

From: [Cross, Andrew](#)
To: [Stolzenberg Eric](#); [Wisniewski Luke](#)
Cc: [Kotsovolos, Nicholas](#)
Subject: RE: Maersk Inert Gas Conversation
Date: Tuesday, November 03, 2015 5:18:37 AM
Attachments: [image001.png](#)
[LR Class News No 22-2015.pdf](#)
[MT SMS N2.pdf](#)
[MT SMS N2 blanket.pdf](#)
[MT SMS Inerting Chem Cargoes.pdf](#)

Good day Luke and Eric,
Apologies for the delay.

As discussed last week, please see attached Maersk Tankers procedures and document from LR rgds the new procedures coming into force for vessels built after 01/Jan/2015, which I'm sure you are aware of.

Also as discussed, the Inerting of cargo tanks is based on the requirements of the charterparty/ voyage fixture notice, normally agreed based on the charterers requirements and the suitability of the vessel for the cargo and trade. Carla Maersk's voyage also stated in the voyage fixture – Quote **'VESSEL IS TO ARRIVE FULLY INERTED, CLEAN, AND SUITABLE TO LOAD THE ABOVE NOMINATED CARGO. MASTER/OWNER TO ADVISE CLEANING METHOD ASAP.'** This is a common statement in voyage fixtures.

As per Maersk Tankers procedures, we aim to inert all low flashpoint cargoes. See 'references' at the foot of each of the attached procedures for source of legislation/ guidance.

There are a few occasions where vessels may be requested not to use their own inert gas plant due to quality of the gas produced having a possible effect on cargo quality. In these cases MT evaluates the carriage of the cargo on a case by case basis and will always move to have the vessels tanks either purged with shore N2/ blanketed with shore N2 and vessel carrying additional N2 bottles to top up during voyage/ use of shore N2 during discharge.

Our vessels Carla Maersk/ Maersk Camilla/ Freja Maersk/ Frida Maersk were all specifically retrofitted with N2 generators for chemical trade (Methanol Specifically). These retrofits were carried out by previous owners for the trade, Brostrom, whom Maersk had purchased in 2008.

I have copied in Nick Kotsovolos. He shall be back in the office on the 9th Nov and is our SME for chemical cargoes and the N2 inerting procedures. Please revert to Nick or myself if you require any further information on N2 inerting of chemical cargoes.

Thanks & Best Rgds

Andy Cross

Vetting & Marine Operations Manager

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

From: Stolzenberg Eric [REDACTED]
Sent: 23 October 2015 17:07
To: Cross, Andrew [REDACTED]
Cc: Wisniewski Luke [REDACTED]
Subject: Maersk Inert Gas Conversation

Andy,

Thank you for taking our call today and forwarding the discussed information (SMS procedures and Chartering Agreement) with regard to IG systems and nitrogen blanketing cargos.

Please forward any information to Luke as I will likely be traveling in Europe the coming week.

Eric




[REDACTED]

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 MAERSK TANKERS	AUTHORISED BY: THH013	SHIPNET PROCEDURE ID: 06.520.01
	REVIEWED BY: SMI044	REVISION NUMBER AND DATE:
	PREPARED / EDITED BY: NKO029	2 / 15 FEB. 2013
SUBJECT:	Directions for Inerting of Chemical Cargoes	

06.520.01 - Directions for Inerting of Chemical Cargoes

Purpose

The purpose of this procedure is to define the conditions when tanks must be inerted for carriage of Chemical cargoes.

Scope

This procedure applies to Chemical Tankers, with fixed Inert Gas plants or Nitrogen systems, and covers the entire voyage life cycle from loading, through transit and discharge.

This procedure does not apply to Chemical Tankers that are not provided with a fixed Inert Gas Generating plant (IGG or N2 plant) as regulated under SOLAS or FSS Code(s).

