

Economic Commission for Europe

Inland Transport Committee

Working Party on the Transport of Dangerous Goods

English

13 June 2017

Joint Meeting of Experts on the Regulations annexed to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN)

Thirty-first session

Geneva, 28-31 August 2017

Item 4 (b) of the provisional agenda

**Proposals for amendments to the Regulations annexed to ADN:
other proposals**

Addenda to document ECE/TRANS/WP.15/AC.2/2017/43

Submitted by EBU and ESO

Addendum 1 Report inspection interval PO tanks – Tank Assist

Consultation Report

Case: Inspection interval
barge's tanks
Propylene Oxide
Report number: 1721004/01
Date: 07th March 2017

TANKASSIST B.V.
Bellinistraat 98
NL-2901 KA Capelle a/d IJssel
Netherlands
Tel: +31 (0)10-7527350
Fax: +31 (0)10-7527352
www.tankassist.com
info@tankassist.com



Principal:
Chemgas Shipping B.V.,
Gedempte Zalmhaven 4G,
3011 BT, Rotterdam,
Netherlands.

Objective:
Study and report causes for increased inspection interval ADN cargo tanks involved in transport of Propylene Oxide.

TO WHOM IT MAY CONCERN

Propylene Oxide (UN 1280) is carried on inland waterways in Europe by barges regulated by European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN). In ADN 3.2 Table C, column 20, an additional requirement is enforced to the carriage of Propylene Oxide. Requirement 12 holds a number of requirements related specifically to Alkylene Oxides and more specific to Propylene Oxide. Requirement 12e stipulates a periodic inspection of cargo tanks engaged in dedicated transport of Propylene Oxide at intervals not exceeding 2.5 years.

Having studied international maritime conventions it looks ADN requirement 12 in total is more or less copied from the International Code for Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) which also sourced the remark related to Propylene Oxide in the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code).

Obviously the International Maritime Organization's Maritime Safety Committee (MSC) had concerns at the time of adoption for increased corrosion rates of steel tanks engaged in dedicated transport of specifically Propylene Oxide.

According to ADN transport of Propylene Oxide requires a type 1 barge tank, an independent (stand alone) tank, which, practically, is only to be found on board type G barges. For good understanding we need to realize that the source of requirement 12, the IBC Code,

Consultation Report

Case: Inspection interval
barge's tanks
Propylene Oxide

Report number: 1721004/01

Date: 07th March 2017

TANKASSIST B.V.
Bellinistraat 98
NL-2901 KA Capelle a/d IJssel
Netherlands
Tel: +31 (0)10-7527350
Fax: +31 (0)10-7527352
www.tankassist.com
info@tankassist.com



allows a type 2 gravity tank (tank part of vessel's construction) to carry Propylene Oxide. The gravity tank has only a design pressure of 0.07 MPa (700 mbar) which will in many situations be insufficient to withhold the combined Propylene Oxide and Nitrogen pressure in the tank's atmosphere. The IBC Code therefore stipulates that if the design pressure is less than 0.06 MPa, the vessel has to be equipped with a cooling system able to control the cargo temperature and the consequent vapour pressure sufficiently.

In that respect and in combination with an onboard cooling system, it was expected, and indeed equipped onboard vessels with dedicated Propylene Oxide tanks, that Owners would insulate these tanks where possible in order to minimize temperature increase of the cargo, saving fuel for the cooling equipment.

Presence of insulation, often containing metal oxides, fixed to the outside of the cargo tank in combination with condensed water (wet insulation) due to temperature differences between cooled Propylene Oxide and the atmosphere, typically in warmer climates, may cause increased corrosion of the outside of the steel cargo tank, although adjacent spaces to the cargo tank are purged to lower oxygen levels. Instead of thickness measurements on the outside of the tank where insulation would have to be removed, same measurements could be taken from the inside for which man entry would have to be made possible.

Since ADN requires a type 1 tank found on type G barges, temperature control is not required since type G barges are equipped with pressure tanks with a maximum working pressure of 1.58 MPa (15.8 bar) sufficient to withhold Propylene Oxide vapour pressures well above any temperature which can be practically expected. As a result these barges are not constructed with cooling equipment onboard and insulation applied to the cargo tanks. This means the concerns for MSC resulting in an increased inspection interval, are not founded for ADN barges.

