Appendix 3

Ship/Shore Safety Check List

This Appendix comprises appropriate parts of the Ship/Shore Safety Check List, Guidelines relating to the Check List and a specimen letter for issue by the terminal representative to masters of tankers at terminals.

SHIP/SHORE SAFETY CHECK LIST

Ship's Name: _____

Berth: _____ Port: _____

Date of Arrival: _____ Time of Arrival: _____

INSTRUCTIONS FOR COMPLETION:

The safety of operations requires that all questions should be answered affirmatively by clearly ticking *(✓)* the appropriate box. If an affirmative answer is not possible, the reason should be given and agreement reached upon appropriate precautions to be taken between the ship and the terminal. Where any question is considered to be not applicable, then a note to that effect should be inserted in the remarks column.

A box in the columns 'Ship' and 'Terminal' indicates that checks should be carried out by the party concerned.

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

A — any procedures and agreements should be in writing in the remarks column of this checklist or other mutually acceptable form. In either case, the signature of both parties should be required.

P — in the case of a negative answer, the operation should not be carried out without the permission of the Port Authority.

R — indicates items to be re-checked at intervals not exceeding that agreed in the declaration.

PART A ULK LIUI ENERAL

enerSip TerinCde		Rer		
. Is the ship securely moored	☐	☐	**R**	Stop cargo at: — kts wind vel. Disconnect at: — kts wind vel. nberth at: — kts wind vel.
2. Are emergency towing wires correctly positioned	☐	☐	**R**	
3. Is there safe access between ship and shore	☐	☐	**R**	
. Is the ship ready to move under its own power	☐	☐	**PR**	
. Is there an effective deck watch in attendance on board and adequate supervison on the terminal and on the ship	☐	☐	**R**	
. Is the agreed shipshore communciation system operative	☐	☐	**AR**	
. as the emergency signal to be used by the ship and shore been explained and understood	☐	☐	**A**	
. ave the procedures for cargo, bunker and ballast handling been agreed	☐	☐	**AR**	
9. ave the haards associated with toxic substances in the cargo being handled been identified and	☐	☐		
. as the emergency shutdown procedure been agreed	☐	☐	**A**	
. Are fire hoses and fire fighting equipment on board and ashore positioned and ready for immediate	☐	☐	**R**	
2. Are cargo and bunker hosesarms in good condition, properly rigged and appropriate for the service intended	☐	☐		
3. Are scuppers effectively plugged and drip trays in position, both on board and ashore	☐	☐	**R**	
. Are unused cargo and bunker connections properly secured with blank flanges fully bolted	☐	☐		
. Are sea and overboard discharge valves, when not in use, closed and visibly secured	☐	☐		
. Are all cargo and bunker tank lids closed	☐	☐		
. Is the agreed tank venting system being used	☐	☐	**AR**	
. ave the P vents been operated using the checklift facility and the operation of the vent verified	☐	☐		
9. Are hand torches of an approved type	☐	☐		

PART A ULK LIUI ENERAL continued

enerSip TerinCde		Rer		
2. Are portable transceivers of an approved tvpe	☐	☐		
2. Are the ship's main radio transmitter aerials earthed and radars switched off	☐	☐		
22. Are electric cables to portable electrical equipment disconnected from power	☐	☐		
23. Are all external doors and ports in the accommodation closed	☐	☐	**R**	
2. Are window-type air conditioning units disconnected	☐	☐		
2. Are air conditioning air intakes which may permit the entry of cargo vapours closed	☐	☐		
2. Are the requirements for use of galley equipment and cooking appliances being observed	☐	☐	**R**	
2. Are smoking regulations being observed	☐	☐	**R**	
2. Are naked light regulations being observed	☐	☐	**R**	
29. Is there provision for an emergency escape	☐	☐		
3. Are sufficient personnel on board and ashore to deal with an emergency	☐	☐	**R**	
3. Are adequate insulating means in place in the shipshore connection	☐	☐		
32. ave measures been taken to ensure sufficient pumproom ventilation	☐	☐	**R**	
33. If the ship is capable of closed loading, have requirements for closed operations been agreed	☐	☐	**R**	
3. as a vapour return line been connected	☐	☐		
3. If a vapour return line is connected, have operating parameters been agreed	☐	☐		
3. Are ship emergency fire control plans located externally	☐	☐		