Roles and responsibilities

The Master is responsible for implementation
The Chief Officer is responsible for compliance
The Chief Engineer is responsible for technical maintenance

Description

Procedure for MARPOL Annex I Cargoes

For Chemical Tankers engaged in carriage of Marpol Annex 1 products, refer to procedure ID Directions for Inerting with IGG Plant

Procedure for MARPOL Annex II Cargoes with Flash Point $\geq 60^{\circ}\text{C}$ (High Flash)

As a minimum, all vessels must comply with IBC code Tank Environment Control (column 'h') requirements. Charterer's voyage orders must be consulted, as they might require Inerting due to quality or local regulations.


Procedure for MARPOL Annex II Cargoes with Flash Point $< 60^{\circ}\text{C}$ (Low Flash)

Maersk Tankers requires all Low Flash Chemical cargoes to be carried under inert conditions; through all phases of the voyage. This is only applicable for vessels provided with a fixed Inert Gas Generating plant (either IGG or N2). Tankers not provided with a fixed system as regulated by SOLAS or FSS code(s) are exempted from this requirement.

The only exception shall be Inhibited or Oxygen dependant cargoes which should not be inerted as per IBC code.

Inerting may be done with either gas produced by onboard IGG Plant, N2 generator, Purging from shore and maintained by bottles onboard for the voyage.

Normally the tanks must be Inerted prior to loading.

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Inhibited, Oxygen Dependent and Self-Reactive Cargoes

Refer to procedure **06.551.01** Inhibited & Self Reactive Cargoes. Normally such cargoes shall not be inerted, irrespective of flash point.

Prior to loading any low flash inhibited cargoes, the marine operations department must be consulted and a thorough risk assessment undertaken.

Procedure for MARPOL Annex II Cargoes Inerted with IG Plant

There are certain Annex II cargoes that are not sensitive to inert gas and do not require use of Nitrogen. Even if they don't require Inerting under IBC code, Maersk Tankers requires Inerting the tanks for safety reasons (i.e. Low Flash Point). This is done under agreement between Operations and the Charterers.

Commonly such cargoes include Pygas, Benzene & MTBE.

In this case, the Inerting procedure will be the same as for handling low flash Annex 1 cargoes. However, in addition to the safety precautions outlined for Inerting with the IGG Plant, the following safety precautions must be considered.

- Crew exposure to possible toxic and/or carcinogenic vapors
- All purging and Gas Freeing must be done through the approved outlets as specified in the vessels P&A manual.
- All crew must be briefed in the operation
- All Ptbl gas detectors and personal Toxic gas monitors have been recently calibrated, tested and available for use.
- All crew issued with correct PPE and familiar with MSDS for cargo
- A Risk Assessment must be completed
- Refer to Procedure ID **06.721.01** Directions for Inerting with IGG Plant

Procedure for MARPOL Annex II Cargoes Inerted with Nitrogen


There are certain Annex II cargoes which are sensitive to inert gas and could be contaminated as a result of Inerting with IG Plant. Therefore Nitrogen (N2) must be used.

Commonly such cargoes include Alcohols such as Methanol & Ethanol.

Reference should be made to the following procedures for full guidelines on Inerting with Nitrogen:-

- **06.505.01** Precautions for use of Nitrogen
- **06.510.01** Inerting with Nitrogen Prior to Loading Chemicals
- **06.518.01** Nitrogen Blanketing after loading Chemicals

For vessels not provided with a N2 generating plant, but rather a fuel oil fired IGG installation, operations department must be consulted and advised. If alternate tonnage is not available then the vessel will be require to pre-purge with N2 prior to loading, ensure an adequate N2 bottle supply for the voyage, and lastly, it must be verified that N2 or VECS will be available at the discharge port.

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Loaded Voyage

On the loaded voyage all cargo carrying tanks shall be kept inerted and positive pressure (over 50mb) maintained. Checks to ascertain the pressure & oxygen content in the cargo tanks shall be made each day and recorded. Topping-up shall be carried out if necessary.

During the passage on chemical tankers with Hygroscopic cargo which was Inerted with Nitrogen from shore, the tank atmosphere will have to be monitored and if the Oxygen content rises to 8% the ullage space will have to be topped up with Nitrogen supplied from the stored Nitrogen Bottles. Vessels provided with N2 generating plant shall keep the tank atmospheres maintained by use of produced N2, either direct from the plant or from deck storage tank.

