. If the magnetic bearing of an aircraft TO the station is 135°, what is the magnetic heading if the ADF indicator corresponds to the figure L? (See Figure PPL Nav-11)
- 360°.
 - 135°.
 - 270°.
110. Choose the correct sequence of procedures in the cockpit for flying inbound to the VOR station.
- Rotate the OBS selector knob to center the CDI needle with TO indication.
 - Check the identification signal.
 - Check for proper frequency selected.
 - Turn the aircraft into the heading, equal to the radial selected on the OBS.
- c, b, a, d
 - b, c, a, d
 - d, a, b, c
 - a, b, c, d.

Theoretical Knowledge Test of VHF and ADF Direction Finding

111. VOR radials are:
- Magnetic directions.
 - Compass directions.
 - True directions.
 - Relative bearings.

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112. An aircraft has a DME reading 120 miles from a VOR station and a CDI indication is one-fifth of a full deflection to one side. Approximately how many miles off the course centerline is the aircraft?
- 4 Nm.
 - 6,7Nm.
 - 1,5Nm.
 - 3,0Nm.
113. When using a VOR for navigation, station passage is indicated:
- By the first complete reversal of the TO-FROM indicator.
 - When the OFF flag appears.
 - When the TO-FROM flag begins to flicker.
 - When the first full-scale deflection of the CDI.
114. Which situation would result in reverse sensing of a VOR receiver?
- Flying a heading that is reciprocal to the bearing selected on the OBS.
 - Setting the OBS to a bearing that is 90° from the bearing on which the aircraft is located.
 - Failing to change the OBS from the selected inbound course to the outbound course after passing the station.
115. To track outbound on the 180 radial of a VOR station, the recommended procedure is to set the OBS to:
- 180° and make heading corrections toward the CDI needle.
 - 360° and make heading corrections toward the CDI needle.
 - 180° and make heading corrections away from the CDI needle.
116. To track inbound on the 215 radial of a VOR station, the recommended procedure is to set the OBS to:
- 035° and make heading corrections toward the CDI needle.
 - 215° and make heading corrections toward the CDI needle.
 - 215° and make heading corrections away from the CDI needle.
117. With a VOR/ILS receiver set to a VOR frequency, how many degrees does full deflection of a CDI to one side represent?
- 10°.
 - 5°.
 - 20°.
118. An aircraft 60 miles from a VOR station has a CDI indication one-fifth deflection; this represents a course center line deviation of approximately:
- 2 miles.
 - 6 miles.
 - 1 mile.
119. Which aircraft correspond(s) to the VOR indicator V? (See Figure PPL Nav-12)

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- a. Airplane 2 only.
 - b. Airplane 6 only.
 - c. Airplanes 5 and 8.
120. Which aircraft correspond(s) to the VOR indicator X? (See Figure PPL Nav-12)
- a. Airplanes 1 and 3.
 - b. Airplanes 3 and 7.
 - c. Airplane 7 only.
121. Which aircraft correspond(s) to the VOR indicator U? (See Figure PPL Nav-12)
- a. Airplane 6 only.
 - b. Airplanes 1 and 2.
 - c. Airplane 2 only.
122. Which presentation of a VOR indicator corresponds to airplanes 8? (See Figure PPL Nav-12)
- a. W.
 - b. T.
 - c. V.
123. Which presentation of a VOR indicator corresponds to airplanes 5 and 7? (See Figure PPL Nav-12)
- a. W and Z.
 - b. T and X.
 - c. V and X.
124. Which of the following statements, regarding a DME operation, is correct?
- a. The frequency of a DME receiver in the aircraft is being adjusted automatically when we set a VOR or ILS frequency.
 - b. When flying directly above the DME facility, the pilot reads on the DME indicator in the cockpit a zero distance.
 - c. If we move the DME switch in the cockpit to HOLD, all readings are reset to zero.
125. Which distance is displayed by a DME indicator?
- a. Slant-range distance in nautical miles.
 - b. Slant-range distance in statute miles.
 - c. The distance from the aircraft to a point at the same altitude directly above the DME ground facility.
126. What is the DME reading if an aircraft is directly over a VOR/DME station at the altitude of 6,000 ft AGL?
- a. 1.
 - b. 0.
 - c. 1,3.
127. The slant-range error of a DME is greatest at:

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- a. Low altitudes directly over the facility.
 - b. High altitudes directly over the facility.
 - c. High altitudes and high range from the facility.
128. Directions of airways on the Jeppesen radio navigational chart in Appendix are:
(See Figure PPL Nav-3)
- a. Magnetic directions.
 - b. True directions.
 - c. Loksodromic directions.
 - d. Compass directions.
129. Waypoints data in a GPS database (with the exception of users waypoints) could be updated by:
- a. A respective software house only.
 - b. A pilot, however when in-flight only.
 - c. A pilot on ground only, when the device is stationary.
130. A CDI deviation needle on the GPS electronic screen in the cockpit shows a deviation from the desired track in:
- a. Distance units.
 - b. Arc degrees.
 - c. Arc degrees or distance units, depends on pilot's discretion.
131. Similarly to a VOR, the accuracy of a GPS in great extend depends on the distance to the point selected.
- a. False.
 - b. True.

Theoretical Knowledge Test of VOR, DME and Ground Radar

132. 132. A GPS leads an aircraft on route along:
- a. Great circle.
 - b. Passive curve.
 - c. Heading line.
 - d. Rhomb line.
133. Which directions are normally selected when setting a GPS?
- a. Magnetic directions.
 - b. True directions.
 - c. Compass directions.
134. A GPS signal receptions in great extend depends on the aircraft's altitude. This statement is:
- a. True.
 - b. False.

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135. When working with a GPS one must know that:
- The device automatically determines the aircraft's present position in geographic coordinates.
 - It is necessary to type in manually geographic coordinates of the aircraft's parking position.
 - The device is able to determine navigational parameters relative only to those fixes, which are in a theoretical sight of view.
136. Which map datum should be selected at GPS initialization?
- WGS84.
 - EUROPE.
 - NAD83.
137. Which velocity is measured in principle by every GPS instrument?
- Ground Speed.
 - True Air Speed.
 - Vertical Speed.
 - Wind Speed.
138. A GPS signal may be interrupted when transmitting on VHF frequencies:
- 121.15 MHz, 121.17 MHz in 121.20 MHz.
 - 131.25 MHz in 131.30 MHz.
 - Both answers are correct.
139. The attached map distance between points A and B is 9 cm. how many kilometers is it? (See Figure PPL Nav-2)
- 18.
 - 9.
 - 4.5.
 - 1.8.
140. Which parameter is included in the reckoning of a magnetic course?
- Magnetic variation.
 - Compass deviation.
 - Magnetic inclination.
 - Wind correction angle.
141. The angle between a direction toward geographic north and a direction toward magnetic north is called:
- Variation.
 - Compass deviation.
 - Inclination.
 - Convergence of meridians.
142. The magnetic variation value of a given point on the Earth's surface can be obtained by:

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- a. Referring to the isogonics lines on aeronautical charts.
 - b. Referring to the table of magnetic variation in the cockpit.
 - c. Calculating the angular difference between the meridian of a given point and the Greenwich meridian.
 - d. Calculating the difference between magnetic and compass heading.
143. Lines on geographical charts joining points of equal magnetic variation, are called:
- a. Isogonics lines.
 - b. Agonic lines.
 - c. Isoclinic lines.
 - d. Isobars.
144. Lines on geographical charts joining points of a zero magnetic variation are called:
- a. Agonic lines.
 - b. Isogonics lines.
 - c. Isoclinic lines.
 - d. A clinic lines.
145. What is the magnetic variation of the area? (See Figure PPL Nav-3)
- a. 3° E
 - b. 21° E.
 - c. 50° W.
 - d. 15° E.
146. When calculating magnetic direction from a given true direction, westerly variation should be:
- a. Added.
 - b. Subtracted.
 - c. Multiplied.
 - d. Divided.
147. Magnetic course is calculated using the equation:
- a. True course plus/minus magnetic variation.
 - b. True heading plus/minus magnetic variation.
 - c. True course plus/minus compass deviation.
 - d. Magnetic heading plus/minus compass deviation.
148. Magnetic heading is:
- a. True heading plus/minus variation.
 - b. True course plus/minus variation.
 - c. True course plus/minus deviation.
 - d. Magnetic course plus/minus deviation.
149. Is it possible for a desired true track, true heading and actual true track to have the same value?
- a. Yes.

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- b. No, in no case.
 - c. Yes, because these values are always equal.
 - d. This is possible only when flying in north or south direction.
150. In a RNAV mode, the lateral deflection of the CDI indicates:
- a. Nautical miles left or right of course.
 - b. Degrees left or right of course.
 - c. Statute miles left or right of course.

