UNITED STATES NAVAL ACADEMY

DIVISION OF PROFESSIONAL DEVELOPMENT

SEAMANSHIP AND NAVIGATION DEPARTMENT

NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ SECTION \_\_\_\_\_\_\_\_\_ INSTRUCTOR\_\_\_\_\_\_\_\_\_\_\_\_\_

NN310 ADVANCED NAVIGATION

**IN-CLASS EXERCISE 4 – MANEUVERING BOARDS**

**Closest Point of Approach and Contact Avoidance**

**Materials Required:**

Maneuvering Boards

Navigation Kit

**Your answers should conform to the following accuracy requirements:**

a. Time: Within 2 minutes.

b. Distance: Within 200 yards.

c. Course/Bearing: Within 2 degrees.

d. Speed: Within 2 knots.

**Situation 1:** Your vessel is on a course of 035°T at 15 knots. The radar shows a contact on a bearing of 090°T at 10,000 yards at 1300. 8 minutes later the contact is plotted at bearing 080°T with a range of 8,000 yards. Find the following information for the contact:

1. Correctly set-up moboard. (15 pts)

2. Determine the following information:

1. MRM: \_\_\_\_\_\_2,550yds\_\_\_\_\_\_\_\_\_ (3 pts)
2. SRM: \_\_\_\_\_\_\_\_9.5kts\_\_\_\_\_\_\_ (3 pts)
3. Bearing Drift: \_\_\_\_\_\_Left\_\_\_\_\_\_\_\_\_ (3 pts)
4. Contact’s Course: \_\_\_\_\_\_002ºT\_\_\_\_\_\_\_\_ (3 pts)
5. Contact’s Speed: \_\_\_\_\_\_\_\_17.5kts\_\_\_\_\_\_\_ (3 pts)
6. CPA Bearing: \_\_\_\_\_\_034T\_\_\_\_\_\_\_\_\_ (3 pts)
7. CPA Range: \_\_\_\_\_\_\_\_\_5,500yds\_\_\_\_\_ (3 pts)
8. Time to CPA: \_\_\_\_\_\_\_\_\_17.5min; 1325:30\_\_\_\_\_\_ (3 pts)
9. Target Angle at CPA: \_\_\_\_\_\_\_\_\_212ºR\_\_\_\_\_ (3 pts)

3. Given the above information, solve for the following actions that would allow you to pass astern of the vessel with a CPA of 6,000 yards. (8 points)

1. Maintaining speed but changing course \_\_\_\_\_\_\_\_\_060ºT\_\_\_\_\_
2. Maintaining course but changing speed \_\_\_\_\_\_\_\_13.5kts\_\_\_\_\_\_

**Situation 2:** You are on a course of 095°T at a speed of 15 knots. At 2300 you detect a contact on radar bearing 275°T at 14,000 yards. At 2315 you detect the same contact bearing 272°T at 10,500 yards. Find the following information for the contact:

4. Correctly set-up moboard. (15 points)

5. Determine the following information:

1. MRM: \_\_\_\_\_\_\_3,600yds\_\_\_\_\_\_\_ (3 pts)
2. SRM: \_\_\_\_\_\_\_7kts\_\_\_\_\_\_\_ (3 pts)
3. Bearing Drift: \_\_\_\_\_Left\_\_\_\_\_\_\_\_\_\_ (3 pts)
4. Contact’s Course: \_\_\_\_098T\_\_\_\_\_\_\_\_\_\_\_ (3 pts)
5. Contact’s Speed: \_\_\_\_\_22kts\_\_\_\_\_\_\_\_\_\_ (3 pts)
6. CPA Bearing: \_\_\_\_\_\_\_194ºT\_\_\_\_\_\_\_ (3 pts)
7. CPA Range: \_\_\_\_\_\_\_2,300yds\_\_\_\_\_\_\_ (3 pts)
8. Time to CPA: \_\_\_\_42min; 2357\_\_\_\_\_\_\_\_\_\_\_ (3 pts)
9. Target Angle at CPA: \_\_\_\_\_\_\_\_276ºR\_\_\_\_\_\_ (3 pts)

6. Your CO orders you to maneuver at 2330. Given the above information, solve for the following actions that would allow the vessel to overtake you on YOUR starboard side with a CPA of 4,000 yards. (8 points)

1. Maintaining speed but changing course \_\_\_\_\_\_\_\_\_087ºT\_\_\_\_\_\_
2. Maintaining course but changing speed \_\_\_\_\_\_\_\_\_20kts\_\_\_\_