Chemistry literature supplied by CEFIC and the Kirk-Othmer Encyclopedia of Chemical Technology also conclude Propylene Oxide has no corrosive properties to steel and the bond between the Oxygen atom and both Carbon atoms inside the Propylene Oxide molecule is

Consultation Report

Case: Inspection interval
barge's tanks
Propylene Oxide
Report number: 1721004/01
Date: 07th March 2017

TANKASSIST B.V.
Bellinistraat 98
NL-2901 KA Capelle a/d IJssel
Netherlands
Tel: +31 (0)10-7527350
Fax: +31 (0)10-7527352
www.tankassist.com
info@tankassist.com



specifically strong that liberation of oxygen from the Propylene Oxide molecule is impossible under storage and transport conditions.

Increased oxidation of steel of barge's tanks inner hull is highly unlikely if not impossible due to enforcement of decreased oxygen levels in the tank atmosphere in both loaded and empty condition. The mandatory 2% (vol.) limit is in practice lowered to 0.5% (vol.) and lower to even 0.05% (vol.) by charterers (see Annex 1/Dow Chemical specifications).

Information supplied by the same charterers like Shell, DOW and others also indicate the specifications of corrosive elements in Propylene Oxide are very low. At these levels no corrosion of steel barge's tanks can be expected with referred elements acting as oxidizers. We refer to Annex 1 of this document, DOW Chemical Sales Specification of Propylene Oxide where acidity, alkalinity and Chlorides are tested and proven to be at very low levels.

Dedicated transport of Propylene Oxide reduces chances of contamination with incompatible substances as documented ADN requirement 12b to zero while additional incompatible substances not carried as cargo and documented in the Wiley Guide to Chemical Incompatibilities such as clay-based absorbents and Magnesium Oxide present in mineral wool insulation are not present onboard ADN type G barges engaged in dedicated transport of Propylene Oxide.

Together with owners' report of inspections of barge's tanks engaged in dedicated transport of Propylene Oxide which don't report increased corrosion of the tanks' surface including presence of heavy rust deposits, we conclude the increased inspection interval of barge's tanks carrying Propylene Oxide is superfluous if mentioned tanks are not insulated, which is common practice not to insulate tanks on a type G barge.

Fred Burgmeijer,

Consultant Oil-, Chemical- and LPG transport,
TankAssist B.V.

Annex 1

THE DOW CHEMICAL COMPANY

Page: 1

SALES SPECIFICATION

Date Printed: 28 JUL 2004

SPECIFIED MATERIAL: 00006141-S

Effective: 29 JUN 2004
Supersedes: 21 DEC 1999

NAME: Propylene.Oxide

MATERIAL DESCRIPTION:

Color: colorless

Odor: ether

Appearance/Physical State: liquid

TEST REQUIREMENTS

TEST ITEM AND CONDITION	LIMIT	UNIT	METHOD	N
Assay, calculated	99.97 Min	% wt	DOWM 102001	
Acidity, as acetic acid, volumetric basis	20 Max	ppm	DOWM 101370	
Aldehydes	30.0 Max	ppm	DOWM 102001	
Alkalinity	5 Max	ppm	DOWM 101370	1
Appearance, clear/matter free	Pass		Visual	
Carbon Dioxide	10 Max	ppm	TPO-G7	2
Chlorides	10.0 Max	ppm	DOWM 102001	3
Color, Pt-Co	5 Max		ASTM D5386	
Ethylene Oxide	100 Max	ppm	DOWM 102001	
Hydrocarbons/Ethers	10 Max	ppm	DOWM 102001	
Methanol	10 Max	ppm	DOWM 102001	
NVM, per 100mL	0.004 Max	g	TPO-G6	
Water Content	100 Max	ppm	ASTM E203	

Continued on Next Page

SPECIFIED MATERIAL: 00006141-S
NAME: Propylene.Oxide

Effective: 29 JUN 2004

TEST REQUIREMENTS (CONTINUED)

TEST REQUIREMENTS NOTES:

1. as potassium hydroxide
2. analyze only if acid high
3. as Cl, compare to standard.

