

## Chapter 26

# SAFETY MANAGEMENT

This Chapter provides a summary of information for assisting the tanker and the terminal jointly to manage personnel and operational safety. Reaction to changing weather conditions during cargo handling is addressed. The correct use of personal protective equipment for both tanker and shore personnel is also discussed.

The diligent and conscientious joint completion of the appropriate Safety Check-Lists provides the foundation for a safe transfer operation. A number of Check-Lists are described in this Chapter and included in Appendices, together with guidelines to assist their completion.

This Chapter also includes guidance on the interface between tanker and terminal emergency procedures.

### 26.1 Climatic Conditions

#### 26.1.1 Terminal Advice of Adverse Weather Conditions

The terminal should establish limiting parameters for controlling or stopping cargo operations based on the design criteria for the berth and its equipment. The parameters may be determined by environmental conditions, such as wind speed, ice conditions, tidal current and swell, or by the physical limitations of the berth, such as fender loads or mooring point strength. Any limitations should be discussed with the tanker before operations commence and recorded in the Safety Check-Lists.

The Terminal Representative should alert the tanker to any forecast of adverse weather conditions which may require operations to be stopped, or loading or discharge rates to be reduced. In some instances, necessary information may be provided by third parties in the immediate vicinity or by the tanker.

Where environmental conditions are critical to the operation of the berth, the terminal should consider providing appropriate measuring instrumentation to provide information that will assist in managing the risk.

## 26.1.2 Wind Conditions

If there is little air movement, product gas may persist on deck in heavy concentrations. If there is a wind, eddies can be created on the lee side of a tanker's accommodation or deck structure which can carry vented gas towards the structure. Either of these effects may result in local heavy product gas concentrations and it may be necessary to extend the precautions set out in Section 24.1 or to stop loading, ballasting of non-gas free tanks, purging, tank cleaning or gas freeing while these conditions persist. All operations should also be stopped if wind conditions cause funnel sparks to fall on deck.

## 26.1.3 Electrical Storms (Lightning)

When an electrical storm is anticipated in the vicinity of the tanker or terminal, the following operations must be stopped, whether or not the tanker's cargo tanks are inerted:

- Handling of volatile products.
- Handling of non-volatile products in tanks not free of flammable vapour.
- Ballasting of tanks not free of flammable vapour.
- Purging, tank cleaning or gas freeing after the discharge of volatile products.

All tank openings and vent valves must be closed, including any bypass valves fitted on the tank venting system.

## 26.2 Personnel Safety

### 26.2.1 Personal Protective Equipment (PPE)

Protective clothing and equipment should be worn by all personnel engaged in operations on board and ashore. It is recommended that this should comprise a boiler suit (or similar clothing providing full cover, anti-static and flame retardant), safety shoes, safety glasses and a safety helmet as appropriate. All personnel should also wear life vests or other similar buoyancy devices where there is a risk of falling into the water.

Storage places for PPE, including breathing apparatus, should be protected from the weather and should be clearly marked. Personnel should utilise the equipment and clothing whenever the situation requires.

Personnel who are likely to be required to use breathing apparatus should be trained in its safe use.

Tankers should establish the PPE requirements for visitors and these should include appropriate clothing, safe footwear, eye protection, life vest and a safety helmet. Likewise, terminals should establish requirements for all persons passing through the terminal. A clearly marked safe route and/or safe transport through the terminal should be provided.

### 26.2.2 Slip and Fall Hazards

Due to the high incidence of slips and falls on tankers, owners, operators and crew should pay particular attention to on board arrangements and the changing conditions that may contribute to these accidents.

Particular attention should be given to providing non-skid coatings or gratings on the deck in working areas and walkways. It is suggested that these areas are clearly marked so that personnel are aware of their existence and extent. Areas for consideration include:

- Mooring areas.
- Manifold areas.
- Dipping and sampling locations.
- Access walkways.
- Pipeline step-overs.

Irrespective of the arrangements provided to prevent slips and falls, it is essential that personnel use the prescribed walkways and keep them clear and free of spillages. Shore personnel and visitors should also use the prescribed areas.

The risk of trips and slips is significantly higher when using access ladders, ladders on bunker booms and companionways. Good design and construction will help to prevent accidents of this nature. Trip hazards, such as high plate edges at the top of ladders and unevenly spaced steps, should be avoided. Where the design cannot be modified, trip hazards should be clearly marked or highlighted with contrasting paint.

### 26.2.3 Personal Hygiene

In view of the danger to health that may arise from prolonged contact with products, personal hygiene is most important. Wherever possible, direct skin contact with product or with contaminated clothing should be avoided.