l e ip i ied r reired e ied i n Iner Se e in ein d e nered

Iner Se Sip	TerinCde		Rer	
3. Is the Inert as System fully operational and in good working order	☐	☐	**P**	
3. Are deck seals in good working order	☐	☐	**R**	
39. Are liquid levels in pv breakers correct	☐	☐	**R**	
. ave the fixed and portable oxygen analysers been calibrated and are they working properly	☐	☐	**R**	
. Are fixed I pressure and oxygen recorders working	☐	☐	**R**	
2. Are all cargo tank atmospheres at positive pressure with an oxygen content of or less by volume	☐	☐	**PR**	
3. Are all the individual tank I valves if fitted correctly set and locked	☐	☐	**R**	
. Are all the persons in charge of cargo operations aware that in the case of failure of the Inert as Plant, discharge operations should cease and the terminal be advised	☐			

l e ip i pnnin n en nide e in ein d e nered

Tn enin Sip	Sre		Rer
Are tank cleaning operations planned during the ship's stay alongside the shore installation	esNo		
If so, have the Port Authority and terminal authority been informed	esNoesNo		

Delete es or No as appropriate

PART C ULK LIUEFIE ASES

Lieied e Sip Ter	inCde	Rer		
. Is information available giving the necessary data for the safe handling of the cargo including, as applicable, a manufacturer's inhibition certificate	☐	☐		
2. Is the water spray system ready for use	☐	☐		
3. Is sufficient suitable protective equipment including self-contained breathing apparatus and protective clothing ready for immediate use	☐	☐		
. Are hold and inter-bamer spaces properly inerted or filled with dry air as required	☐	☐		
. Are all remote control valves in working order	☐	☐		
. Are the required cargo pumps and compressors in good order, and have maximum working pressures been agreed between ship and shore	☐	☐	**A**	
. Is reliquefaction or boil-off control equipment in good order	☐	☐		
. Is the gas detection equipment properly set for the cargo, calibrated and in good order	☐	☐		
9. Are cargo system gauges and alarms correctly set and in good order	☐	☐		
. Are emergency shutdown systems working properly	☐	☐		
. Does shore know the closing rate of ship's automatic valves does ship have similar details of shore system	☐	☐	**A**	Ship:..... Shore:.....

PART C ULK LIUEFIE ASES continued

Lieied e Sip TerinCde	Rer		
2. as information been exchanged between ship and shore on the maximumminimum temperatures pressures of the cargo to be handled	☐	**A**	
3. Are cargo tanks protected against inadvertent overfilling at all times while any cargo operations are in progress	☐		
. Is the compressor room properly ventilated the electrical motor room properly pressurised and is the alarm system working	☐		
. Are cargo tank relief valves set correctly and actual relief valve settings clearly and visibly displayed Tank No. ..... Tank No. 2..... Tank No. 3..... Tank No. ..... Tank No. ..... Tank No. ..... Tank No. ..... Tank No. ..... Tank No. 9..... Tank No.	☐		

erin

We the undersigned, have checked, where appropriate ointly, the items on this checklist 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 with the letter 'R' in the column 'Code' should be re-checked at intervals not exceeding _____ hours.

Fr Sip	Fr Sre
Name:	Name:
Rank:	Position:
Signature:	Signature:
Date: Time:	

SHIP/SHORE SAFETY CHECK LIST GUIDELINES

Inrdin

Before liquid bulk dangerous substances are pumped into or out of any ship, or into a shore installation, the master of the ship and the berth operator should:

. agree in writing on the handling procedures including the maximum loading or unloading rates

2. complete and sign, as appropriate, the ShipShore Safety Check ist, showing the main safety precautions to be taken before and during such handling operations and

3. agree in writing on the action to be taken in the event of an emergency during handling operations.