SHELF LIFE

CONTAINER

SHELF LIFE

Bulk

6 month

STORAGE:

Oxygen <0.05%

NOTES


1. DO NOT RETURN PRODUCT, for safety & security reasons, without prior consultation with a qualified Dow PO representative.

READ PRECAUTIONARY INFORMATION AND MATERIAL SAFETY SHEETS. THIS PRODUCT IS SHIPPED IN COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS REGARDING CLASSIFICATION, PACKAGING, SHIPPING AND LABELING.

Addendum 2 Inspection report and testing on cargo tanks of ex-Chemgas 17 – Manufacturer Siemerink



Inspection and testing on cargo tanks ex-Chemgas 17	
Purchaser	Chemgas Shipping
Req. No.	Chemgas 20+21
Siemerink ref. no.	GT-5944
Siemerink doc. number	GT-5944-IT-1

Revision	Issue Date	Signed	Description / Changes	Reviewed By QA department Siemerink B.V.
0	30-03-2017		For information	L. Koyen, QA-manager.



General			
Manufacturer: (modifications only)	Siemerink B.V.	Customer	Chemgas
Manufacturer reference.:	GT-5944	Document no.	GT-5944-IT rev.0
Name	ex- Chemgas 17	Item no:	Tank 1 / Tank 2 / Tank 5 / Tank 6
Date	March 2017	Condition	Used since 1977

Introduction :

Related to a modification of the above mentioned cargo tanks an inspection to determine the general condition after 40 years of service has been made.

The actual wall thickness has been compared to the original thickness as mentioned on calculations from an earlier modification in 1996.

Furthermore, as part of the scope of modification works was adding a new nozzle, thus giving an opportunity to perform an examination of the material condition on the material that was cut out. The microstructures of the inside of the tank shell and the outside of the tank shell were compared.

Finally a global visual inspection was performed of the inside surface of the tanks.

Investigations:

The wall thickness was measured on each shell course on 4 locations after removal of the coating to expose the bare material.

Considering the original nominal wall thickness of 20,8 mm, all of the measured locations would still satisfy the common current day new plate thickness tolerance class A (-0.6/+1.3, EN 10029) i.e. a wall thickness between 20,2 and 22,1mm. See table 1-4 for the measured thicknesses. No wall thickness reduction is observed.

A micrographic specimen was prepared from the cut-out of one of the shell plates and it was examined on both the inside and outside of the shell plate. The inside of the tank showed an identical structure to the outside without any signs of negative effects from the cargo-medium and a similar structure as could be expected for new production plates of a comparable grade (See Element Materials Technology test report SIE012-17-03-25477-1)

The global inspection of the internal tank surface showed a similar surface condition throughout all the tanks with no sign of degradation of the surface either generally or locally. Please see images 1 through 3

Conclusion :

Based on the above data we can conclude that the stored cargo medium does not affect the tank material and all tanks are considered to be still in excellent condition and fit for extended use.