APPENDIXES

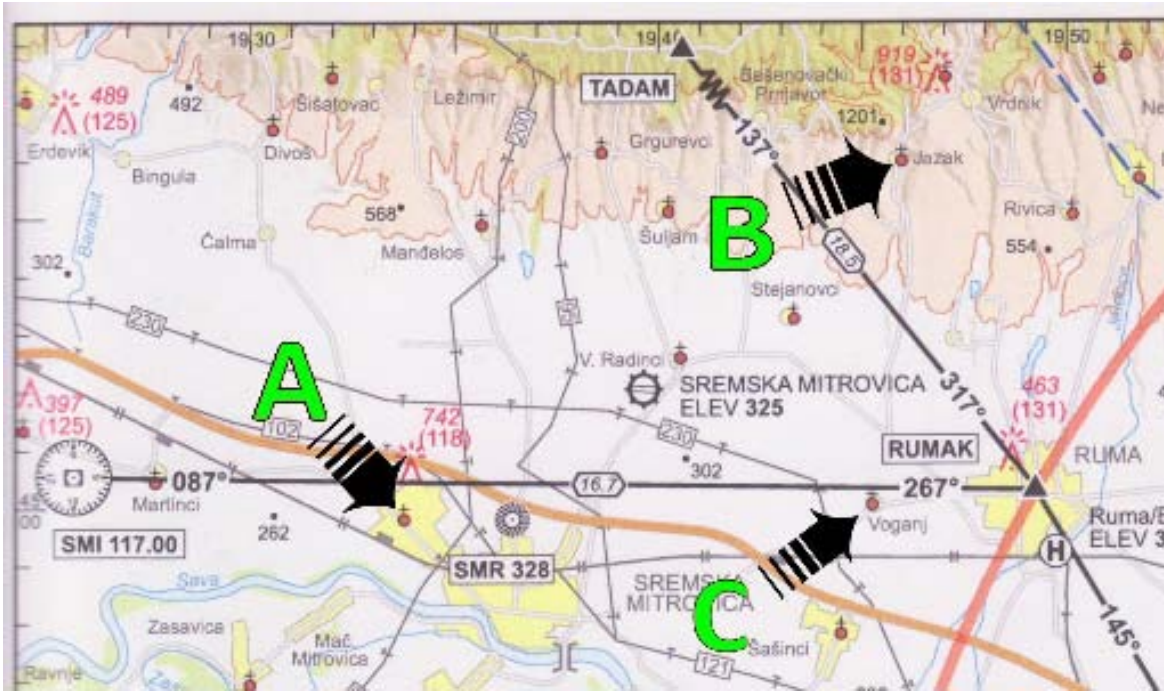


Fig. PPL Nav – 1

PPL (H) - Navigation

PPL (H) - Navigation

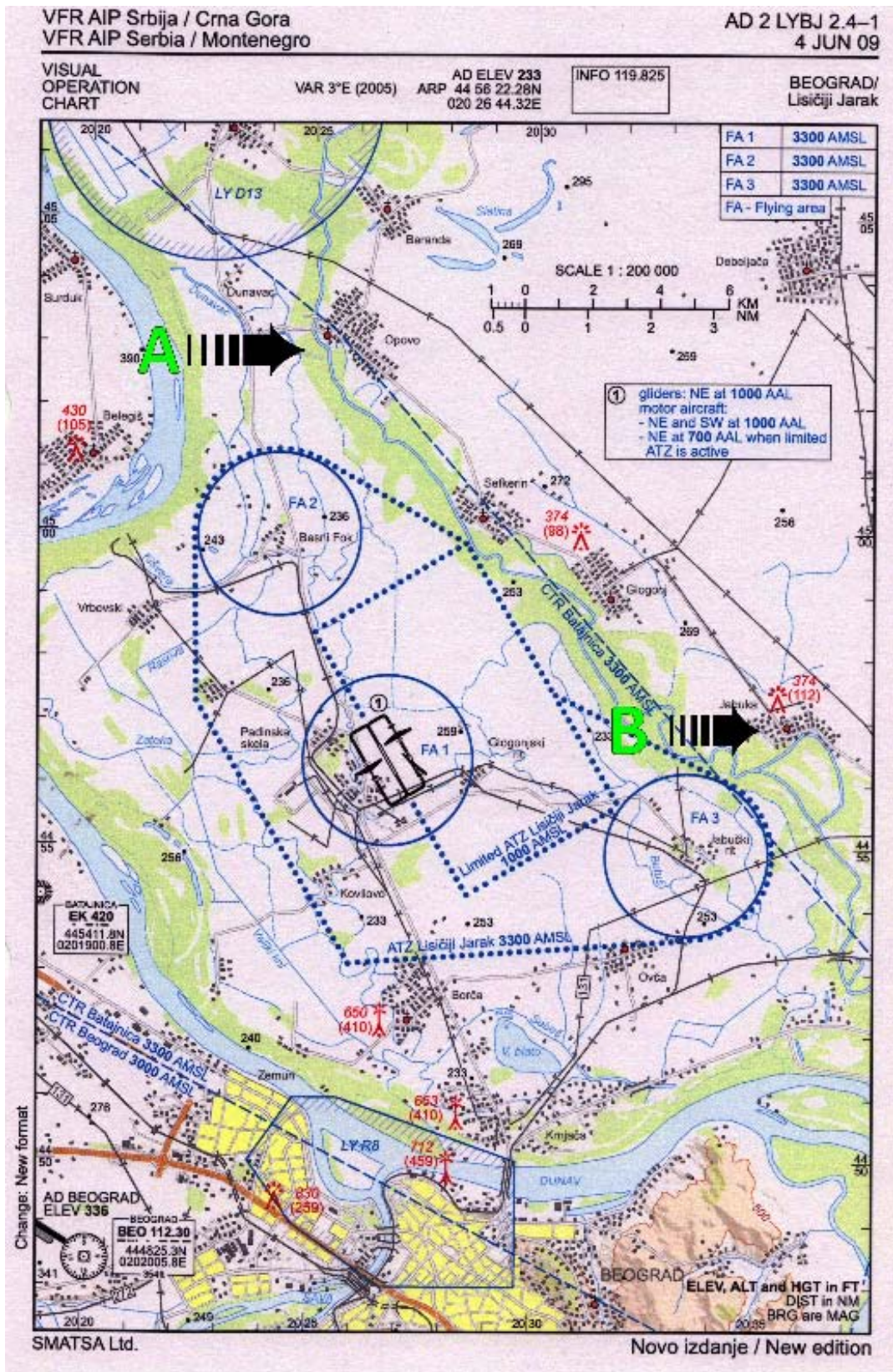