The following guidelines have been produced to assist berth operators and shipmasters in their oint use of the ShipShore Safety Check ist.

Te M Se Exinin

A tanker presenting itself to a loading or discharging terminal needs to check its own preparations and its fitness for the safety of the intended cargo operation. Additionally, the master of a ship has a responsibility to assure himself that the terminal operator has likewise made proper preparations for the safe operation of his terminal.

qually the terminal needs to check its own preparations and to be assured that the tanker has carried out its checks and has made appropriate arrangements.

The ShipShore Safety Check ist, by its questions and requirements for exchange of written agreements for certain procedures, should be considered a minimum basis for the essential considerations which should be included in such a mutual examination.

Some of the Check ist questions are directed to considerations for which the ship has prime responsibility, others apply to both ship and terminal.

All items lying within the responsibility of the tanker should be personally checked by the tanker's representative and similarly all items which are the terminal's responsibility should be personally checked by the terminal representative. In carrying out their full responsibilities however, both representatives, by questioning the other, by sighting of records and, where felt appropriate, by oint visual inspection should assure themselves that the standards of safety on both sides of the operation are fully acceptable.

The oint declaration should not be signed until such mutual assurance is achieved.

Thus all applicable questions should result in an affirmative mark in the boxes provided. If a difference of opinion arises on the adequacy of any arrangements made or conditions found, the operation should not be started until measures taken are ointly accepted.

A negative answer to the questions coded "P" does not necessarily mean that the intended operation cannot be carried out. In such cases, however, permission to proceed should be obtained from the Port Authority.

Items coded "R" should be re-checked at intervals not exceeding that agreed in the declaration .

Where an item is agreed to be not applicable to the ship, to the terminal or to the operation envisaged, a note to that effect should be entered in the "Remarks" column.

Whilst the ShipShore Safety Check ist is based upon cargo handling operations, it is recommended that the same mutual examination, using the Check ist as appropriate, be carried out when a tanker presents itself at a berth for tank cleaning after carriage of liquid bulk dangerous substances.

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The conditions under which the operation takes place may change during the process. The changes may be such that safety can no longer be regarded as guaranteed. The party noticing or causing the unsafe condition is under an obligation to take all necessary actions, which may include stopping the operation, to re-establish safe conditions. The presence of the unsafe condition should be reported to the other party and where necessary, co-operation with the other party should be sought.

Tn Cenin Aiiie

The questions on tank cleaning are provided in the list in order to inform the Terminal and the Port Authority of the ship's intentions regarding these activities.

GUIDELINES FOR COMPLETING THE SHIP/SHORE SAFETY CHECK LIST

PART A ULK LIUI ENERAL

l e ip ere red

In answering this question, due regard should be given to the need for adequate tendering arrangements.

Ships should remain adequately secured in their moorings. Alongside piers or quays, ranging of the ship should be prevented by keeping all mooring lines taut attention should be given to the movement of the ship caused by wind, currents, tides or passing ships and the operation in progress.

The wind velocity at which loading arms should be disconnected, cargo operations stopped or the vessel unberthed, should be stated.

Wire ropes and fibre ropes should not be used together in the same direction i.e. breasts, springs, head or stern because of the difference in their elastic properties.

nce moored, ships fitted with automatic tension winches should not use such winches in the automatic mode.

Means should be provided to enable quick and safe release of the ship in case of an emergency. In ports where anchors are required to be used, special consideration should be given to this matter.

Irrespective of the mooring method used, the emergency release operation should be agreed, taking into account the possible risks involved.

Anchors not in use should be properly secured.

Are eeren in ire rre piined

mergency towing wires fire wires should be positioned both on the off-shore bow and quarter of the ship. At a buoy mooring, emergency towing wires should be positioned on the side opposite to the hose string.

There are various methods for rigging emergency towing wires currently in use. Some terminals may require a particular method to be used and the ship should be advised accordingly.

3 l ere e e eeen ip nd re

The access should be positioned as far away from the manifolds as practicable.