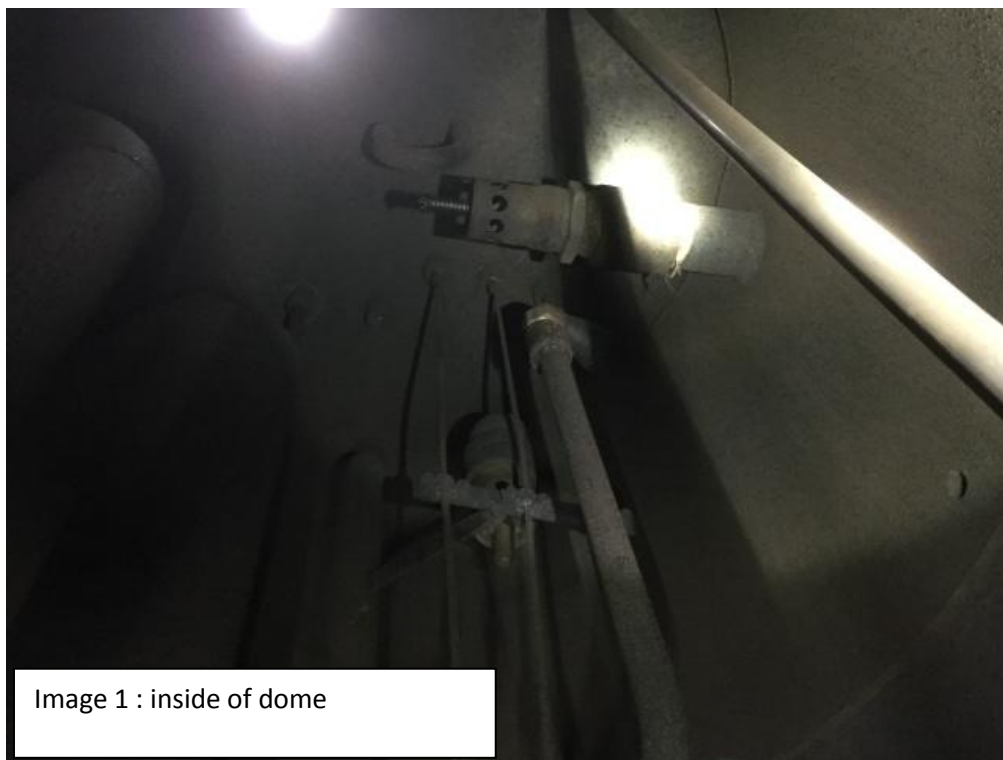


Image 1 : inside of dome

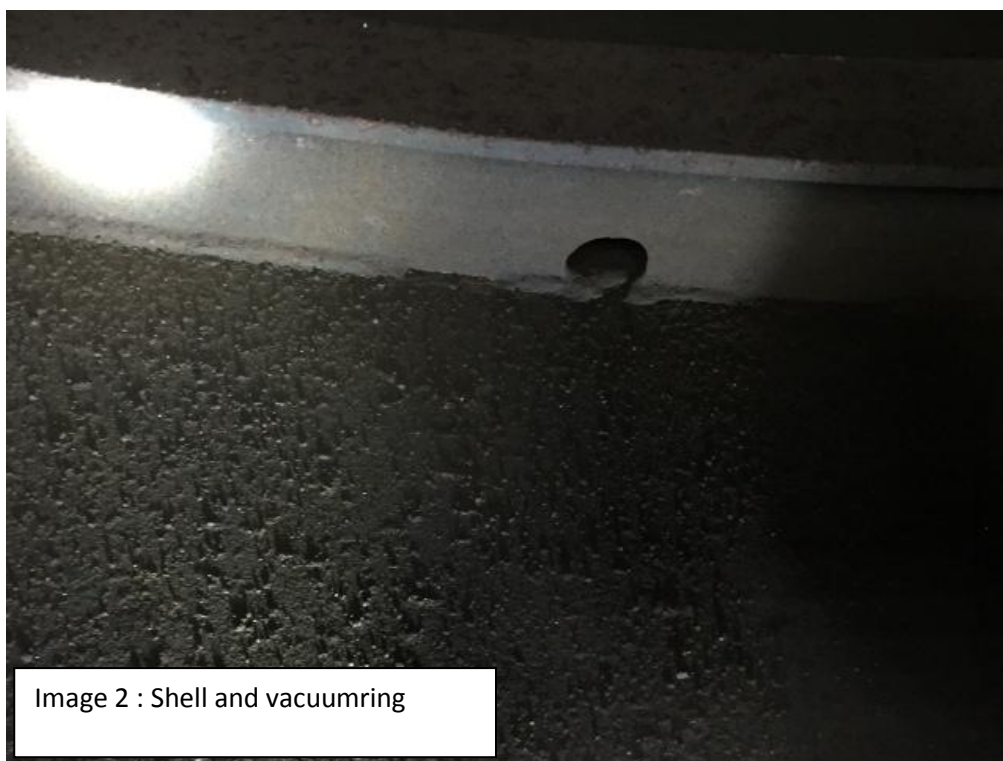


Image 2 : Shell and vacuumring



Image 3 : Shell and sump



Table 1: Wall thickness measured on tank 1 (mm)