Fig. PPL Nav – 2

PPL (H) - Navigation

VFR AIP Srbija / Crna Gora
VFR AIP Serbia / Montenegro

AD 2 LYPN 2.4-1
4 JUN 09

VISUAL
OPERATION
CHART

VAR 3°E (2000) ARP 43 51 58.85N
021 29 12.77E

INFO 123.500

PARAČIN/
Davidovac

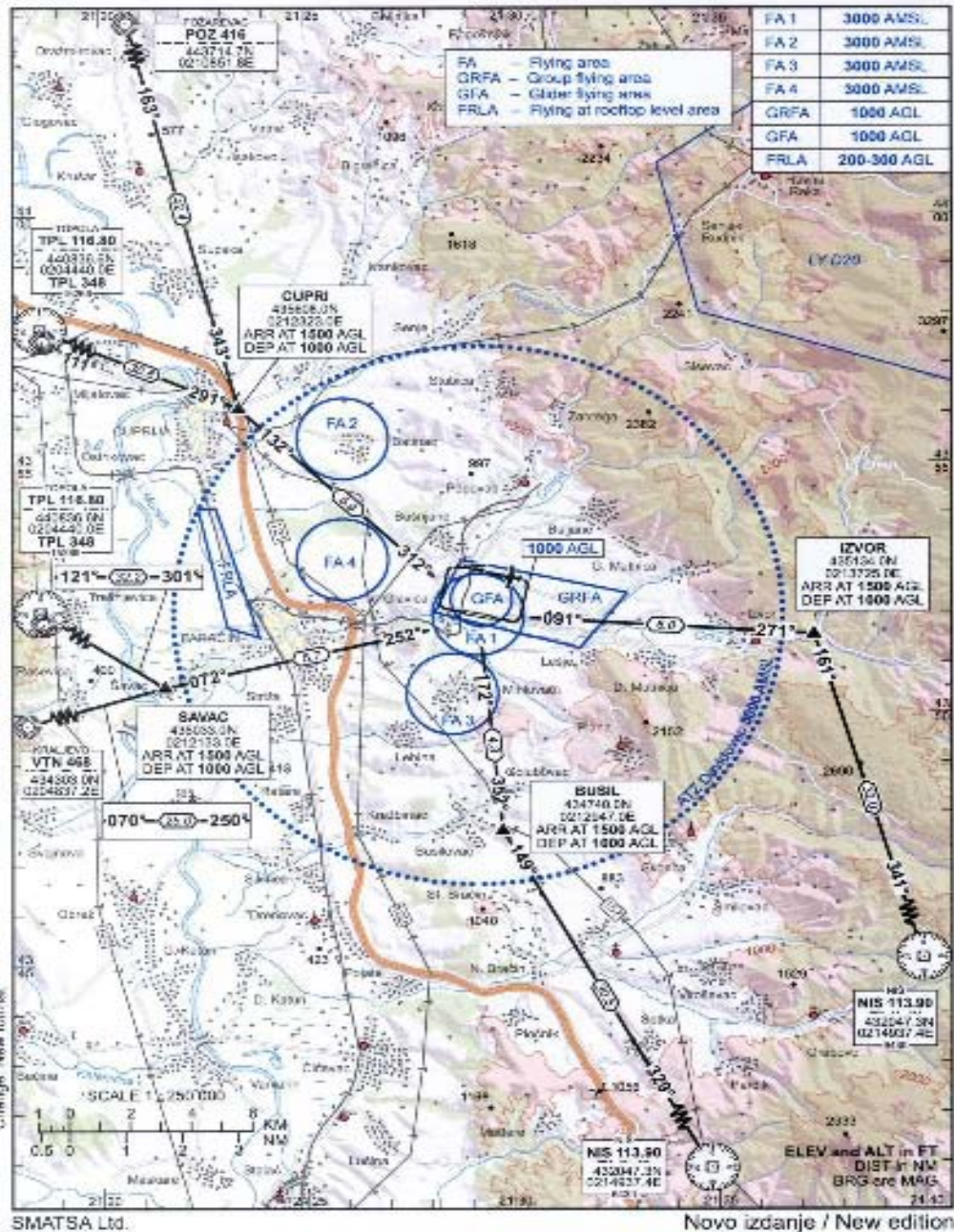


