

# BUNKERING OPERATIONS

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Spillages and leakages during bunkering operations are a primary source of oil pollution from ships. Experience has shown that many of the bunker overflows and spillages that do occur can be attributed to human error.

This chapter provides guidance on the planning and execution of bunkering operations and includes an example of a pre-transfer safety check-list.

## General

All bunkering operations should be carefully planned and executed in accordance with MARPOL regulations. Pollution caused when heavy fuel oil is split is particularly damaging and difficult to clean-up.

Personnel involved in the bunkering operation on board should have no other tasks and should remain at their workstations during topping-off. This is particularly important when bunkers are being loaded concurrent with cargo operations, in order to avoid conflicts of interest for operational personnel. Spillages often occur when staff are distracted by another task.

## Bunkering Procedures

Companies should require that all bunkering operations are controlled under procedures that are incorporated in the ship's Safety Management System.

The procedures should ensure that the risks associated with the operation have been assessed and that controls are in place to mitigate these risks. The procedures should also address contingency arrangements in the event of a spill. The Company should consider the following items when producing the procedures:

- Determining that there is adequate space for the volume of bunkers to be loaded.
- Establishing maximum loading volume for all tanks.
- Controls for the setting of bunker system valves.
- Determining loading rates for the start of loading, bulk loading and topping-off.
- Special precautions when loading into double bottom tanks.
- Arrangements of bunker tank ventilation.
- Internal tank overflow arrangements.
- Verification of gauging system operation and accuracy.
- Alarm settings on overfill alarm units.
- Communication with the terminal to establish when bunkering can be undertaken.

- Communications with the bunker supplier prior to commencement, to establish and record the loading procedure to be followed and to determine how quantity and quality checks may be carried out, particularly if safe access is needed between the ship and a barge.
- Methods of managing the handling of bunkers which have or may have a hydrogen sulphide (H<sub>2</sub>S) content.
- Testing procedures for determining the presence of hydrocarbon or H<sub>2</sub>S vapours.
- Method of determining the temperature of the bunkers during loading.
- Communications procedure for the operation, including emergency stop.
- Manning requirements to execute the operation safely.
- Monitoring of the bunkering operation and checking it conforms to the agreed procedure.
- Changing over tanks during loading.
- Containment arrangements and clean-up equipment to be available.

Once the procedure is produced, it should be implemented by use of a check-list, an example of which is included herewith.

## **The Bunkering Operation**

Prior to commencing the operation, all pre-loading checks should be carried out and communication systems verified as working.

The loading rate should be checked regularly.

When changing over from one tank to another, care should be taken to ensure that an excessive back pressure is not put on the hose or loading lines.

When topping-off tanks, the loading rate should be decreased to reduce the possibility of air locks in the tank causing mist carry over through the vents, and to minimize the risk of the supplier not stopping quickly enough.

On completion of loading, all hoses and lines should be drained to the tank or if applicable, back to the barge, prior to disconnection. The practice of blowing lines with air into bunker tanks is a common one, but has a high risk of causing a spillage unless the tank is only part full and has sufficient ullage on completion of loading.

## **The Bunkering Safety Check-List**

### **General**

Responsibility and accountability for the safe conduct of operations while a ship is receiving bunkers by barge is shared jointly between the Masters of the receiving vessel and of the barge. The responsibility for the bunkering operation is usually delegated to designated Responsible Officers on the ship and on the barge. Before the bunkering operation commences, the Responsible Officers should:

- Agree in writing on the handling procedures including the maximum transfer rates.
- Agree in writing on the action to be taken in the event of an emergency during transfer operations.
- Complete and sign the Bunkering Safety Check-List.

The Bunkering Safety Check- List is based upon the Ship/Shore Safety Check-List and the Pre-Transfer Bunkering Check-List contained in the IMO publication *Recommendations on the Safe Transport of Dangerous Cargoes and Related Activities in Port Areas*

The Check-List is primarily structured for loading bunkers from a barge, but it is also suitable for use when taking bunkers from a jetty or when loading bulk lubricating oil or gas oil from a road tanker.

## Guidelines for Use

The following guidelines have been produced to assist ship, barge and terminal operators in their joint use of the Bunkering Safety Check-List.

The Bunkering Safety Check-List uses statements assigning responsibility and accountability. Ticking or initialling the appropriate box, and finally signing the declaration, confirms the acceptance of obligations. Once signed, this provides the minimum basis for safe operations as agreed through a mutual exchange of critical information.

Some of the Check-List statements are directed to considerations for which the ship has sole responsibility and accountability, some for which the barge has sole responsibility and accountability and others which assign joint responsibility and accountability. Shaded boxes are used to identify statements that generally may be applicable to only one party, although the ship or barge may tick or initial such sections if they so wish.

The assignment of responsibility and accountability does not mean that the other party is excluded from carrying out checks in order to confirm compliance. The assignment of responsibility and accountability ensures clear identification of the party responsible for initial and continued compliance throughout the transfer activity.

The Responsible Officers completing the Check-List should be the people carrying out the bunkering operation.

The tanker's Responsible Officers should personally check all considerations lying within the responsibility of the tanker. Similarly, the barge's Responsible Officer should personally check all considerations that are within the responsibility of the barge. In fulfilling their responsibilities, Responsible Officers should assure themselves that the standards of safety on both sides of the operation are fully acceptable. This can be achieved by means such as:

- Confirming that a competent person has satisfactorily completed the Check-List.
- Sighting appropriate records.
- By joint inspection, where deemed appropriate.