The means of access to the ship should be safe and may consist of an appropriate gangway or accommodation ladder with a properly secured safety net fitted to it.

Particular attention to safe access should be given where the difference in level between the point of access on the vessel and the etty or quay is large or likely to become large.

When terminal access facilities are not available and a ship's gangway is used, there should be an adequate landing area on the berth so as to provide the gangway with a sufficient clear run of space and so maintain safe and convenient access to the ship at all states of tide and changes in the ship's freeboard.

Near the access ashore, appropriate life-saving equipment should be provided by the terminal. A lifebuoy should be available on board the ship near the gangway or accommodation ladder.

The access should be safely and properly illuminated during darkness.

Persons who have no legitimate business on board, or who do not have the master's permission, should be refused access to the ship.

The terminal should control access to the etty or berth in agreement with the ship.

l e ip red e nder i n per

The ship should be able to move under its own power at short notice, unless permission to immobilise the ship has been granted by the Port Authority and the terminal manager.

Certain conditions may have to be met for permission to be granted.

l ere n eeie de in endne n rd nd dee periin n e erin nd n e ip

The operation should be under constant control both on ship and shore.

Supervision should be aimed at preventing the development of haardous situations if however such a situation arises, the controlling personnel should have adequate means available to take corrective action.

The controlling personnel on ship and shore should maintain an effective communication with their respective supervisors.

All personnel connected with the operations should be familiar with the dangers of the substances handled.

l e reed ip/re niin e perie

Communication should be maintained in the most efficient way between the responsible officer on duty on the ship and the responsible person ashore.

When telephones are used, the telephones both on board and ashore should be continuously manned by a person who can immediately contact his respective supervisor. Additionally, the supervisor should have a facility to override all calls. When RT systems are used, the units should preferably be portable and carried by the supervisor or a person who can get in touch with his respective supervisor immediately. Where fixed systems are used the guidelines for telephones should apply.

The selected system of communication, together with the necessary information on telephone numbers andor channels to be used, should be recorded on the appropriate form. This form should be signed by both ship and shore representatives.

The telephone and portable RT systems should comply with the appropriate safety requirements.

H e eeren in e ed e ip nd re een expined nd nderd

The agreed signal to be used in the event of an emergency arising ashore or on board should be clearly understood by shore and ship personnel.

He e predre r r ner nd ndin een reed

The procedures for the intended operation should be pre-planned. They should be discussed and agreed upon by the ship and shore representatives prior to the start of the operations. Agreed arrangements should be formally recorded and signed by both ship and terminal representatives. Any change in the agreed procedure that could affect the operation should be discussed by both parties and agreed upon. After agreement has been reached by both parties, substantial changes should be laid down in writing as soon as possible and in sufficient time before the change in procedure takes place. In any case, the change should be laid down in writing within the working period of those supervisors on board and ashore in whose working period agreement on the change was reached.

The operations should be suspended and all deck and vent openings closed on the approach of an electrical storm.

The properties of the substances handled, the equipment of ship and shore installations, the ability of the ship's crew and shore personnel to execute the necessary operations and to sufficiently control the operations are factors which should be taken into account when ascertaining the possibility of handling a number of substances concurrently.

The manifold areas both on board and ashore should be safely and properly illuminated during darkness.

The initial and maximum loading rates, topping off rates and normal stopping times should be agreed, having regard to:

- The nature of the cargo to be handled
- The arrangement and capacity of the ship's cargo lines and gas venting systems
- The maximum allowable pressure and flow rate in the shipshore hoses and loading arms
- Precautions to avoid accumulation of static electricity
- Any other flow control limitations.

A record to this effect should be formally made as above.

He e rd ied i xi ne in e r ein nded een ideniied nd nderd

Many tanker cargoes contain components which are known to be haardous to human health. In order to minimise the impact on personnel, information on cargo constituents should be available during the cargo transfer to enable the adoption of proper precautions. In addition, some port states require such information to be readily available during cargo transfer and in the event of an accidental spill.