Care should be taken not to over pressurize the tank during topping up.

Personnel shall be aware of the dangers of Nitrogen as given in ICS TSG Chemicals ISGOTT and as mentioned in MSDS


Discharging

The pressure in cargo tanks shall be reduced before sampling, temperature measurement, etc., is undertaken. Throughout the entire discharge, steps shall be taken to ensure that cargo tanks which are being unloaded are supplied with inert gas with oxygen content below 5 per cent and that positive pressure is maintained in all tanks.

During discharge of a tank of which has been initially inerted with Nitrogen, will not require replacement of atmosphere with Nitrogen if a VECS is connected to the vessel from the receiving terminal. The Vapor return system must be functioning properly and guidance is provided in procedure **06.506.01** Discharge of Chemical cargoes with VECS.

References

Definitions
ICS Tanker Safety Guide - Chemicals IBC Code

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SUBJECT:	Inerting with Nitrogen Prior To Loading Chemicals	

06.510.01 - Inerting with Nitrogen Prior To Loading Chemicals

Purpose

The purpose of this procedure is to define the conditions when tanks must be purged and inerted with Nitrogen prior to loading.

Scope

This procedure applies to all Chemical Tankers where inerting or pre-purging a tank with Nitrogen is required before loading.

Role and responsibility

- The Master is responsible for implementation
- The Chief Officer is responsible for compliance

Definitions

NITROGEN BLANKET: A Positive pressure pad of Nitrogen introduced into the tank atmosphere **without** purging down the tank atmosphere to specific oxygen content prior to loading.

NITROGEN PURGING: The tank atmosphere is purged & inerted with Nitrogen to a desired oxygen content before loading, and upon completion of loading the tank is maintained under positive pressure at/or below a desired oxygen level.

Description


Requirement to purge with Nitrogen

- IBC code requirements
- Shippers' quality requirements, certain products will require a tank to have a specially controlled atmosphere. This may be due to flammability or due to air/moisture reactivity.
- Some products are very sensitive due to contamination or discoloration - and thus the use of inert gases produced by the vessels IGG plant is not viable. Therefore, high purity Nitrogen will be received from shore.
- Always check with your ship operator as to the requirements.

THE GREATEST DANGER IN NITROGEN PURGING IS OVER PRESSURIZATION OF THE CARGO TANK

Ship and Shore written Agreement

- Conduct meeting with terminal regarding the operation.
- The volume of required gas must be specified.
- Flow rate must be specified.
- Pressure must be specified.

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SUBJECT:	Inerting with Nitrogen Prior To Loading Chemicals	

- Size of hose must be discussed.

General Precautions

- All crew must be briefed in the operation.
- Tank pressures, either remotely or with a gauge placed on the tank/vent riser must be monitored.
- The tank/tanks(s) should be marked.
- NO TANK ENTRY is to be permitted in any cargo tank during the purging process.
- In case of vessels with enclosed deck truck (i.e. N-Class), the deck trunk ventilation system must be in continuous operation, and due care taken to ensure no nitrogen is released within the truck space.
- No purging shall commence until the Chief Officer has satisfied himself that the tank(s) to be purged can vent properly as to avoid over pressurization of the tank.

Purging via Cargo Line and venting to atmosphere

- Normally a Nitrogen hose will be connected to the vessel's manifold
- All Butterworth hatches should be fully opened
- The man way hatch cracked open as to prevent accidental entry, but allow the tank to vent.
- At no time should anyone close any of these hatching during the purging process.
- Care must be taken to avoid crew exposure.

Purging via Cargo Line and venting through the Vapour return system or P/V valve gas freeing outlet

- Nitrogen flow must not exceed the capacity of the PV valve.
- Refer to the P&A manual or Deck operating manual for vessel specifics.
- Care must be taken to avoid crew exposure.