<i>Measured 1 Head front</i>	<i>Measured 2 Head front</i>	<i>Average Head front</i>	<i>Measured 1 Head rear</i>	<i>Measured 2 Head rear</i>	<i>Average Head rear</i>
22,1	21,6	21,9	21,9	22,0	22,0
<i>Shell</i>	<i>Measured 1</i>	<i>Measured 2</i>	<i>Measured 3</i>	<i>Measured 4</i>	<i>Average</i>
<i>A</i>	21,5	21,6	21,5	21,5	21,5
<i>B</i>	21,0	20,9	21,0	20,9	21,0
<i>C</i>	21,5	21,5	21,5	21,6	21,5
<i>D</i>	21,0	21,0	21,1	21,0	21,0
<i>E</i>	21,2	21,2	21,2	21,1	21,2
<i>F</i>	20,9	20,8	21,0	20,9	20,9
<i>G</i>	20,8	20,7	20,8	20,8	20,8
<i>H</i>	20,7	20,9	20,7	20,8	20,8

Table 2: Wall thickness measured on tank 2 (mm)

<i>Measured 1 Head front</i>	<i>Measured 2 Head front</i>	<i>Average Head front</i>	<i>Measured 1 Head rear</i>	<i>Measured 2 Head rear</i>	<i>Average Head rear</i>
21,1	21,1	21,1	21,6	21,4	21,5
<i>Shell</i>	<i>Measured 1</i>	<i>Measured 2</i>	<i>Measured 3</i>	<i>Measured 4</i>	<i>Average</i>
<i>A</i>	20,9	20,7	20,9	20,8	20,8
<i>B</i>	20,7	20,7	21,1	21,1	20,9
<i>C</i>	21,1	21,1	21,2	21,2	21,2
<i>D</i>	21,2	21,2	21,2	21,2	21,2
<i>E</i>	20,8	20,8	20,6	20,5	20,7
<i>F</i>	20,9	21,0	20,9	21,0	21,0
<i>G</i>	21,0	21,0	20,8	21,0	21,0
<i>H</i>	20,9	20,8	20,8	20,7	20,8



Table 3: Wall thickness measured on tank 5 (mm)

<i>Measured 1 Head front</i>	<i>Measured 2 Head front</i>	<i>Average Head front</i>	<i>Measured 1 Head rear</i>	<i>Measured 2 Head rear</i>	<i>Average Head rear</i>
21,7	21,7	21,7	21,8	21,8	21,8
<i>Shell</i>	<i>Measured 1</i>	<i>Measured 2</i>	<i>Measured 3</i>	<i>Measured 4</i>	<i>Average</i>
<i>A</i>	21,3	21,4	21,2	21,1	21,3
<i>B</i>	21,2	21,2	21,3	21,2	21,2
<i>C</i>	20,9	20,9	20,9	20,9	20,9
<i>D</i>	21,5	21,7	21,6	21,6	21,6
<i>E</i>	21,7	21,7	21,6	21,6	21,7
<i>F</i>	20,7	20,7	20,6	20,6	20,7
<i>G</i>	20,9	20,9	20,8	20,8	20,9
<i>H</i>	21,1	21,1	21,1	21,1	21,1

Table 4: Wall thickness measured on tank 6 (mm)

<i>Measured 1 Head front</i>	<i>Measured 2 Head front</i>	<i>Average Head front</i>	<i>Measured 1 Head rear</i>	<i>Measured 2 Head rear</i>	<i>Average Head rear</i>
21,9	21,9	21,9	21,2	21,1	21,2
<i>Shell</i>	<i>Measured 1</i>	<i>Measured 2</i>	<i>Measured 3</i>	<i>Measured 4</i>	<i>Average</i>
<i>A</i>	21,1	21,0	21,2	21,0	21,1
<i>B</i>	20,8	20,7	21,0	20,9	20,9
<i>C</i>	21,3	21,2	21,2	21,2	21,2
<i>D</i>	21,3	21,3	21,3	21,4	21,3
<i>E</i>	21,6	21,7	21,5	21,6	21,6
<i>F</i>	21,1	21,3	20,9	21,1	21,1
<i>G</i>	20,6	20,7	20,7	20,8	20,7
<i>H</i>	20,7	20,8	20,6	20,8	20,7

Siemerink B.V.
 Centraleweg 3
 4931 NA GEERTRUIDENBERG

Date : 27-3-2017
 Element report number : SIE012-17-03-25477-1
 Customer reference : GT 5944

TEST REPORT

Item Description: Gastank 72.003.6_ ½ of ex-Chemgas 17.
 Material type and grade: Carbon steel STE380
 Identification on Sample: Reference number
 Size: 150 x 15 x 20.8 mm
 Condition: In use for the last 40 years.