### 26.2.4 Clothing Made of Synthetic Materials

The tendency for synthetic material to melt and fuse together when exposed to high temperatures leads to a concentrated heat source which causes severe damage to body tissue. Clothing made of such material is therefore not considered suitable for persons who may be exposed to flame or hot surfaces in the course of their duties.

## 26.3 The Safety Check-Lists

### 26.3.1 General

The responsibility and accountability for the safe conduct of operations while a tanker is at a terminal are shared jointly between the tanker's Master (by ship/ship operations by both Masters) and the Terminal Representative. Before cargo or ballast operations commence, the Master(s), or his representative, and/or the Terminal Representative should:

- Agree in writing on the transfer procedures, including the maximum loading or unloading rates.
- Agree in writing on the action to be taken in the event of an emergency during cargo or ballast handling operations.
- Complete and sign the appropriate Safety Check-List(s).

Terminals may wish to issue an explanatory letter to the Masters of visiting tankers advising them of the terminal's expectations regarding the joint responsibility for the safe conduct of operations, and inviting the co-operation and understanding of the tanker's personnel. An example of the text for such a letter is in Section 26.3.3.

While the Safety Check-List is based upon cargo handling operations, it is recommended that the same practice is adopted when a tanker presents itself at a berth for tank cleaning.

### 26.3.1.2 Overview of Appended Check-Lists

The following provides a summary of the Check-Lists that are included in the Appendices:

Tanker - Shore Safety Check-List	Cargo transfer	See ISGINTT Appendix 1
Seagoing – Inland Tanker / Inland Tanker Safety Check-List	Cargo transfer	See ISGINTT Appendix 2
Hazardous Disposal Safety Check-List	Hazardous Disposal	See ISGINTT Appendix 3
Non Hazardous Disposal Safety Check-List	Non Hazardous Disposal	See ISGINTT Appendix 4
Bunkering Safety Check-List for Bunker Delivery to Inland Ships	Bunkering	See ISGINTT Appendix 5
Bunkering Safety Check-List for Bunker Delivery to Maritime Ships	Bunkering	See ISGINTT Appendix 6

### 26.3.2 Guidelines for Use

Guidelines for completing the Check-Lists and to assist in responding to each individual statement are included in Appendix 7. They have been produced to assist berth operators and tanker Masters in their joint use of the Safety Check-Lists.

Masters and all under their command should adhere strictly to these requirements throughout the tanker's stay alongside. The Terminal Representative and all shore personnel should do likewise. Each party will be committed to co-operate fully in the mutual interest of achieving safe and efficient operations.

Responsibility and accountability for the statements within the Safety Check-Lists are assigned within the documents. The acceptance of responsibility is confirmed by ticking or initialling the appropriate box and finally signing the declaration at the end of the Check-Lists. Once signed, the Check-Lists detail the minimum basis for safe operations as agreed through the mutual exchange of critical information.

Some of the Check-List statements are directed to considerations for which the tanker has sole responsibility and accountability, some to considerations for which the terminal has sole responsibility and accountability, and there are others which assign joint responsibility and accountability. Shaded boxes are used to identify statements that generally would be applicable to only one party, although the tanker or terminal may tick or initial such sections if they so wish. Responsible Persons representing both parties have to tick or fill in the empty boxes alongside the relevant provisions in the proper column.

The assignment of responsibility and accountability does not mean that the other party is excluded from carrying out checks in order to confirm compliance. It is intended to ensure clear identification of the party responsible for initial and continued compliance throughout the tanker's stay at the terminal or alongside the other vessel.

The Responsible Person/Crew Member should personally check all considerations lying within the responsibility of the tanker. Similarly, the Terminal Representative should personally check all considerations that are the terminal's responsibility. In fulfilling these responsibilities, representatives 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-Lists.
- Sighting appropriate records.
- Joint inspection, where deemed appropriate.

For mutual safety, before the start of operations, and from time to time thereafter, a Terminal Representative and, where appropriate, a Responsible Person/Crew Member, should conduct an inspection of the tanker to ensure that the tanker is effectively managing its obligations, as accepted in the Safety Check-Lists. Similar checks should be conducted ashore where basic safety requirements are found to be insufficient, either party may require that cargo and ballast operations are stopped until corrective action is implemented satisfactorily.

### 26.3.2.1 Composition of the Check-Lists

The Safety Check-Lists contained in Appendices 1 and 2 comprise four parts, the first two of which (Parts 'A' and 'B') address the transfer of Bulk Liquids. These are applicable to all operations. Part 'A' identifies the required physical checks and Part 'B' identifies elements that are verified verbally.