The information provided should identify the constituents by chemical name, name in common usage, N number and the maximum concentration expressed as a percentage by volume.

H e eeren dn predre een reed

An emergency shut down procedure should be agreed between ship and shore, formally recorded and signed by both the ship and terminal representative.

The agreement should state in which cases the operations have to be stopped immediately.

Due regard should be given to the possible introduction of dangers associated with the emergency shut down procedure.

Are ire e nd ire iin eipen n rd nd re piined nd red r iedie e

ire fighting equipment both on board and ashore should be correctly positioned and ready for immediate use.

Adequate units of fixed or portable equipment should be stationed to cover the ship's cargo deck and on the etty. The ship and shore fire main systems should be pressurised, or be capable of being pressurised at short notice.

Both ship and shore should ensure that their fire main systems can be interconnected in a quick and easy way utilising, if necessary, the international shore fire connection

Are r nd ner e/r in d ndiin prper ried nd pprprie r e erie inended

oses should be in a good condition and properly fitted and rigged so as to prevent strain and stress beyond design limitations.

All flange connections should be fully bolted and any other types of connections should be properly secured.

It should be ensured that the hosesarms are constructed of a material suitable for the substance to be handled, taking into account its temperature and the maximum operating pressure.

Cargo hoses should be properly marked and identifiable with regard to their suitability for the intended operation.

3 Are pper eeie ped nd drip r in piin n rd nd re

Where applicable all scuppers on board and drain holes ashore should be properly plugged during the operations. Accumulation of water should be drained off periodically.

Both ship and etty manifolds should ideally be provided with fixed drip trays in their absence portable drip trays should be used.

All drip trays should be emptied in an appropriate manner whenever necessary but always after completion of the specific operation.

When only corrosive liquids or refrigerated gases are being handled, the scuppers may be kept open, provided that an ample supply of water is available at all times in the vicinity of the manifolds.

Are ned r nd ner nnein prper ered i n ne ed

nused cargo and bunker line connections should be closed and blanked. Blank flanges should be fully bolted and other types of fittings, if used, properly secured.

Are e nd errd dire e en n in e ed nd ii ered

xperience shows the importance of this item in pollution avoidance on ships where cargo lines and ballast systems are interconnected. Remote operating controls for such valves should be identified in order to avoid inadvertent opening.

If appropriate, the security of the valves in question should be checked visually.

Are r nd ner n id ed

Apart from the openings in use for tank venting, refer to question all openings to cargo tanks should be closed and gastight.

xcept on gas tankers, ullaging and sampling points may be opened for the short periods necessary for ullaging and sampling.

Closed ullaging and sampling systems should he used where required by international, national or local regulations and agreements.

l e reed n enin e ein ed

Agreement should be reached, and recorded, as to the venting system for the operation, taking into account the nature of the cargo and international, national or local regulations and agreements.

There are three basic systems for venting tanks:

. pen to atmosphere via open ullage ports, protected by suitable flame screens.

2. ixed venting systems which includes inert gas systems.

3. To shore through other vapour collection systems.

He e p/ en een pered in e ei ii nd e perin e en eriied

The operation of the pv vents should be checked using the facility provided by the manufacturer. urthermore it is imperative that an adequate visual, or otherwise, check is carried at this time to ensure the checklift facility is actually operating the valve. n occasions, a seied or stiff pv vent has caused the checklift drive pin to shear and the ship's personnel to assume, with disastrous consequences, that the vent was operational.

Are nd re n ppred pe nd

Are pre HF/UHF rneier n ppred pe

Battery operated hand torches and radio-telephone sets should be of a safe type which is approved by a competent authority. Shipshore telephones should comply with the requirements for explosion-proof construction, except when placed in a safe space in the accommodation.

radio-telephone sets may operate in the internationally agreed wave bands only.

The above mentioned equipment should be well maintained. Damaged units, even though they may be capable of operation, should not be used.

Are e ip in rdi rnier eri ered nd rdr ied

The ship's main radio station should not be used during the ship's stay in port, except for receiving purposes. The main transmitting aerials should be disconnected and earthed.

