

**PLOTTING EXERCISE SEVEN - QUESTIONS ONE      NAME:**

**1** Your ship is on a course of  $130^\circ$  T and its speed is 28 kts. At 1500 a contact was observed bearing  $090^\circ$  T at 12.0 miles at 1505 the bearing was  $091\frac{1}{2}^\circ$  T at 9.0 miles, and at 1510 the bearing was  $095^\circ$  T and the range 6.0 miles.

Find: CPA, time of CPA and the bearing of CPA.

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**2** Your ship is on a course of  $050^\circ$  T and its speed is 12 kts. At 1000 a contact was observed bearing  $226^\circ$  T at 2.5 miles at 1005 the bearing was  $220^\circ$  T at 2.0 miles, and at 1010 the bearing was  $212\frac{1}{2}^\circ$  T and the range 1.5 miles.

Find: CPA, time of CPA and the bearing of CPA.

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**3** Your ship is on a course of  $250^\circ$  T and its speed is 10 kts. At 1206 a contact was observed bearing  $176^\circ$  T at 9.8 miles at 1209 the bearing was  $174^\circ$  T at 9.0 miles, and at 1212 the bearing was  $172^\circ$  T and the range 8.2 miles.

Find: CPA, time of CPA and the bearing of CPA.

**Plotting 1 answers**

1 CPA 1.1 nm, TCPA 1520, BCPA  $175\frac{1}{2}^\circ$  T

2 CPA 0.8 nm, TCPA 1021, BCPA  $154^\circ$  T

3 CPA 3.4 nm, TCPA 1240, BCPA  $107^\circ$  T

## PLOTTING QUESTIONS TWO

- 1** Your course  $320^{\circ}\text{T}$ , speed 18 knots; radar observations:  
1000: true bearing  $000^{\circ}$  distance 10 miles  
1010: true bearing  $000^{\circ}$  distance 8 miles  
Find course and speed of other vessel at 1010.
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- 2** Your course  $020^{\circ}\text{T}$ , speed 25 knots; radar observations:  
1100: true bearing  $078^{\circ}$  distance 10 miles  
1112: true bearing  $076^{\circ}$  distance 8.5 miles  
Find course and speed of other vessel at 1112.
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- 3** Your course  $350^{\circ}\text{T}$ , speed 22 knots; radar observations:  
2100: true bearing  $290^{\circ}$  distance 6 miles  
2112: true bearing  $280^{\circ}$  distance 4 miles  
Find course and speed of other vessel at 2112.

## PLOTTING ANSWERS 2

- 1 course  $278^{\circ}\text{T}$ , speed 12 knots  
2 course  $000^{\circ}\text{T}$ , speed 24 knots  
3 course  $018^{\circ}\text{T}$ , speed 15.5 knots

## PLOTTING QUESTIONS THREE

1. Your course  $330^{\circ}\text{T}$ , speed 9 knots; radar observations:  
1900:  $009^{\circ}\text{T}$ , distance 10.5 miles  
1905:  $008.5^{\circ}\text{T}$ , distance 9.5 miles  
1910:  $008^{\circ}\text{T}$ , distance 8.7 miles
  - a) Find: CPA, TCPA, course and speed of other ship and aspect.
  - b) State what action if any are you going to take.
  
2. Your course  $250^{\circ}\text{T}$ , speed 9 knots; radar observations:  
2310:  $217^{\circ}\text{T}$ , distance 5.8 miles  
2315:  $214.5^{\circ}\text{T}$ , distance 4.9 miles  
2320:  $211^{\circ}\text{T}$ , distance 4.0 miles
  - a) Find: CPA, TCPA, course and speed of other ship and aspect.
  - b) State what action if any are you going to take.
  
3. Your course  $050^{\circ}\text{T}$ , speed 11 knots; radar observations:  
0311:  $261^{\circ}\text{Rel}$ , distance 5.6 miles  
0316:  $262^{\circ}\text{Rel}$ , distance 4.8 miles  
0321:  $263^{\circ}\text{Rel}$ , distance 4.0 miles
  - a) Find: CPA, TCPA, course and speed of other ship and aspect.
  - b) State what action if any are you going to take.
  
4. Your course  $350^{\circ}\text{T}$ , speed 7 knots; radar observations:  
1703:  $131^{\circ}\text{Rel}$ , distance 5.2 miles  
1706:  $131.5^{\circ}\text{Rel}$ , distance 4.75 miles  
1709:  $132^{\circ}\text{Rel}$ , distance 4.3 miles
  - a) Find: CPA, TCPA, course and speed of other ship and aspect.
  - b) State what action if any are you going to take.
  