Part 'C' contains additional considerations relating to the transfer of Bulk Liquid Chemicals and Part 'D' contains those for Bulk Liquefied Gases.

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

Where a particular item is considered not to be applicable to the tanker, the terminal or to the planned operation, a note to this effect should be entered in the 'Remarks' column.

### 26.3.2.2 Coding of Items

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

- A ('Agreement'). This indicates an agreement or procedure that should be identified in the 'Remarks' column of the Check-List or communicated in some other mutually acceptable form.
- P ('Permission'). In the case of a negative answer to the statements coded 'P', operations should not be conducted without the written permission from the appropriate authority.
- R ('Re-check'). This indicates items to be re-checked at appropriate intervals, as agreed between both parties, at periods stated in the declaration.

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

The numbers and the letters in the first column indicate the following:

- Number:** This number indicates that the provision in question is based on the recommendations from ISGOTT/ISGINTT. The number corresponds with the relevant item in the ISGOTT checklist
- B Number** This "B" number indicates that the provision in question is based on those in the ADN (agreement concerning carriage of dangerous goods by barge) relating to the transfer of cargo from ship to shore. The "B" number corresponds with the relevant item in the ADN checklist.
- L ("legislation")** This indicates that the provisions in question are related to regional legislation and/or requirements.

### 26.3.3 Example Safety Letter

Company .....  
Terminal .....  
Date .....  
The Master MV .....  
Port .....

Dear Sir,

Responsibility for the safe conduct of operations while your tanker is at this terminal rests jointly with you, as Master of the tanker, and with the responsible Terminal Representative. We wish, therefore, before operations start, to seek your full co-operation and understanding on the safety requirements set out in the Tanker/Shore Safety Check-List, which are based on safe practices that are widely accepted by the oil and tanker industries.

We expect you, and all under your command, to adhere strictly to these requirements throughout your tanker's stay alongside this terminal and we, for our part, will ensure that our personnel do likewise, and co-operate fully with you in the mutual interest of safe and efficient operations.

Before the start of operations, and from time to time thereafter, for our mutual safety, a member of the terminal staff, where appropriate together with a Responsible Crew Member, will make a routine inspection of your tanker to ensure that elements addressed within the scope of the Tanker/Shore Safety Check-List are being managed in an acceptable manner. Where corrective action is needed, we will not agree to operations commencing or, should they have been started, we will require them to be stopped.

Similarly, if you consider that safety is being endangered by any action on the part of our staff or by any equipment under our control, you should demand immediate cessation of operations.

There can be no compromise with safety.

Please acknowledge receipt of this letter by countersigning and returning the attached copy.

Signed .....  
Terminal Representative

Terminal Representative on duty is: .....  
Position or Title: .....  
Contact Details: .....

Signed .....  
Master

Tanker's name .....  
Date/Time .....

## 26.4 Guidelines for Completing the Tanker-Shore Safety Check-List

See Appendix 7.

## 26.5 Emergency Actions

The actions to be taken in the event of an emergency at a terminal should be contained in the terminal's Emergency Plan (see Chapter 20). Particular attention should be given to factors to be taken into consideration when deciding whether or not to remove a tanker from the berth in the event of an emergency (see also Section 20.5).

### 26.5.1 Fire or Explosion on a Berth

#### Action by Tankers:

Should a fire or explosion occur on a berth, the tanker or tankers at the berth must immediately report the incident to the terminal control room by the quickest possible method (VHF/UHF, telephone contact, sounding tanker's siren, etc). All cargo, bunkering, deballasting and tank cleaning operations should be shut down and all cargo arms or hoses should be drained ready for disconnection.

The tanker's fire-mains should be pressurised and water fog applied in strategic places. The tanker's engines, steering gear and unmooring equipment must be brought to a state of immediate readiness. A pilot ladder, or equivalent, should be available to be deployed on the offshore side.

#### Action by Tankers at Other Berths:

On hearing the terminal alarm being sounded or on being otherwise advised of a fire at the terminal, a tanker at a berth not directly involved in the fire should shut down all cargo, bunkering and ballasting operations. Fire-fighting systems should be brought to a state of readiness and engines, steering gear and mooring equipment should be made ready for immediate use.

