**SCENARIOS OF EXERCISE “LOADING OPERATIONS OF BULK CARRIER”**

**TASK SCENARIO AND INITIAL DATA**

According to “Voyage Assignment”, it is necessary to load maximum cargo up to Winter Draft. Loading at the port of Klaipeda is planned to start on 7th of March.

**Chartered bulk carrier** – m/v “BULK CARRIER”.

IMO No. 9999999

Length Overall: 141,350 m

Length between perpendiculars: 134,300 m

Breadth, moulded: 22,500 m

Depth, moulded: 12,886 m

Keel Plate thickness: 0,017 m

Min. Draught Forward: 3,50 m

Lightweight: 5808 t, LCG: 57,367 TCG: 0,00 VCG: 9,639 m

Draught/Deadweight Restrictions:

Summer, S: 9,470 m 17504 t

Winter, W: 9,270 m 16964 t

Tropical Fresh, TF: 9,870 m 18714 t

Fresh, F: 9,690 m 18194 t

Tropical, T: 9,670 m 18164 t

**Details of voyage**:

* port of loading: Klaipeda (LTKLJ)
* port of discharge: İzmir (TRIZM)
* voyage duration: 14-16 days (AGW WP)
* cargo type: dry bulk, Ammonium nitrate-based fertilizers UN 2071 (table 1)

**Table 1. Characteristics of Cargo**

| **Physical properties** |
| --- |
| **Size** | **Angle of repose** | **Bulk density (kg/m3)** | **Stowage factor (m3/t)** |
| 1 mm to 5 mm | 270 to 420 | 900 to 1.200 | 1,10 |
| **Hazard classification** |
| **Class** | **Subsidiary hazard(s)** | **MHB** | **Group** |
| 9 | Not applicable |  | B |

*Source*: IMO (2019). International Maritime Solid Bulk Cargoes (IMBSC) Code. Amendment 05-19

**Table 2. Information about tanks and weights**

| **TANKS** | **Weight, t** | **TANKS** | **Weight, t** |
| --- | --- | --- | --- |
| Crew effects | 1,0 | HFO FWD (P) | 142,7 |
| Prov. & store | 10,0 | HFO FWD (S) | 142,7 |
| Store for crew and store | 20,0 | HFO AFT (P) | 40,0. |
| LUBRICATING OIL | 10,0 | HFO AFT (S) | 40,0 |
| FRESH WATER TANK (P) | 50,0 | HFO SETT (P) | 9,0 |
| FRESH WATER TANK (S) | 50,0 | HFO SETT (S) | 17,0 |
| FRESH WATER COLLECT. | 0,0 | HFO DAY (P) | 17,0 |
| SLUDGE TANK | 0,0 | HFO DAY (S) | 0,0 |
| BILGE WELL TANK | 2,0 | MDO DB (P) | 20,0 |
| MISCELLANEOUS TANK | 0,0 | MDO DB (S) | 20,0 |
|  |  | MDO SETT (P) | 10,0 |
| **CONSTANTS** | **50,0** | MDO DAY (S) | 10,0 |

**Main notes for completing the task**

In accordance with the International Convention on Load Lines, 1966 as modified 1988, the Baltic Sea is considered as a winter freeboard zone up to 31st of March. In compliance with the Ship’s International Load Line Certificate the Winter draft mark of “BULK CARRIER” is 9,27 m. The principle purpose of load line assignment is to ensure that the ship always has sufficient reserve buoyancy and intact stability when proceeding to sea. Before the Cargo plan preparation always is to enquire Chief Engineer about the quantities of bunkers. The Chief Engineer reported that on board there were 408,4 tons of heavy fuel, 60,0 tons of maritime gas oil and 10,0 tons of lubricating oil. Boatswain made soundings and reported that there was 100,0 tons of fresh water. The required quantities of consumables depend on voyage duration and weather conditions. According to the Voyage assignment the port of destination is Turkish port Izmir. Depending on weather conditions, voyage duration is about from 14 up to 16 days. Average daily fuel consumption is about 17 tons, therefore the minimum required bunker is about 300 tons. Another bunkering was planned in the port of Malta after unloading in the port of İzmir. The ship's ballast system can pump out all the ballast without residues. During loading operations water ballast was pumped out.

**Tasks**

1. Determine a maximum cargo quantity for loading in a vessel up to the allowable winter / summer draft.
2. Prepare and evaluate the order of loading/unloading ports (Port Sequence) and loading/ unloading Sequence.
3. Calculate a vessel’s stability. Stability criteria must comply with requirements of the International Code on Intact Stability (2008), which is mandatory for passenger and cargo ships.

**Table 3. Criteria of assessment**

| **#** | **Action** | **Fulfilled or NO** | **Grade** |
| --- | --- | --- | --- |
|  | Determined and loaded a vessel up to the allowable winter/summer draft |  | 2 |
|  | Without violating the requirements of international conventions, to accommodate the entire amount of cargo specified in the voyage assignment |  | 0,5 |
|  | Evaluated the order of loading - unloading ports (Port Sequence) |  | 0,5 |
|  | Evaluated the Loading/Unloading Sequence |  | 0,5 |
|  | Do not exceed the permissible (Load Limit) load on one square meter of the bottom of the hold (Tank Top), bending moments and “shearing” forces of the ship's hull (Limits of Bending Moments and Shearing Forces) (values are within acceptable limits up to arrival next port) |  | 1 |
|  | Cargo operations comply with IMDG Code requirements |  | 1 |
|  | The GM value is within acceptable limits as specified in the loading manual and in compliance with IMO rules up to arrival next port; GZ curves of the vessel to be fully understood, and their characteristics confirmed |  | 3 |
|  | Expected weather and sea conditions, are to be taken into consideration when confirming stability & hull strength, incl. free surface effects and any sloshing effects, fuel oil, diesel oil and freshwater consumptions |  | 1 |
|  | The cargo density, SF in accordance with maximum permissible values and precautions as per the loading manual and any restrictions specified in the loading manual to be taken into consideration |  | 0,5 |
|  | **TOTAL** |  | **10** |