For mutual safety, before the start of operations, and from time to time thereafter, a barge representative and a ship's officer should conduct inspections of the barge and the ship to ensure that their obligations, as accepted in the Check-List, are being effectively managed.

The Bunkering Safety Check-List contains the following sections :

- 1. Bunkers to be Transferred:**  
A joint agreement on the quantity and grades of bunkers to be transferred, together with agreed transfer rates and the maximum line back pressures.
- 2. Bunker Tanks to be loaded**  
An identification of the tanks to be loaded with the aim of ensuring that there is sufficient space to safely accommodate the bunkers to be transferred. Space is provided to record the each tank's maximum filling capacity and the available volume.
- 3. Checks by Barge Prior to Berthing**  
This section provides the checks to be carried out before the barge goes alongside the ship.

**4. Checks Prior to Transfer**

This section provides the checks to be jointly undertaken before transfer activities commence.

The safety of operations requires that all relevant statements are considered and the associated responsibility and accountability for compliance accepted. Where either party is not prepared to accept an assigned accountability, a comment must be made in the Remarks column and due consideration given to whether operations should proceed.

Where an item is agreed not to be not applicable to the ship, to the barge or to the operation envisaged, a note to that effect should be entered in the `Remarksqcolumn.

The presence of the letters 'A' or 'R' in the Code column indicates the following:

- A** (~~A~~Agreement). This indicates an agreement or procedure that should be identified in the Check-List or communicated in some other mutually acceptable form.
- R** (~~R~~Re-check). This indicates items to be re-checked at appropriate intervals, as agreed between both parties and stated in the declaration.

The joint declaration should not be signed until all parties have checked and accepted their assigned responsibilities and accountabilities.



## Bunkering Safety Check-List

**Port** ..... **Date** .....  
**Ship** ..... **Barge** .....  
**Master** ..... **Master** .....

### 1. Bunkers to be Transferred

Grade	Tonnes	Volume at Loading Temp.	Loading Temperature	Maximum Transfer Rate	Maximum Line Pressure
Fuel Oil					
Gas Oil/Diesel					
Lub. Oil in Bulk					

### 2. Bunker Tanks to be Loaded

Tank No.	Grade	Volume of Tank @ .....%	Vol. of Oil in Tank before Loading	Available Volume	Volume to be Loaded	Total Volumes Grade

### 3. Checks by Barge Prior to Berthing

Bunkering	Ship	Barge	Code	Remarks
1. The barge has obtained the necessary permissions to go alongside receiving vessel.				
2. The fenders have been checked, are in good order and there is no possibility of metal to metal contact.			R	
3. Adequate electrical insulating means are in place in the barge-to-ship connection.				
4. All bunker hoses are in good condition and are appropriate for the service intended.				

#### 4. Checks Prior to Transfer

Bunkering	Ship	Barge	Code	Remarks
5. The barge is securely moored.			R	
6. There is a safe means of access between the ship and barge			R	
7. Effective communications have been established between responsible officers.			A R	(VHF/UHF Ch 6 6 6 6 .....). Primary System: Backup System: Emergency Stop Signal:
8. There is an effective watch on board the barge and ship receiving bunkers.				
9. Fire hoses and fire-fighting equipment on board the barge and ship are ready for immediate use.				
10. All scuppers are effectively plugged. Temporarily removed scupper plugs will be monitored at all times. Drip trays are in position on decks around connections and bunker tank vents.			R	
11. Initial line up has been checked and unused bunker connections are blanked and fully bolted.				
12. The transfer hose is properly rigged and fully bolted and secured to manifolds on ship and barge.				
13. Overboard valves connected to the cargo system, engine room bilges and bunker lines are closed and sealed.				
14. All cargo and bunker tank hatch lids are closed.				
15. Bunker tank contents will be monitored at regular intervals.			A R	
16. There is a supply of oil spill clean up material readily available for immediate use.				
17. The main radio transmitter aerials are earthed and radars are switched off.				
18. Fixed VHF/UHF transceivers and AIS equipment are on the correct power mode or switched off.				
19. Smoking rooms have been identified and smoking restrictions are being observed.			A R	Nominated Smoking Rooms Tanker: Barge:

Bunkering	Ship	Barge	Code	Remarks
20. Naked light regulations are being observed.			R	
21. All external doors and ports in the accommodation are closed.			R	
22. Material Safety Data Sheets (MSDS) for the bunker transfer have been exchanged where requested.			R	
23. The hazards associated with toxic substances in the bunkers being handled have been identified and understood.			R	H <sub>2</sub> S Content 0 0 0 0 0 ..0 0 Benzene Content 0 0 0 ..0 0 0

### DECLARATION

We have checked, where appropriate jointly, the items of the Check-List in accordance with the instructions and have satisfied ourselves that the entries we have made are correct to the best of our knowledge.

We have also made arrangements to carry out repetitive checks as necessary and agreed that those items coded R in the Check List should be re-checked at intervals not exceeding \_\_\_\_\_ hours.

If to our knowledge, the status of any item changes, we will immediately inform the other party.

For Ship	For Barge
Name .....	Name .....
Rank .....	Rank .....
Signature .....	Signature .....
Date .....	Date .....
Time .....	Time .....

### Record of repetitive checks:

Date:			
Time:			
Initials for Ship:			
Initials for Barge:			