### 26.5.2 Fire on a Tanker at a Terminal or on the other Tanker

#### Action by Tanker Personnel:

If a fire breaks out on a tanker while at a terminal or alongside another tanker, the tanker must raise the alarm by sounding the recognised alarm signal consisting of a series of long blasts on the tanker's whistle, each blast being not less than 4 seconds in duration unless the terminal or the other tanker has notified the tanker of some other locally recognised alarm signal. All cargo, bunkering or ballasting operations must be stopped and the main engines and steering gear brought to a standby condition.

Fire Action - Ship			
<p><b>Fire on your Ship</b></p> <ul style="list-style-type: none"><li>• Raise alarm</li><li>• Fight fire with aim of preventing spread</li><li>• Inform terminal</li><li>• Cease all cargo/ballast operations and close all valves</li><li>• Stand by to disconnect hoses or arms</li><li>• Bring engines to standby</li></ul>	<p><b>Fire on another Ship or Ashore</b></p> <ul style="list-style-type: none"><li>• Raise alarm</li></ul> <p>Stand by, and when instructed:</p> <ul style="list-style-type: none"><li>• Cease all cargo/ballast operations and close all valves</li><li>• Disconnect hoses or arms</li><li>• Bring engines and crew to standby, ready to unberth</li></ul>		
Fire Action - Ashore			
<p><b>Fire on a Ship</b></p> <ul style="list-style-type: none"><li>• Raise alarm</li><li>• Contact ship</li><li>• Cease all cargo/ballast operations and close all valves</li><li>• Stand by to disconnect hoses or arms</li><li>• Stand by to assist fire-fighting</li><li>• Inform all ships</li><li>• Implement terminal emergency plan</li></ul>	<p><b>Fire Ashore</b></p> <ul style="list-style-type: none"><li>• Raise alarm</li><li>• Cease all cargo/ballast operations and close all valves</li><li>• Fight fire with aim of preventing spread</li><li>• If required, stand by to disconnect hoses or arms</li><li>• Inform all ships</li><li>• Implement terminal emergency plan</li></ul>		
In case of fire, do not hesitate to raise the alarm			
<p>Terminal Fire Alarm</p> <p>At this terminal, the fire alarm signal is <input type="text"/></p> <p>In Case of Fire:</p> <ol style="list-style-type: none"><li>1. Sound one or more blasts on the ship's whistle, each blast of not less than ten seconds duration supplemented by a continuous sounding of the general alarm system.</li><li>2. Contact the terminal.</li></ol> <table border="1"><tr><td>Telephone <input type="text"/></td><td>UHF/VHF channel <input type="text"/></td></tr></table>		Telephone <input type="text"/>	UHF/VHF channel <input type="text"/>
Telephone <input type="text"/>	UHF/VHF channel <input type="text"/>		
In the case of fire, personnel will direct the movement of vehicular traffic ashore			

Figure 26.1 - Example of fire instructions notice

Once the alarm has been raised, responsibility for fighting the fire on board the tanker(s) will rest with the Master or other Responsible Person assisted by the tanker's crew. The same emergency organisation should be used as when the tanker is at anchor or under way (see Section 9.9.2.2) with an additional group under the command of a responsible person to make preparations, where possible, for disconnecting marine arms or hoses from the manifold.

On mobilisation of the terminal and, where applicable, the civil fire-fighting forces and equipment, the Master or other Responsible Person, in conjunction with the professional fire-fighters, must make a united effort to bring the fire under control.

#### **Action by Terminal Personnel:**

On hearing a tanker sounding its fire alarm, the person in charge of a berth should immediately advise the person in charge of terminal cargo operations. This person should sound the terminal fire alarm, inform the port authority and commence shutting down any loading, discharging, bunkering or deballasting operations that may be taking place.

The terminal's fire emergency plan should be activated and this may involve shutting down cargo, bunkering and ballast handling operations on tankers on adjacent or neighbouring berths. All other tankers at the terminal should be informed of the emergency and, where considered necessary, make preparations to disconnect marine arms or hoses and bring their engines and steering gear to a state of readiness.

Where there are fire-fighting tugs, the person in charge of terminal cargo operations will summon them to assist in fighting the fire until a decision is made by the person in overall control whether or not to use them to assist in the evacuation of unaffected tankers (see Section 20.5).

The person in charge of terminal cargo operations should be responsible for summoning any outside assistance, such as the civil fire brigade, rescue launches, medical aid and ambulances, police, harbour authority and pilots.

The above emergency procedures may be summarised for the information of visiting tankers in a fire instructions notice, an example of which is included in Figure 26.1.