Fig. PPL Nav - 3

PPL (H) - Navigation

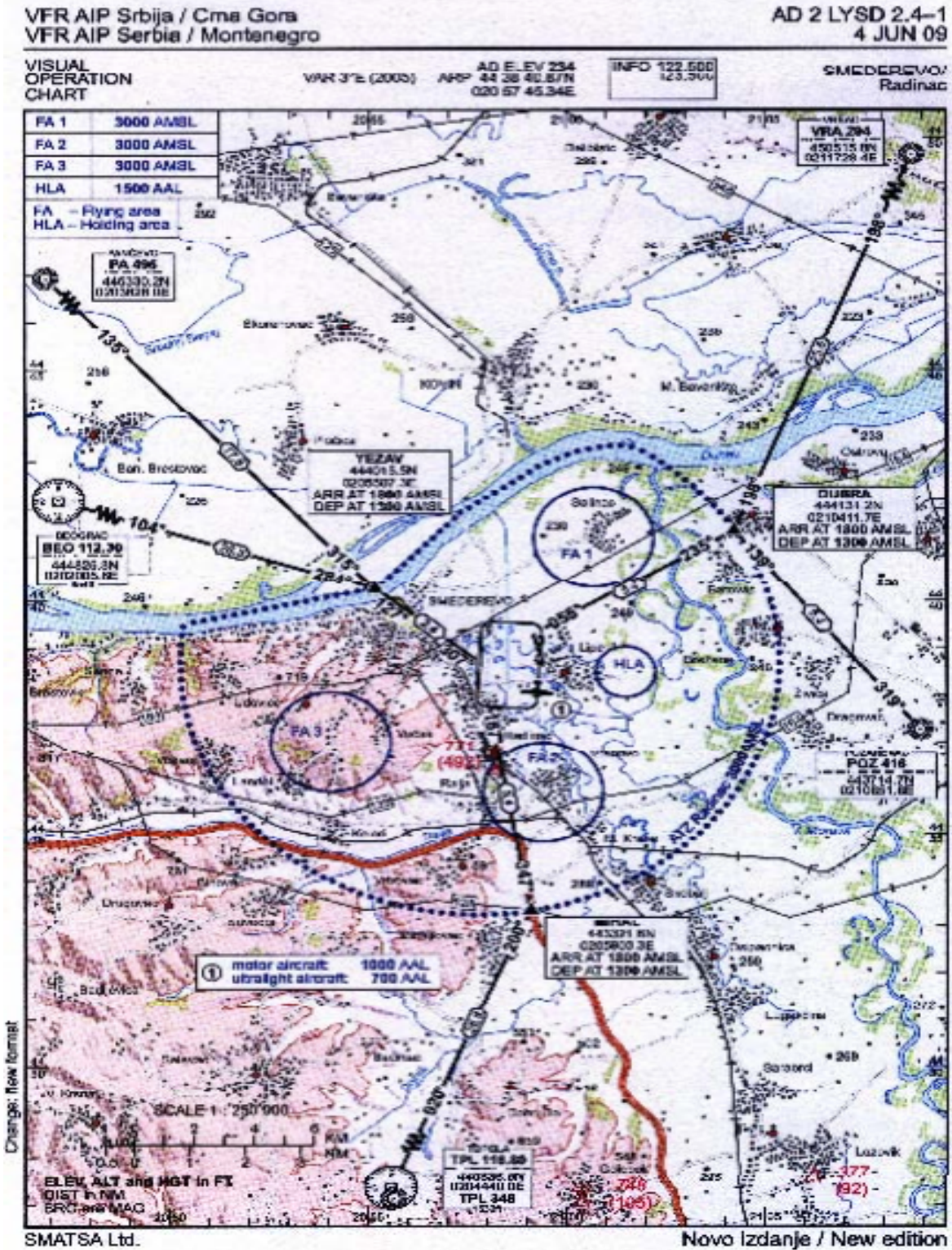


Fig. PPL Nav – 4

PPL (H) - Navigation

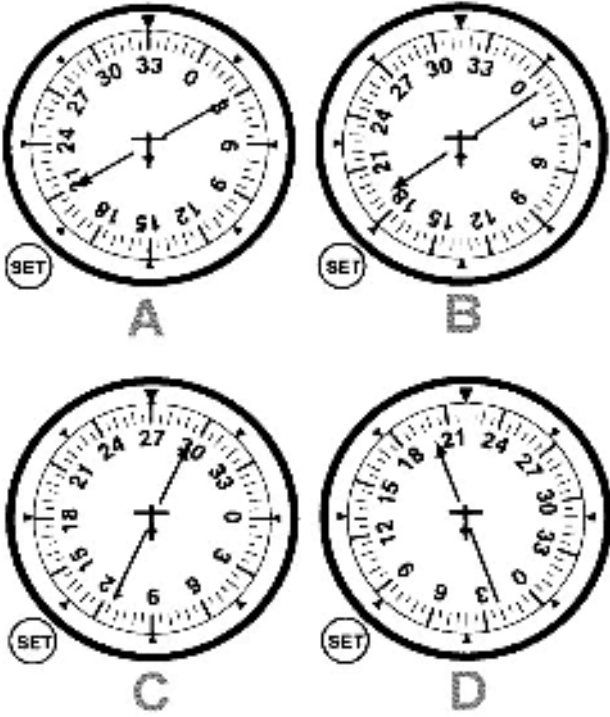