5. Your course  $170^{\circ}\text{T}$ , speed 6 knots; radar observations:  
1910:  $10^{\circ}\text{Rel}$ , distance 5.6 miles  
1916:  $10^{\circ}\text{Rel}$ , distance 4.7 miles  
1922:  $10^{\circ}\text{Rel}$ , distance 3.9 miles
  - a) Find: CPA, TCPA, course and speed of other ship and aspect.
  - b) State what action if any are you going to take.
  
6. Your course  $350^{\circ}\text{T}$ , speed 9 knots; radar observations:  
Target A  
2010:  $336\frac{1}{2}^{\circ}\text{T}$ , distance 11.0 miles  
2020:  $332^{\circ}\text{T}$ , distance 9.5 miles  
Target B  
2010:  $020^{\circ}\text{T}$ , distance 10.8 miles  
2020:  $021^{\circ}\text{T}$ , distance 9.0 miles
  - a) Find: CPA, TCPA, course, speed and aspect of the other vessels

- b) Identify the vessels that may pose a risk of collision and state what action if any are you going to take.
7. Your course 330°T, speed 11 knots; radar observations:  
 Target A  
 2210: 226° T, distance 3.2 miles  
 2216: 235° T, distance 4.2 miles  
 Target B  
 2212: 151° T, distance 4.2 miles  
 2222: 152° T, distance 3.5miles  
 a) Find: CPA, TCPA, course, speed and aspect of the other vessels  
 b) Identify the vessels that may pose a risk of collision and state what action if any are you going to take.
8. Your course 210°T, speed 8 knots; radar observations:  
 Target A  
 0551: 110½° T, distance 5.2 miles  
 0601: 112° T, distance 4.3 miles  
 Target B  
 0550: 234½° T, distance 3.3 miles  
 0600: 248½° T, distance 2.2miles  
 a) Find: CPA, TCPA, course, speed and aspect of the other vessels  
 b) Identify the vessels that may pose a risk of collision and state what action if any are you going to take.
9. Your course 200°T, speed 14 knots; radar observations:  
 Target A  
 1611: 187° T, distance 7.0 miles  
 1621: 197° T, distance 3.4 miles  
 Target B  
 1615: 191° T, distance 8.0 miles  
 1621: 177° T, distance 3.7miles  
 a) Find: CPA, TCPA, course, speed and aspect of the other vessels  
 b) Identify the vessels that may pose a risk of collision and state what action if any are you going to take.

### **PLOTTING ANSWERS 3**

The solutions given here are not necessarily the only correct answers, rather it is opinion offered after careful consideration of the practical aspects of the encounters as well as the content and intent of the collision regulations.

- 1 CPA 1.0 miles, TCPA, 1958, Course 250°T, Speed 8 Knots, Aspect Red 62°.
 

Alter course 60° to starboard
- 2 CPA 1.2 miles TCPA 2339, Course 007°T, Speed 4.5 Knots, Aspect Green 25°.
 

Alter course 60° to starboard
- 3 CPA 0.5 miles, TCPA 0344, Course 086°T, Speed 16.0 Knots, Aspect Green 48°.
 

Reduce speed
- 4 CPA 0.3, TCPA, 1728, Course 329°T, Speed 12 Knots. Aspect, Red 07°.
 

Alter course 30° to port
- 5 CPA Collision, TCPA 1943, Course 014°T, Speed 4.3 Knots, Aspect Red 14°.
 

Alter to Starboard 60° immediately
- 6 **Target A**, CPA 4.3. TCPA 2108, Course 240°T, Speed 3.0 Knots, Aspect Red 88°, **Target B**, CPA 0.9, TCPA 2112, Course 246°T, Speed 4.8 knots, Aspect Red 25°.
 