Investigator/Author: S. Murton

MICROSTRUCTURE PHOTO REPORT

Inner surface



Light microscope

Direct ●
 Replica ○

Polishing method

Mechanical ●
 Electrolytic ○

Etching method

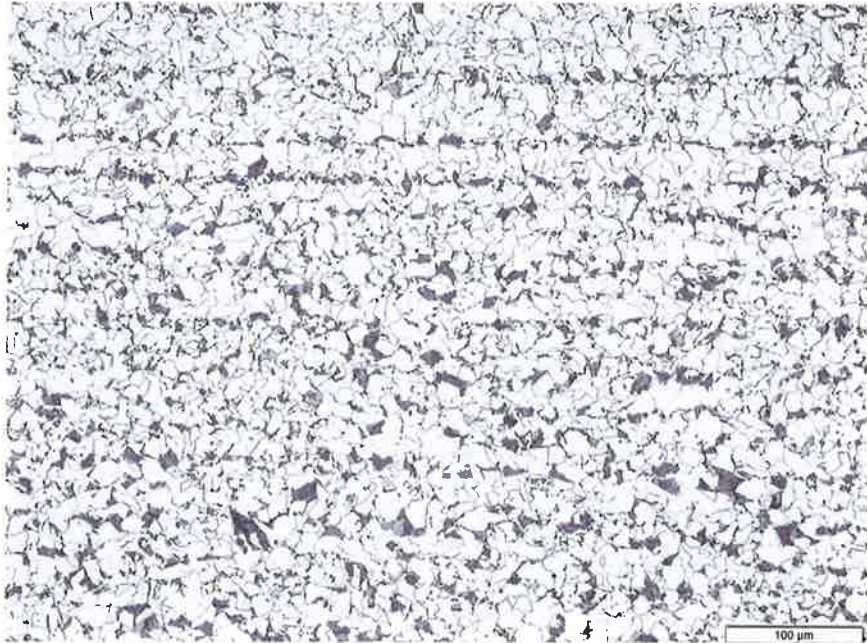
Chemical ●
 Electrolytic ○

Etching reagent:
 3% Nital

Magnification: ca.200x

Structure: The microstructure of the inner surface showed a matrix of ferrite with pearlite. No deleterious constituents were observed in the cross-section.

outer surface



Light microscope

Direct ●
Replica ○

Polishing method

Mechanical ●
Electrolytic ○

Etching method

Chemical ●
Electrolytic ○

Etching reagent:
3% Nital

Magnification: ca.200x

Structure: The microstructure of the outer surface showed a matrix of ferrite with pearlite. No deleterious constituents were observed in the cross-section.



element™
H. J. Jan Peter van Houten

Element Materials Technology

All characteristics of the above object(s) have, as far as accessible and relevant, been verified by Element Materials Technology Rotterdam b.v. (Element). Other information was provided by the purchaser. This information was verified as far as possible and has been copied into this report, unchanged. Element does not bear responsibility for the correctness of this submitted information. Any kind of "witnessing" and conclusions by a third party is not covered by the RVA accreditation L063 and is no part of the Element report. We hereby certify that the reported test data is correct and that the above object(s) was (were) tested/examined in accordance with purchaser's requirements and/or the above procedure(s) and/or code(s)/specification(s). On occasion a test is subcontracted by Element, the accreditation number of the subcontracted party is reported. Interpretations, opinions, conclusions and advice are partly based on the examination results and partly on information supplied by the purchaser. This report has legal value only when furnished with an authorized signature. If, upon reproduction, only part of this report is copied, Element will not bear any responsibility for content, purport and conclusions of that reproduction.