Fig. PPL Nav – 10

PPL (H) - Navigation

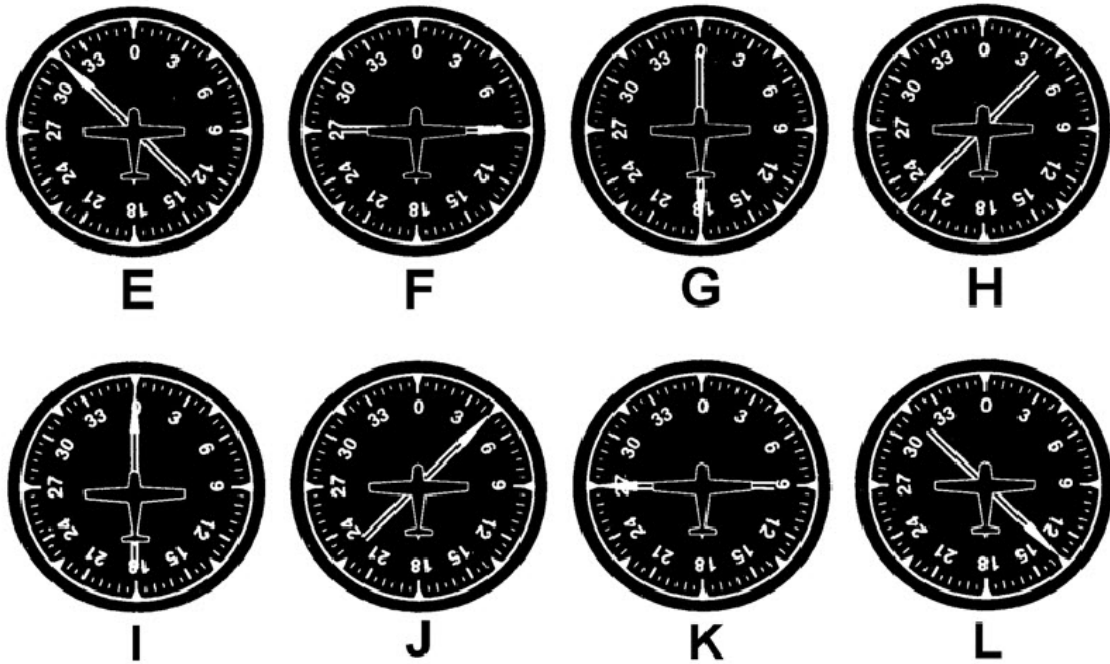


Fig. PPL Nav – 11

PPL (H) - Navigation