Satellite communications equipment may be used normally unless advised otherwise.

The ship's radar installation should not be used unless the master, in consultation with the terminal manager, has established the conditions under which the installation may be used safely.

Are eeri e pre eeri eipen dinneed r per

The use of portable electrical equipment on wandering leads should be prohibited in haardous ones during cargo operations and the equipment preferably removed from the haardous one.

Telephone cables in use in the shipshore communication system should preferably be routed outside the haardous one. Wherever this is not feasible, the cable should be so positioned and protected that no danger arises from its use.

3 Are exern dr nd pr in e din ed

xternal doors, windows and portholes in the accommodation should be closed during cargo operations. These doors should be clearly marked as being required to be closed during such operations, but at no time should they be locked.

Are ind pe ir ndiinin ni dinneed nd

Are ir ndiinin ine i peri e enr r pr ed

Window type air conditioning units should be disconnected from their power supply.

Air conditioning and ventilator intakes which are likely to draw in air from the cargo area should be closed.

Air conditioning units which are located wholly within the accommodation and which do not draw in air from the outside may remain in operation.

Are e reireen r e e e eipen nd er in ppine ein ered

pen fire systems may be used in galleys whose construction, location and ventilation system provides protection against entry of flammable gases.

In cases where the galley does not comply with the above, open fire may be used provided the master, in consultation and agreement with the terminal representative, has ensured that precautions have been taken against the entry and accumulation of flammable gases.

n ships with stern discharge lines which are in use, open fire in galley equipment should not be allowed unless the ship is constructed to permit the use of open fire in such circumstances.

Are in rein ein ered

Smoking on board the ship may only take place in places specified by the master in consultation with the terminal manager or his representative.

No smoking is allowed on the etty and the adacent area except in buildings and places specified by the terminal manager in consultation with the master.

Places which are directly accessible from the outside should not be designated as places where smoking is permitted. Buildings, places and rooms designated as areas where smoking is permitted should be clearly marked as such.

Are ned i rein ein ered

A naked light or open fire comprises the following: flame, spark formation, naked electric light or any surface with a temperature that is equal to or higher than the minimum ignition temperature of the products handled in the operation.

The use of open fire on board the ship, and within a distance of 2 metres of the ship, should be prohibited, unless all applicable regulations have been met and agreement reached by the port authority, terminal manager and the master. This distance may have to be extended for ships of a specialised nature such as gas tankers.

l ere priin r n eeren epe

In addition to the means of access referred to in question 3, a safe and quick emergency escape route should be available both on board and ashore. n board the ship it may consist of a lifeboat ready for immediate use, preferably at the after end of the ship.

3 Are iien pernne n rd nd re de i n eeren

At all times during the ship's stay at a terminal, a sufficient number of personnel should be present on board the ship and in the shore installation to deal with an emergency.

3 Are dee inin en in pe in e ip/re nnein

nless measures are taken to break the continuous electrical path between ship and shore pipework provided by the shipshore hoses or metallic arms, stray electric currents, mainly from corrosion prevention systems, can cause electric sparks at the flange faces when hoses are being connected and disconnected.

The passage of these currents is usually prevented by an insulating flange inserted at each etty manifold outlet or incorporated in the construction of metallic arms. Alternatively, the electrical discontinuity may be provided by the inclusion of one length of electrically discontinuous hose in each hose string.

It should be ascertained that the means of electrical discontinuity is in place, is in good condition and that it is not being by-passed by contact with an electrically conductive material.

3 He ere een en enre iien ppr eniin

Pumprooms should be mechanically ventilated and the ventilation system, which should maintain a safe atmosphere throughout the pumproom, should be kept running throughout the operation.

33 I e ip i pe ed din e e reireen r ed perin een reed

It is a requirement of many terminals when ballasting, loading and discharging that the ship operates without recourse to opening ullage and sighting ports. Such ships will require the means to enable closed monitoring of tank contents, either by a fixed gauging system or by using portable equipment passed through a vapour lock, and preferably backed up by an independent overfill alarm system.

