

U.S.C.G. Merchant Marine Exam

Master Less than 500-1600 Gross Registered Tons

Q122 Deck Safety-Stability Problems

(Sample Examination)

Choose the best answer to the following Multiple Choice Questions.

1. Using the information in Section 1, the blue pages, of the Stability Data Reference Book, determine the danger angle for permanent list if the KG is 21.8 feet and the drafts are: FWD 23'-05", AFT 24'-04".
- (A) 31°
 - (B) 26°
 - (C) 21°
 - (D) 37°

If choice B is selected set score to 1.

2. Use the material in Section 1, the blue pages, of the Stability Data Reference Book. If the KG is 24.2 feet, and the drafts are: FWD 22'-04", AFT 23'-00"; at what angle will the vessel lose positive stability?
- (A) 72°
 - (B) 78°
 - (C) 86°
 - (D) 92°

If choice B is selected set score to 1.

3. You are on a Mariner class cargo vessel. Your drafts are: FWD 21'-04", AFT 23'-04". You wish to increase the calculated GM of 4.8' to 5.8'. What tanks should you ballast? (Use the white pages in the Stability Data Reference Book.)
- (A) Tanks: DB2, DB6
 - (B) Tanks: DB6, DT7
 - (C) Tanks: DB4, DB7
 - (D) Tanks: DB2, DB5

If choice C is selected set score to 1.

4. Your vessel's drafts are: FWD 23'-01", AFT 24'-05"; and the KG is 22.8 feet. Use the selected stability curves in the blue pages of the Stability Data Reference Book to determine the remaining righting arm at 30° inclination if the center of gravity is 1.9 feet off the centerline.
- (A) 2.3 feet
 - (B) 0.7 foot
 - (C) 3.7 feet
 - (D) 1.4 feet

If choice B is selected set score to 1.

5. Your vessel has a displacement of 24,500 tons. It is 529 feet long and has a beam of 71 feet. You have timed your vessel's rolling period to be 25.0 seconds. What is your vessel's approximate GM?
- (A) 1.25 feet
 - (B) 1.56 feet
 - (C) 1.98 feet
 - (D) 2.43 feet

If choice B is selected set score to 1.

6. Your drafts are: FWD 23'-03", AFT 24'-01". Use the blue pages of the Stability Data Reference Book to determine the vessels displacement if you are in fresh water.
- (A) 11,650 tons
 - (B) 11,800 tons
 - (C) 12,000 tons
 - (D) 12,250 tons

If choice C is selected set score to 1.

7. What is the purpose of cant frames in steel vessels?
- (A) To provide strength to shell plating at the stern
 - (B) To support the overhang of the stern
 - (C) To support the plating of a cylindrical tank
 - (D) To add strength to the deck beams which support the weather decks

If choice A is selected set score to 1.

8. Your sailing drafts are: FWD 19'-06", AFT 20'-10" and the GM is 3.3 feet. What will be the angle of list if the #2 starboard deep tank (capacity 100 tons, VCG 19.1 feet, and 24 feet off the centerline) is filled? (Use the data in Section 1, the blue pages, of the Stability Data Reference Book)
- (A) Less than 1°
 - (B) 2°
 - (C) 4°
 - (D) 6°

If choice C is selected set score to 1.

9. The SS AMERICAN MARINER is ready to bunker with drafts of FWD 21'-04", AFT 26'-04". After all bunkers are on board, soundings indicate the tonnages shown in table ST-0177 below. Use the white pages of The Stability Data Reference Book to determine the free surface correction.

DB 1 CL	48.2	DB 7 P	66.2
DB 1A CL	81.9	DB 7 S	58.4
DB 2 P	71.2	DT 1 CL	125.3
DB 2 S	71.2	DT 1A CL	235.6
DB 3 CL	227.6	DT 3 P	86.1
DB 3 P	55.6	DT 3 S	86.1
DB 3 S	55.6	DT 6 P	201.2
DB 4 CL	224.1	DT 6 S	201.2
DB 4 P	87.0	DT 7 P	128.8
DB 4 S	87.0	DT 7 S	128.8
DB 5 CL	196.2		
DB 6 CL	242.3		
DB 6 P	87.0		
DB 6 S	87.0		

- (A) 0.62 foot
- (B) 0.80 foot
- (C) 0.85 foot
- (D) 0.99 foot

If choice A is selected set score to 1.

10. You have 520 tons of below deck tonnage including liquid mud. Your existing deck cargo is 160 tons with a VCG above the deck of 2.7 feet. What is the maximum cargo tonnage you are permitted to load? See illustration D036DG.

- (A) 84 tons
- (B) 160 tons
- (C) 244 tons
- (D) 317 tons

If choice A is selected set score to 1.

D036DG

US Department of Transportation United States Coast Guard		Commandant United States Coast Guard	Washington, D.C. 20593-0001 Staff Symbol: Phone:
		16710 8 Apr 87	
Master, M/V HUDSON, O.N. 666666			
Subj: M/V HUDSON Stability			
Dear Sir:			
A stability test, supervised by the U.S. Coast Guard, was conducted on the M/V HUDSON at San Diego, California on 08 April 1987. On the basis of this test, stability calculations have been performed. Results indicate that the stability of the M/V HUDSON, as presently outfitted and equipped, is satisfactory for operation in Ocean Service as indicated on the Certificate of Inspection, provided the following restrictions are strictly observed:			
1. a. The vessel shall only be loaded according to the instructions on the attached LOADING DIAGRAM bearing U.S. Coast Guard approval stamp dated 8 April 1986.			
b. Drilling fluids may be carried. The maximum specific gravity of the fluids shall not exceed 2.60.			
c. The vessel may engage in towing operations when loaded in accordance with the attached LOADING DIAGRAM.			
2. The height above the main deck of the center of gravity of the deck cargo shall not exceed the value shown on the LOADING DIAGRAM (3.0 feet). Such cargo must be positively secured against shifting prior to leaving protected waters.			
3. Permanent ballast, in the form of 64.4 long tons of high density fluids (sg. = 2.87), is to be maintained in the after peak tank. No permanent ballast shall be added, removed, altered and/or relocated without the authorization and supervision of the cognizant Officer in Charge, Marine Inspection.			
4. The maximum summer load line draft is 13 feet 8 3/8 inches. Trim shall be minimized and shall always result in a freeboard of at least 22 inches at the stern.			
5. No more than one centerline or P/S pair of the following tanks may be partially filled at any one time: fuel oil, lube oil, potable water, ballast/cargo water, fuel oil day tanks, drilling fluid. Cross-connections between all port and starboard tank pairs shall be kept closed at all times when underway.			

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6. Main deck hatches and weather doors to the forecastle and machinery spaces shall be kept closed and fully secured at all times when underway, except when actually used for transit under safe conditions.

7. Main deck freeing ports shall be maintained operable and completely unobstructed at all times.

8. Bilges shall be kept pumped to minimum content at all times.

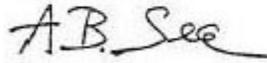
9. Suitable tables or curves for determining the capacities of full or partially full tanks shall be maintained aboard the vessel.

10. The Master should make every effort to determine the cause of any list of the vessel before taking corrective action.

It shall be the Master's responsibility to maintain the vessel in a satisfactory stability condition at all times.

This stability letter shall be posted under suitable transparent material in the pilothouse of the vessel so that all pages and the diagram are visible. It supersedes any stability information previously furnished the vessel.

Sincerely,



A. B. SEA
Lieutenant Commander
U.S. Coast Guard

Attachment: LOADING DIAGRAM for the subject vessel bearing U.S. Coast Guard approval stamp dated 8 April 1987

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