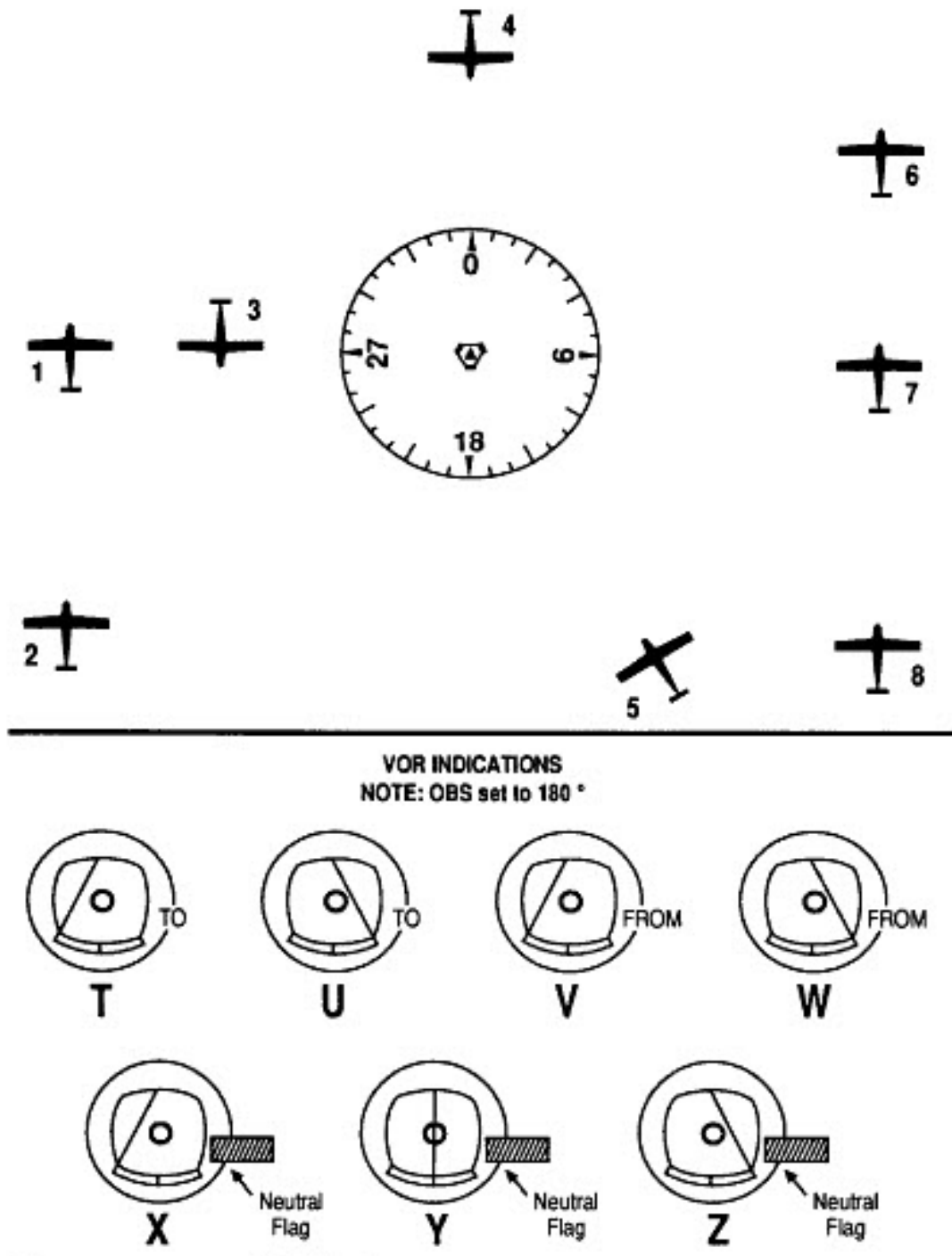


Fig. PPL Nav – 12

PPL (H) - Navigation

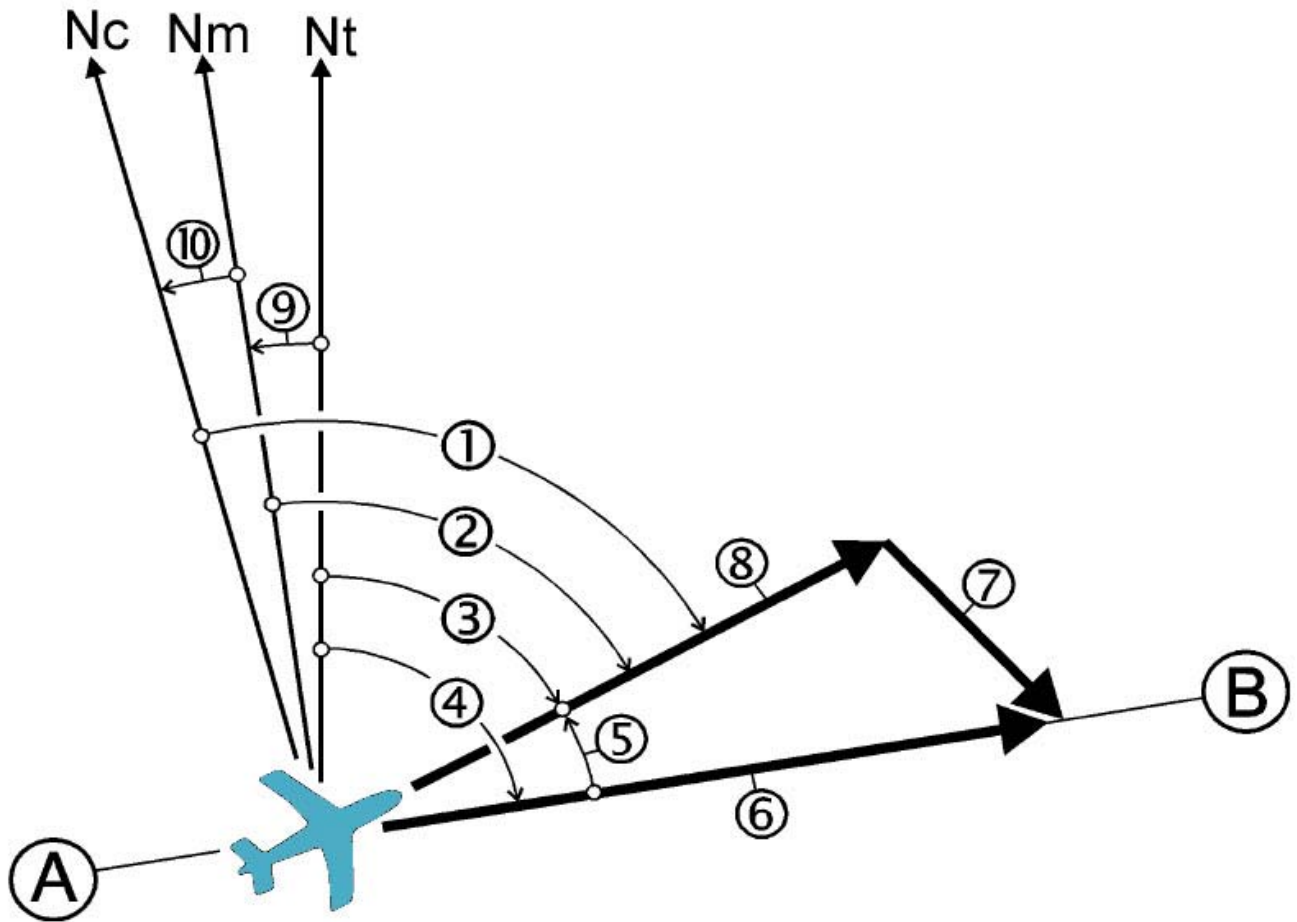


Fig. PPL Nav - 13