3 H pr rern ine een nneed

If required, a vapour return line may have to be used to return flammable vapours from the cargo tanks to shore.

3 I pr rern ine i nneed e perin preer een reed

The maximum and minimum operating pressures and any other constraints associated with the operation of the vapour return system should be discussed and agreed by ship and shore personnel.

3 Are ip eeren ire nr pn ed exern

A set of fire control plans should be permanently stored in a prominently marked weathertight enclosure outside the deckhouse for the assistance of shoreside fire fighting personnel. **Re: SOLAS** A crew list should also be included in this enclosure.

If the ship is fitted, or required to be fitted, with an Inert Gas System the following questions should be answered.

3 I e Iner Se perin nd in d rin rder

The inert gas system should be in safe working condition with particular reference to all interlocking trips and associated alarms, deck seal, non-return valve, pressure regulating control system, main deck I line pressure indicator, individual tank I valves when fitted and deck pv breaker.

Individual tank I valves if fitted should have easily identified and fully functioning openclose position indicators.

3 Are de e in d rin rder

It is essential that the deck seal arrangements are in a safe condition. In particular, the water supply arrangements to the seal and the proper functioning of associated alarms should be checked.

3 Are iid ee in p/ reer rre

Checks should be made to ensure the liquid level in the pv breaker complies with manufacturer's recommendations.

He e ixed nd pre xen ner een ired nd re e rin prper

All fixed and portable oxygen analysers should be calibrated and checked as required by the company andor manufacturer's instructions. The in-line oxygen analyser recorder and sufficient portable oxygen analysers should be working properly. **Reer SOLAS nd**

Are ixed l prere nd xen nen rerder rin

All recording equipment should be switched on and operating correctly.

Are r n pere piie prere i n xen nen r e e

Prior to commencement of cargo operations, each cargo tank atmosphere should be checked to verify an oxygen content of or less by volume. lnerted cargo tanks should at all times be kept at a positive pressure.

3 Are e indiid n l e i ied rre e nd ed

or both loading and discharge operations it is normal and safe to keep all individual tank l supply valves if fitted open in order to prevent inadvertent under or over pressurisation. ln this mode of operation each tank pressure will be the same as the deck main l pressure and thus the pv breaker will act as a safety valve in case of excessive over or under pressure. If individual tank l supply valves are closed for reasons of potential vapour contamination or de-pressurisation for gauging, etc., then the status of the valve should be clearly indicated to all those involved in cargo operations. ach individual tank l valve should be fitted with a locking device under the control of a responsible officer. **Reer SOLAS ll**

Are e pern in re r perin re in e e ire e lner Pn dire perin re ee nd e erin e died

In the case of failure of the l plant, the cargo discharge, de-ballasting and tank cleaning should cease and the terminal to be advised. **Reer SOLAS ll**

nder no circumstances should the ship's officers allow the atmosphere in any tank to fall below atmospheric pressure.

PART C ULK LIUEFIE ASES

l inrin ie iin e neer d r e e ndin e r indin ere ppie nrer iniiin eriie

Information on each product to be handled should be available on board the ship and ashore before and during the operation.

Cargo information, in a written format, should include:

A cargo stowage plan

A full description of the physical and chemical properties necessary for the safe containment of the cargo

Action to be taken in the event of spills or leaks

Counter-measures against accidental personal contact

ire-fighting procedures and fire-fighting media

Procedures for cargo transfer, gas freeing, ballasting, tank cleaning and changing cargoes

Special equipment needed for the safe handling of the particular cargoes

Minimum allowable inner hull steel temperatures and

mergency procedures.

When cargoes required to be stabilised or inhibited are to be handled, ships should be provided with a certificate from the manufacturer stating:

Name and amount of inhibitor added

Date inhibitor was added and the normally expected duration of its effectiveness

Any temperature limitations affecting the inhibitor, and

The action to be taken should the length of the voyage exceed the effective lifetime of the inhibitors.

l e er pr e red r e

In cases where flammable andor toxic products are handled, water spray systems should be regularly tested. Details of the last tests should be exchanged.

