Bunkering Procedures

Loss Prevention Bulletin

Members will be aware that the financial consequences of a pollution incident during bunkering are becoming increasingly severe.

For example, one recent claim amounted to US$ 3.6 million. Any spill, no matter how small, may result in penalties and costs far outweighing the apparent gravity of the event. Costs involved and consequential reputational losses reinforce the need for all shipowners to mitigate the risks.

Apart from claims arising as a result of pollution of the environment, disputes related to quantity or quality of fuel delivered on board are far more frequent. Although not as costly as pollution claims in monetary terms, such cases often require time to resolve.

Procedures to be followed during bunkering operations will be detailed in a vessel's Safety Management System. However, this Bulletin has been written in order to reiterate best practice and includes a number of recommendations regarding the items that should be checked and verified throughout the various stages of the operation. These are summarised in the form of a loading plan and checklist, either for direct use by the ship or to assist Members in reviewing or formulating their own versions. Utilising a loading plan and checklist and following a predetermined routine may minimise the likelihood of important safeguards being overlooked.

Bunkering operations offshore should be treated as Ship-to- Ship (STS) operations and the guidance contained in the latest edition of the Oil Companies International Marine Forum (OCIMF) STS Transfer Guide should be followed.

Members requiring a more comprehensive account of prudent procedures relating to bunkering are referred to the IMO publication "Manual on Oil Pollution Section 1 - Prevention" and to Singapore Standards for Bunkering – SS 600 and SS 524.

Some of the issues to bear in mind are however as follows:

- A senior engineer should always be appointed to co-ordinate and take charge of the bunkering operation, and it is intended that the loading plan and checklist be used by this officer. He should first ensure that all crew members involved in the exercise are fully conversant with the specification and quantity of fuel to be lifted, the ship's fuelling and tank sounding arrangements, the alarm systems and the loading sequence

- It is of primary importance that all personnel on board are made aware of the intention to bunker so that the vessel's emergency response plan can be activated without delay in the event of a spill. In addition, it should be remembered that the bunkering facility itself may be the source of a spill, and the contingency arrangements of the barge or terminal should be checked and discussed beforehand. In case of a pollution incident originating from the bunkering facility or if Bunkering Procedures Loss Prevention Bulletin the source of the pollution is unclear, the ship should not automatically assume their own innocence in the incident. In any event the crew must take all necessary measures to prevent further worsening of the incident

- Clear and detailed drawings of the vessel's bunkering system must be available for use by members of the ship's bunkering team during the operation and it is recommended that a piping diagram be posted in a suitable location for easy reference by the bunkering team. As well as aiding the routine checking of pipeline configurations, access to such diagrams may prove indispensable in an emergency. In case of any modifications the pipeline drawings must be updated accordingly and only the latest revision used

- Receiving tanks and respective valves should be tagged for easy identification. Remember the valve handling rule: Open First – Close Second

- All bunker tank vent heads shall be marked with the identity of the tank and proven to be free of obstructions to allow the escape of displaced air

- Save-alls are to be dry and clean, and plugs to be fitted in position. The save-alls should be drained regularly during rain

- When agreeing signalling procedures with the terminal or barge, Members are advised to consider using an audible alarm to supplement an emergency stop, recognisable by all parties. This additional defence may secure a swifter response than relying entirely on VHF contact or other methods of signalling. It is advisable to request from the supplier to provide your vessel with a remote emergency stop for the bunker transfer pumps on board of the barge

- To reduce the chance of misunderstandings still further, the key elements of the bunker plan may be summarised in writing and signed by both the responsible bunkering officer and the supplier as confirmation of mutual agreement

- The duty officer should keep in close contact with the ship's bunker team throughout, while the bunker team should regularly check the agreed communication channels with the bunkering facility

- Over filling of bunker tanks may result in spillage and consequently expose the Member to significant claims, penalties and clean-up costs of extraordinary proportions. It is advisable that the filling level in bunker tanks is limited to 90-92% by volume

- Moorings should be tended to ensure that the movement of the vessel is restricted to a minimum and that the ship, as far as practicable, is kept upright and on an even keel

- Check the Bunker Delivery Note (BDN) presented by the barge to make sure that the delivered fuel complies with the contractual specification and statutory requirements. Information which must be provided in the BDN can be found here
- Take regular soundings of the tanks. Reduce measurement intervals when the tank level exceeds 60-70%. If several tanks are being bunkered, reduce sounding interval as soon as the first receiving tank is full and isolated. Keep an eye on the isolated tanks as well as on the tanks not being bunkered in order to make sure that the level in such tanks remains constant
- Do not exceed the maximum line pressure
- Give a supplier timely warning to reduce the pumping rate when “topping up” the tanks. The rate of delivery must be reduced when any of the filling valves needs to be closed. All filling valves must never be closed before the bunkering has been completed and the hoses and the filling pipelines have been blown through with compressed air and drained