#### **Action by the Other Tanker:**

Should a fire or explosion occur on a tanker while alongside another tanker, the following actions should be taken:

- Stop the transfer.
- Sound the emergency signal.
- Inform crews on both tankers of the nature of the emergency.
- Man emergency stations.
- Implement emergency procedures.
- Drain and disconnect cargo hoses.
- Send mooring gangs to stations.

- Confirm main engine is ready for immediate use.
- Advise standby boat of the situation and any requirements.
- In addition, Masters should decide jointly, particularly in cases of fire, whether it is to their mutual advantage for the tankers to remain alongside each other.

The basic actions, as listed above, should be included in individual STS (ship to ship) contingency plans and be consistent with the ships' Safety Management System.

### 26.5.3 International Shore Fire Connection (if required)

As described in Section 19.5.3.5, all terminals that handle international tankers should be provided with means to enable the fire-mains on board and ashore to be inter-connected. The International Shore Fire Connection provides a standardised means of connecting two systems where each might otherwise have couplings or connections that do not match.

The flanges on the connection should have the dimensions shown on Figure 26.2. It should have a flat face on one side and on the other should be a coupling that will fit the hydrant or hose on the tanker or shore, as appropriate.

If fixed on a tanker, the connection should be accessible from both sides of the tanker and its location should be clearly marked.

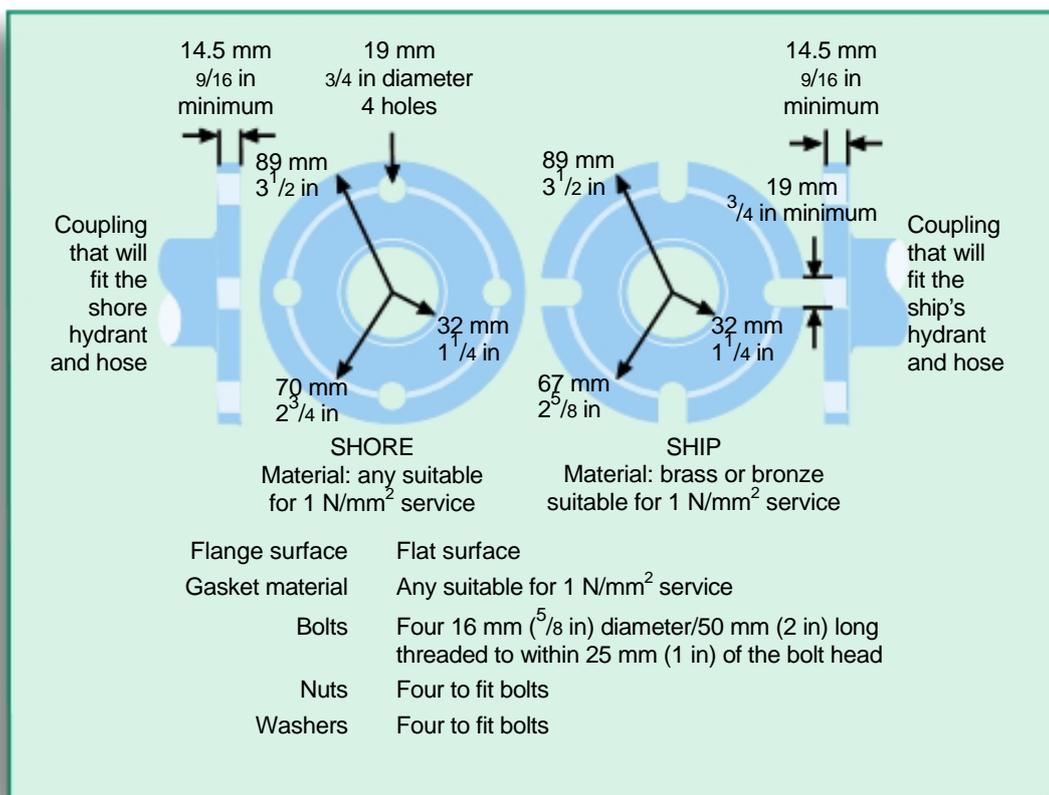


Figure 26.2 - Details of International Shore Fire Connection

To inter-connect the two fire-mains, a fire hose having a shore connection on the end is led to its counterpart and the flange joints are bolted together.

The shore connection should be ready for use whenever a tanker is in port.

#### 26.5.4 Emergency Release Procedures

Means should be provided to permit the quick and safe release of the tanker in an emergency. The method used for the emergency release operation should be discussed and agreed, taking into account the possible risks involved.

#### 26.5.5 Emergency Towing-Off Pennants

Unless specifically required by legislation ETOPS are not recommended for inland barges.