During operations the systems should be kept ready for immediate use.

3 l iien ie preie eipen indin enined rein ppr nd preie in red r iedie e

Suitable protective equipment, including self-contained breathing apparatus, eye protection and protective clothing, appropriate to the specific dangers of the product handled, should be available in sufficient quantity for operations personnel both on board and ashore.

Storage places for this equipment should be protected from the weather and be clearly marked.

All personnel directly involved in the operation should utilise this equipment and clothing whenever the situation requires.

Personnel required to use breathing apparatus during operations should be trained in its safe use. ntrained personnel and personnel with facial hair should not be selected for operations involving the use of breathing apparatus.

Are d nd inerrrier pe prper inered r ied i dr ir reired

The spaces that are required to be inerted by the IM as Carrier Codes should be checked by ship's personnel prior to arrival.

Are ree nr e in rin rder

All ship and shore cargo system remote control valves and their position indicating systems should be regularly tested. Details of the last tests should be exchanged.

Are e reired r pp nd prer in d rder nd e xi rin prere een reed eeen ip nd re

Agreement in writing should be reached on the maximum allowable working pressure in the cargo line system during operations.

l reiein r i nr eipen in d rder

It should be verified that reliquefaction and boil-off control systems, if required, are functioning correctly prior to commencement of operations.

l e deein eipen prper e r e r ired nd in d rder

Span gas should be available to enable calibration of gas detection equipment. ixed gas detection equipment should be calibrated for the product to be handled prior to commencement of operations. The alarm function should have been tested and the details of the last test should be exchanged.

Portable gas detection instruments, suitable for the products handled, capable of measuring flammable, andor toxic levels, should be available.

Portable instruments capable of measuring in the flammable range should be calibrated for the product to be handled before operations commence.

Are r e e nd r rre e nd in d rder

Ship and shore cargo system gauges should be regularly checked to ensure that they are in good working order.

In cases where it is possible to set alarms to different levels, the alarm should be set to the required level.

Are eeren dn e rin prper

Where possible, ship and shore emergency shut-down systems should be tested before cargo transfers.

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Automatic shutdown valves may be fitted in the ship and the shore systems. Among other parameters, the action of these valves can be automatically initiated by a certain level being reached in the tank being loaded either on board or ashore.

Where valves are fitted and used, the cargo handling rate should be so adusted that a pressure surge evolving from the automatic closure of any such valve, does not exceed the safe working pressure of either the ship or shore pipeline system.

Alternatively, means may be fitted to relieve the pressure surge created, such as recirculation systems and buffer tanks.

A written agreement should be made between the ship and shore supervisor indicating whether the cargo handling rate will be adusted or alternative systems will be used the safe cargo handling rate should be noted in this agreement.

H inrin een exned eeen ip nd re n xi/ini eperre/prere e r e nded

Before operations commence, information should be exchanged between ship and shore representatives on cargo temperaturepressure requirements.

This information should be agreed in writing.

3 Are r n preed in inderen eriin ie ie n r perin re in prre

Automatic shut-down systems are normally designed to shut the liquid valves and, if discharging, to trip the cargo pumps, should the liquid level in any tank rise above the maximum permitted level. This level must be accurately set and the operation of the device tested at regular intervals.

If ship and shore shut-down systems are to be inter-connected, then, their operation must be checked before cargo transfer begins.

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ans should be run for at least minutes before cargo operations commence and then continuously during cargo operations.

Audible and visual alarms, provided at airlocks associated with compressormotor rooms, should be regularly tested.

Are r n reie e e rre nd reie e ein er nd ii diped

In cases where cargo tanks are permitted to have more than one relief valve setting, it should be verified that the relief valve is set as required by the cargo to be handled and that the actual setting of the relief valve is clearly and visibly displayed on board the ship. Relief valve settings should be recorded on the check list.

urthermore, the high pressure alarms should be set according to the relief valve setting.