- Any spill during a bunkering operation must be immediately reported to the appropriate authorities and corresponding measures taken in accordance with the vessel’s SOPEP / SMPEP

- Bunkering operations have to be entered in the Deck and Engine log books. Relevant contemporaneous entries must be made in the Engine Room Oil Record Book as required. The importance of keeping accurate and sufficient records cannot be overemphasised

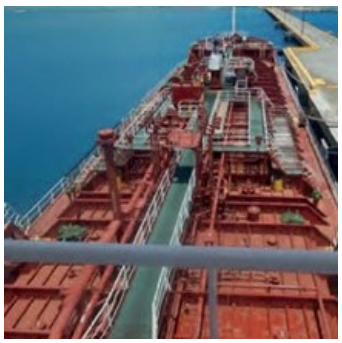
- The final bunkered volume figures must be corrected to allow for the vessel’s trim and list at the end of the bunkering. The weight of the bunkered fuel should be calculated using the standard density figure provided on the BDN and corrected to the actual temperature of the delivered fuel. In case of a significant difference the BDN (or receipt, if a separate document) should be signed “for volume only”

- Fuel surveying companies use various formats of tank measurement reports. Useful abbreviations:
  TOV Total Observed Volume
  GOV Gross Observed Volume
  GSV Gross Standard Volume
  GSW Gross Standard Weight
  VCF Volume Correction Factor
  WCF Weight Conversion Factor

- During the course of bunkering, representative samples must be taken and retained in line with company and regulatory requirements. The MARPOL sampling procedure has been published by the IMO in Resolution MEPC.182(59) – 2009 Guidelines for the Sampling of Fuel Oil for Determination of Compliance with the Revised MARPOL Annex VI

- The bunker fuel quality should be tested by a reputable shore laboratory and results received and reviewed prior to using the fuel. It is recommended that the laboratory is accredited in accordance with ISO 17025

Technical aspects of the bunker quality sampling and disputes are discussed in the Loss Prevention Bulletin. If these basic principles of bunkering are followed, exposure to associated losses should be reduced.



Bunkering Loading Plan and Checklist

Vessel		Port	
Date		Supplier	

Tank Loading Plan

Tank						
Sounding/ullage prior to bunkering						
Volume in tank prior to bunkering						
Volume to be loaded						
Sounding/ullage interval and measurement						
Valve id – time opened/closed						
Planned sounding/ullage on compl.						
Planned volume in tank on compl., 90% of total tank capacity						
Actual sounding/ullage on compl.						
Actual volume in tank on compl., % of total tank capacity						

Tank Loading Plan

To be checked and signed off by the vessel, supplier, or both as appropriate.

No.	Checkpoint	Vessel	Supplier

Prior to Bunkering

1	Ensure all personnel are aware of the intention to bunker and of the emergency response procedures. Review SOPEP / SMPEP manual and confirm local contacts in case of pollution incident		
2	Ensure all personnel involved in the bunkering operation are wearing appropriate PPE		
3	Discuss bunkering plan and tank sequence with officers involved and ensure the tank loading plan is completed		
4	Establish and check the common communication link between bunkering station, duty officer and engine room, using intrinsically safe radios		
5	Close and secure all associated overboard discharge valves		
6	Close all unused manifold valves and blank off manifold connections using all securing bolts, properly tightened, with a gasket in place		
7	Plug all deck scuppers and make oil/watertight		
8	Provide means of draining off any accumulations of water on deck		
9	Empty out and plug save-alls for manifolds and bunker tank vents		
10	Check all bunker tank air pipes are open and unblocked		
11	Reconfirm space remaining in all bunker tanks to be filled		
12	Ensure all sounding pipe caps are tight, except when sounding tanks		

13	Check that all bunker tank lids are closed and secured		
14	Check all bunker tank high level alarms are functioning		
15	Ensure designated overflow tank is prepared		
16	Take the fuel transfer pump out of AUTO mode and make sure it is OFF		
17	Place SOPEP equipment (sawdust, sand, absorbent pads, empty drums, squeegees, brushes etc.) in key locations ready for use		
18	Ensure suitable “no smoking / no naked flame” warning notices are posted		
19	Place firefighting appliances ready for immediate use. Rig fire hoses fore and aft (if applicable)		
20	Ensure all external accommodation superstructure doors and ports/ windows are kept closed		
21	Ensure the radars are on standby or switched off and the main radio aerials have been earthed		
22	Check that VHF/AIS units are either switched off if not in use or operating on low power (1 watt or less).		
23	Check that all flag or light signals required by local regulations are displayed		
24	Inform Port Control about start/stop bunkering operation		
25	When bunkering from a barge ensure there is sufficient fendering between vessels so there is no metal to metal contact		
26	Ensure there is a safe means of access, adequately illuminated, in place between the vessels		
27	Ensure that the barge is securely moored alongside		