Monitoring

- During the Nitrogen purging process, it is vital that either a surveyor or the Chief Officer monitor the tank atmosphere, keeping regular written check of the O₂ content and/or dew point.

Note

In the event the Charterer or Shipper requests to Nitrogen purge and pad after loading, this must be communicated to your ship operator, and prior approval received from Technical Operations - Nautical. When it is necessary to use shore nitrogen, **it is preferred to purge the tank prior to loading**. After such pre-purging and loading is completed, the tank atmosphere should be at the level required for the pad.


For normal Nitrogen padding or blanketing after loading - refer to N₂ padding / blanketing procedure ID **06.518.01** - Nitrogen Blanketing after loading.

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SUBJECT:	Inerting with Nitrogen Prior To Loading Chemicals		

ISGOTT 11.1.15.8 contains useful recommendations for receiving Nitrogen from shore.

References

- Definitions
- Definition of Terms for Tankers
- ICS Chemical Tanker Safety guide
- P & A Manual
- Deck Operating manual
- IBC code

 MAERSK TANKERS	AUTHORISED BY: PEE003	SHIPNET PROCEDURE ID: 06.518.01
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	PREPARED / EDITED BY: JSM022	0 / 21 JUL. 2014
SUBJECT:	Nitrogen Blanketing after Loading of Chemicals	

06.518.01 - Nitrogen Blanketing after Loading of Chemicals

Purpose

To ensure that correct and safe loading of special cargoes that requires a Nitrogen pad.

Scope

This procedure applies to Nitrogen blanketing of cargoes onboard Chemical Tankers, when the tank atmosphere will be undefined and not reduced to a specific O2 content

Definitions

NITROGEN BLANKET: A Positive pressure pad of Nitrogen introduced into the tank atmosphere **without** purging down the tank atmosphere to a specific oxygen content.

NITROGEN PURGING: The tank atmosphere is purged with Nitrogen to a desired oxygen content, and upon completion of loading the tank is maintained under positive pressure at/or below a desired oxygen level.

Roles and responsibilities

General Precautions


- Nitrogen blanketing is done once the tank is full, so the head space will have little volume.
- Nitrogen must be introduced slowly into the tank.
- A responsible officer must supervise the padding operation at all times.
- In case of Nitrogen blanketing tanks which contain inhibited cargo, care must be taken to ensure the Inhibitor is not Oxygen dependent. See procedure ID **06.551.01** Inhibited Cargoes for precautions and guidance.
- Care must be taken to prevent crew exposure to any vapors. All crew involved to be briefed in the operation prior to commencement and issued with appropriate PPE. See Procedure Nitrogen handling

The following procedures are to be used for blanketing / padding with Nitrogen when the tank atmosphere will be undefined and not reduced to a specific O2 content.

ISGOTT and the ICS Tanker Safety Guide Chemical contain useful recommendations for receiving Nitrogen from shore.

Blanketing After Loading with Open Venting

- Nitrogen supply to the ship must be done through a small diameter hose connected either to the cargo loading hose or direct to the ships manifold.
- Alternatively, Nitrogen may be introduced into the tank through the purge connection on the vent tower or direct to a connection on tank hatch.
- The Nitrogen supply hose should preferably not be larger than 1 in diameter.
- During the preloading conference with the terminal, it must be discussed what the rate of Nitrogen supply will be, and under NO CIRCUMSTANCES should it exceed the capacity of the PV valve for the tank.

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SUBJECT:	Nitrogen Blanketing after Loading of Chemicals	

- Always ensure the ullage hatch or a small hatch with flame arrestor screen fitted is left open.
- Crew exposure to any vapors should be avoided. All crew involved in the operation must wear appropriate PPE.
- After the required amount of nitrogen has been supplied to the tank, the hatches should be closed and tank pressure increased SLOWLY to about 100mb.
- A responsible person should be standing by at the manifold to close back on the valve Vessel to maintain a daily log of tank pressures if required.

Pre-Cautions when loading Hot products


- The danger here is that the product in the vessels tanks should normally be quite hot, and cold nitrogen introduced into the tank can cause violent expansion of the gas - causing high risk of overflow if the tank is full.