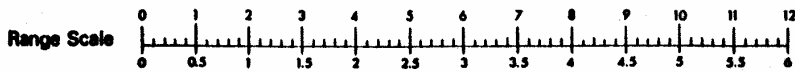
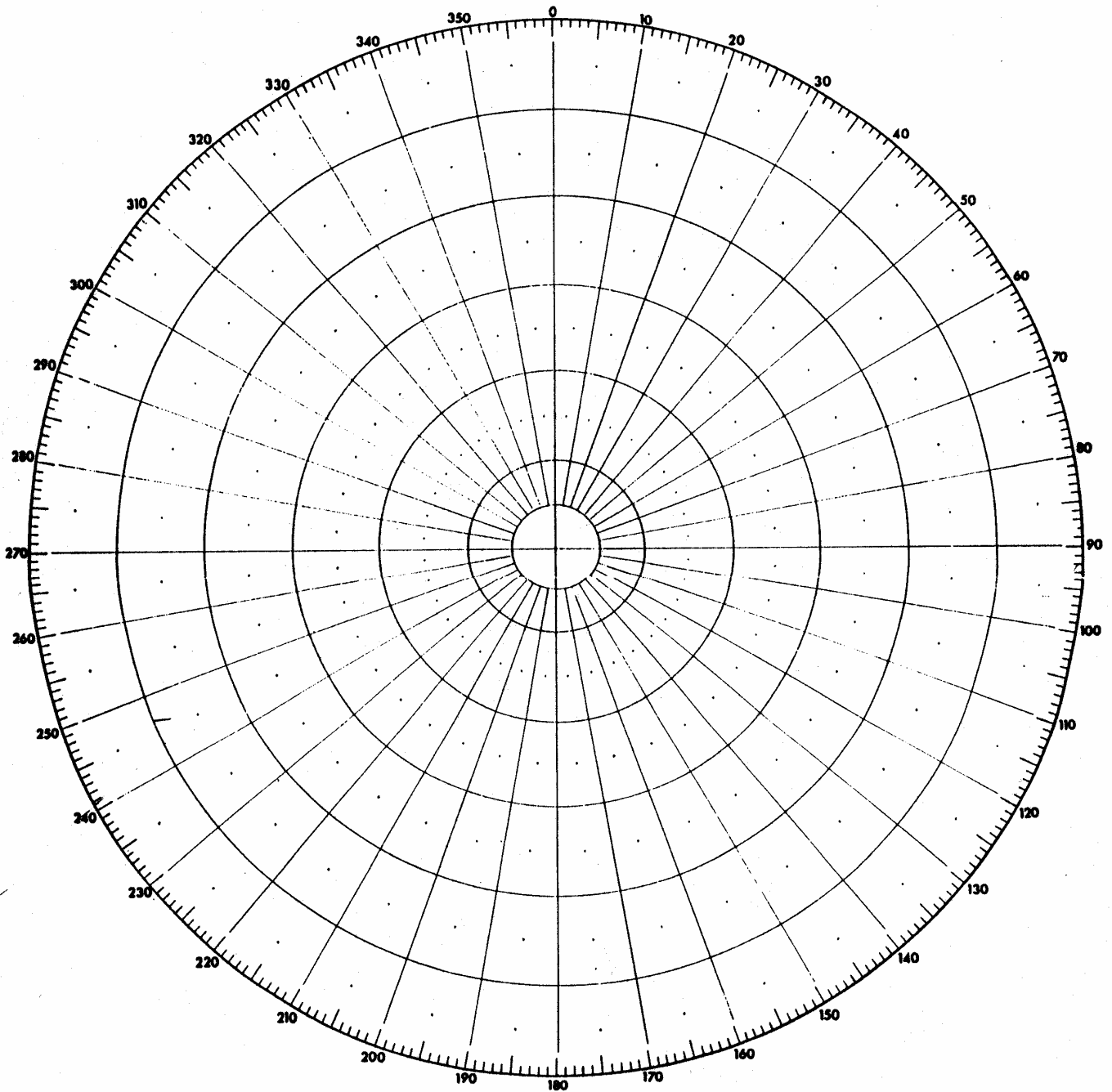
Alter course 60° to starboard
- 7 **Target A** is moving away so CPA has already passed, Course 301°T, Speed 16.2 Knots, Aspect Green 114°, **Target B** CPA 0.2, TCPA 2315, Course 331°T, Speed 15 Knots, Aspect Red 4°.
 

Alter course 30° to port
- 8 **Target A**, CPA 0.6, TCPA 0635, Course 243°T, Speed 12 Knots Aspect Green 50° **Target B**, CPA 1.5, TCPA, 0613, stopped.
 

Reduce speed
- 9 **Target A**, CPA 1.1, TCPA 1629, Course 333°T, Speed 13.2 Knots Aspect Green 45° **Target B**, CPA 1.5, TCPA, 1625, Course 024°T, Speed 31 Knots, Aspect Red 27°.
 

Reduce speed

# RADAR PLOTTING SHEET



**LOGARITHMIC SPEED SCALE**



TO FIND SPEED PLACE LEFT POINT OF DIVIDERS ON MILES RUN & RIGHT POINT ON MINUTES RUN.  
WITHOUT CHANGING DIVIDER SPACE PUT RIGHT POINT ON 60 THEN LEFT INDICATES SPEED