28	Check the weight of the bunkering hose including weight of the fuel inside it does not exceed the SWL of vessel's lifting gear in case it will be used		
29	Check hose is of such a length that there is sufficient play to allow for movement, and that it is adequately supported		
30	Ensure that the transfer hose if properly rigged, lined up and bolted		
31	Inspect hose and couplings for damage		
32	Install a fuel sampling device making sure it is clean and fit		
33	Place drip trays under hose couplings, flanges and the sampling device		
34	Check that Gravity, Viscosity, Flash point, Water content, Sulphur content and delivery Temperature are correctly* stated in the bunker delivery note		
35	Ensure that Material Safety Data Sheets have been provided for each grade of fuel being stemmed		
36	Discuss bunkering plan with supplier		
37	Agree with supplier the quantity of oil to be pumped aboard		
38	Agree unit of measurement (cubic metres have to be converted into metric tons using a proper procedure)		
39	Agree maximum pumping rate and pressure. Agree to begin bunkering at a reduced pumping rate and agree to reduce pumping rate and pressure when closing off receiving bunker tanks		

40	Bunker tank content measurements to be done at regular intervals: ▪ Tanks being filled---------- ---------- interval ▪ Tanks not in use---------- interval		
41	Discuss vessel's emergency response procedures with supplier		
42	Discuss supplier's own emergency response procedures		
43	Establish and check the communication link between vessel and supplier ▪ Primary ▪ Back-up ▪ Emergency stop		
44	Agree signaling system with supplier ▪ Commence Pumping ▪ Reduce Pumping Rate ▪ Cease Pumping ▪ Emergency Stop		
45	Request from the supplier to provide your vessel with a remote emergency stop for the bunker transfer pumps on board the barge		
46	Conduct compatibility test, if necessary. Carry out quality analysis with vessel's fuel test kit (if carried)		
47	Sight, agree and record shore/barge meter readings or tank figures. Record corresponding temperatures. Inspect the flowmeter if fitted		
48	Appoint crewmember to tend mooring lines during bunkering		
49	Prepare filling line and open all relevant valves, ensuing all valves not in use are closed		

During Bunkering

50	Ensure a crewmember is stationed at the bunker manifold throughout the bunkering operation		

51	Commence bunkering at minimum pumping rate		
52	Start taking sample, adjust sampling device in order to ensure that the sample runs throughout the entire bunkering operation		
53	Monitor supply line pressure		
54	Carry out spot analysis with vessel's fuel test kit (if carried)		
55	Examine hose and connections for leakage upon commencing receiving fuel, and immediately after each increase in delivery rate		
56	Ensure soundings/ullages of tanks being filled are closely monitored. Take soundings to make sure that the correct tanks are being filled.		
57	Periodically check the quantity of fuel in bunker tanks that are not being loaded, or have completed loading		
58	Reduce pumping rate and/or open next tank before topping off		
59	Close valves as each tank is completed, ensuring that the loading hose is not subjected to excessive back pressure. Prior to closing valves request to reduce pumping rate / pressure if necessary		
60	Ensure sufficient ullage in the final tank for hose draining/line blowing		
61	Notify supplier on reaching final tank		
62	Give supplier timely warning to reduce pumping rate		
63	Give supplier timely warning to stop pumping		

No.	Checkpoint	Vessel	Supplier

On Completion of Bunkering

64	Drain hoses on completion of bunkering, blow with air only once at the end of the bunkering and close all filling valves		
65	Ensure all hoses are fully drained		
66	Close manifold valve and blank off manifold connection using all securing bolts, properly tightened, with a gasket in place		
67	Blank off disconnected hose couplings using all securing bolts, properly tightened, with a gasket in place		
68	Reconfirm all bunker line and tank filling valves are closed		
69	Reconfirm all bunker tank soundings. Confirm bunker temperature		
70	Ensure all sounding pipe caps are securely fitted and all sounding pipe automatic closure devices, where fitted, are not open		
71	Sight, agree and record shore/barge meter readings or tank figures. Take measurements twice if possible		
72	Verify all bunker receipt details are correct and sign		
73	Witness, date, jointly countersign and retain sealed bunker samples in line with company and regulatory requirements		
74	Complete entry in Oil Record Book, Engine Log book and Deck Log Book		
75	Preserve the fuel samples. Send the sample ashore for the quality analysis		

* In accordance with appendix V to MARPOL Annex VI the Bunker Delivery Note is to contain at least: name and IMO number of receiving ship, port, date of commencement of delivery, name, address and telephone number of marine fuel oil supplier, product name(s), quantity (metric tons), density at 15°C (kg/m3), sulphur content (%) and a declaration signed and certified by the fuel oil supplier's representative that the fuel oil supplied is in conformity with regulation 14.1 or 14.4 and regulation 18.3 of MARPOL Annex VI.

Signed for ship	Signed for supplier
Rank:	Designation:

Contact us

Members requiring further guidance should contact the Loss Prevention department.

Contact here →