Blanketing after loading with Controlled Venting (Without Vapour Return)

- Application of a Nitrogen blanket with the tank in closed condition can be dangerous and result in tank rupture if not done properly.
- There is a high risk of over pressurization of the tank and rupture/structural failure.
- A pressure gauge reading 0-500 mbar should be fitted to the tank.
- Don't rely on computer based pressure readings as they may be too slow to react.
- The P/V valve should be placed in the open position
- Nitrogen supply to the ship must be done through a small diameter hose connected either to the cargo loading hose or direct to the ship's manifold and the nitrogen the bobbles through the cargo. **HOWEVER, this method is NOT allowed for high viscous cargoes**
- Alternatively, Nitrogen may be introduced into the tank through the purge connection on the vent tower, via the inert gas line or direct to a connection on tank hatch.
- The Nitrogen supply hose should preferably not be larger than 1 in diameter. During the preloading conference with the terminal, it must be discussed what rate of Nitrogen supply will be, and under NO CIRCUMSTANCES should it exceed the capacity of the PV valve for the tank.
- Carefully open the nitrogen supply
- When the required volume of nitrogen has been placed in the tank, reduce the Nitrogen supply to minimum and set the PV valve to auto position. Closely monitor the tank pressure.
- When desired pressure has been reached, shut off the nitrogen supply.

Blanketing after loading with Controlled Venting (With Vapour Return)

- Application of a Nitrogen blanket with the tank in closed condition is dangerous and result in tank rupture if not done properly.
- There is a high risk of over pressurization of the tank and rupture/structural failure.
- A pressure gauge reading 0-500 mbar should be fitted to the tank.
- Don't rely on computer based pressure readings as they may be too slow to react.
- Ensure the Vapor return system remains open during the procedure
- The PV valve should be set to the Auto position
- Nitrogen supply to the ship must be done through a small diameter hose connected either to

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SUBJECT:	Nitrogen Blanketing after Loading of Chemicals	

the cargo loading hose or direct to the ships manifold and the nitrogen the bobbles through the cargo. **HOWEVER, this method is NOT allowed for high viscous cargoes.**

- The Nitrogen supply hose should preferably not be larger than 1 in diameter. During the preloading conference with the terminal, it must be discussed what rate of Nitrogen supply will be, and under NO CIRCUMSTANCES should it exceed the capacity of the PV valve for the tank.
- Ensure cargo manifold and drop valves are open to the tank
- Carefully open the nitrogen supply
- When the required volume of nitrogen has been placed in the tank, throttle back on the vapor return valve. Closely monitor the tank pressure.
- Once the desired positive pressure in the tank has been achieved, close both the Nitrogen supply and Vapor return valves simultaneously. Never close the Vapor return first.

Nitrogen purging after Loading to a desired Oxygen Content

- This should normally be avoided
- Should a cargo require a Nitrogen blanket after completion of loading, with the tank atmosphere purged down to a particular oxygen content - it is preferred to Nitrogen purge the tank prior to loading.
- This will ensure the tank is totally dry, and during the loading process the product will not be exposed to oxygen. Experience has shown that Nitrogen purging and padding after loading will not always ensure product quality.
- During the loading process, the product will pick up oxygen if the tank has not been pre-purged.
- During the voyage, the oxygen will slowly dissolve out of the product and reduce the effectiveness of the Nitrogen Pad.
- See procedure for Inerting with Nitrogen. ID **06.510.01** Inerting with Nitrogen prior to Loading
- Should a Shipper or Charterer request the tank to be purged and padded after loading, contact Technical Operations Nautical Dept. for prior approval.

NEVER ATTEMPT TO NITROGEN BLANKET A TANK WITH A NITROGEN SUPPLY VOLUME THAT IS GREATER THAN THE CAPACITY OF THE PV VALVE.

****** TANK RUPTURE CAN OCCUR! ******

References

- Definition of Terms for Tankers
- Definitions
- IBC Code
- ICS Chemical tanker safety guide