Addendum 3 Class inspection report including cargo tank inspection data of mts Chubasco

NON DESTRUCTIVE TESTING REPORT
NIET DESTRUCTIEF ONDERZOEK RAPPORT

Page 1 of 15

MM order nr.: **ND 176326**

Report no. **RI555845712**
Rapport nr. rev.0

Client: Klant:	Chemgas	Project: Project:	mts CHUBASCO		
Test location: Plaats onderzoek:	Kolner Schiffswerft Koln	Subject: Onderwerp:	Photo impression		
Order number: Order nummer:	Per tel				
Reference client: Referentie klant:	mr. Rolf Neukirchen	Subject no.: Werkstuk nr.:	All compartments	Request no.: Opdracht nr.:	Per tel
Examination: Soort onderzoek:	Photo report	Drawing no.: Tekening. nr.:	n.a	Heat treat: Warmtebeh.:	n.a
Specification: Specificatie:	n.a	Material type: Materiaal soort:	n.a	Material thickn.: Materiaal dikte:	n.a
Acceptance: Acceptatie:	n.a	Weld process: Las methode:	n.a	Weld preparation: Las voorbereiding:	n.a

VISUAL INSPECTION
VISUEEL ONDERZOEK

VT

Procedure: Procedure:	MM	Revision: Revisie:		Weld gauge: Las kaliber:	ID. No.: MM
Light intensity: Licht sterkte:	Lux	Temperature: Temperatuur:	10 °C	Inspection equipment: Inspectie apparatuur:	ID. No.: MM

Part examined:
Onderzochte gedeelte:

All Cargo tanks, Ballast tanks and void spaces have been inspected.


Note; All sediment and mud from the ballast tanks and the void spaces has been removed and all tanks are very clean.
Also the cargo tanks are very clean

Welder(s)/Lasser(s):

Remarks/Opmmerkingen:

Time and/or date of examination:
Tijd en/of datum van onderzoek:

Result according to procedure and acceptance criteria:
Resultaat volgens procedure en acceptatiecriteria:

Inspector/Inspecteur(s) Rien van de Velde	Level:	Manufacturer/Fabrikant:	Client/Klant:	Cert.Authority/Keur instantie:
				
Date of report: Rapport datum:	30-05-2017	Fabr. date/time: Fabr. datum/tijd:	Date: Datum:	Date: Datum:

VT-Rev. w8.3



Chainlocker, False Bottom and sides, coating is in good condition



Chain locker, Deck head



Chain locker, Chain



Fore peak, is dry space and nicely coated

Inspector/Inspecteur(s)
Rien van de Velde

Level:

Manufacturer/Fabrikant:

Client/Klant:

Cert. Authority/Keur instantie:



Date of report:
Rapport datum: 30-5-2017

Date:
Datum:

Date:
Datum:

Date:
Datum:



Fore Peak, General view



Forward machinery space



Forward machinery space



Forward machinery space (sea chest)


<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------

PHOTO SHEET
FOTOBLAD

Page 4 of 15

MM order nr.: ND 176326

Report no.
Rapport nr.

RI555845712

rev.0



Forward Void space no 1 (Deck head), coating in good condition




Forward void space no 1 (Tank fundation and bottom plating) very clean



Forward void space no 1 (bottom plating)



Forward void space no 1 (Bottom web frames)

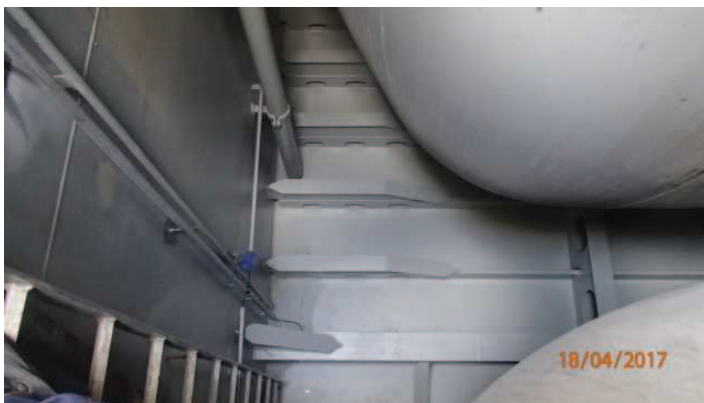
<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------



Middle void space (Deck head)



Middle void space (piping underneath the deck head)



Middle void space (Bottom view)



Middle void space (Cargo tank Foundation) very clean and in good condition

Inspector/Inspecteur(s)
Rien van de Velde

Level:

Manufacturer/Fabrikant:

Client/Klant:

Cert. Authority/Keur instantie:



Date of report:
Rapport datum: 30-5-2017

Date:
Datum:

Date:
Datum:

Date:
Datum:



Aft void space (General view)



Aft void space (Bottom plating)



Aft void space (Bottom web frames)



Aft void space (Cargo tank Foundation)


<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------

PHOTO SHEET
FOTOBLAD

Page 7 of 15

MM order nr.: ND 176326

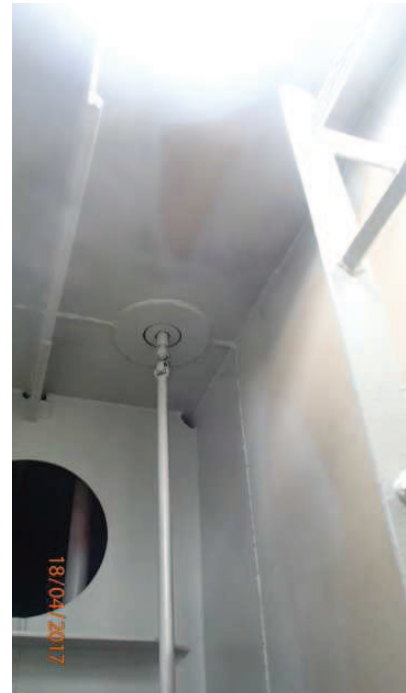
Report no.
Rapport nr.

RI555845712

rev.0



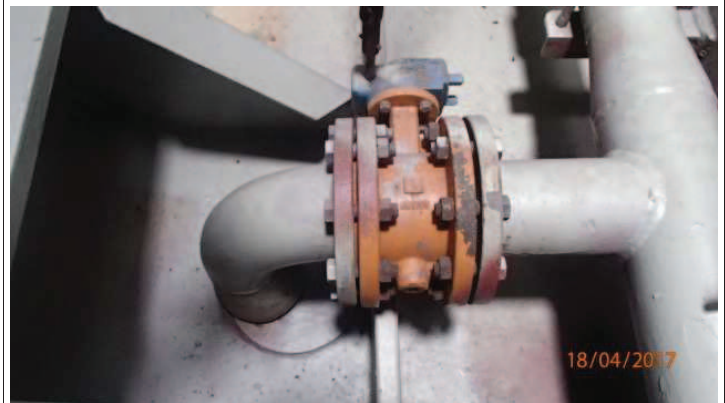
Water Ballast tank no 1, Portside (Web frame)



Water Ballast tank no 1, Portside (Deck head)



Water Ballast tank no 1, Portside (Bottom plating)



Water Ballast tank no 1, Portside (Bell mouth and suction line)


<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------

PHOTO SHEET
FOTOBLAD

Page 8 of 15

MM order nr.: ND 176326

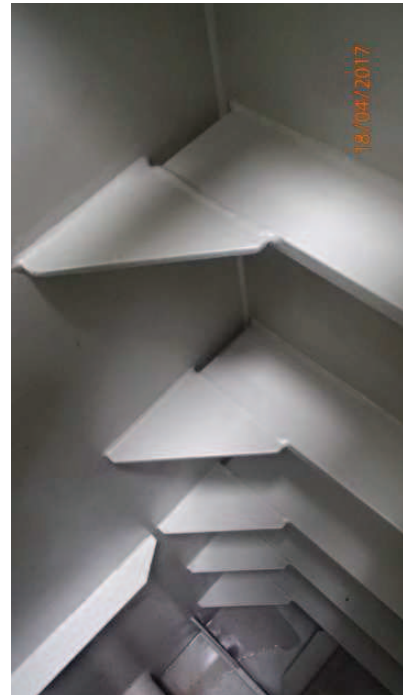
Report no.
Rapport nr.

RI555845712

rev.0



Water Ballast tank no 2, Portside (Transverse bulkhead)



Water Ballast tank no 2, Portside (Transverse bulkhead)



Water Ballast tank no 2, Portside (Web frame)



Water Ballast tank no 2, Portside (Bottom plating)


<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------

PHOTO SHEET
FOTOBLAD

Page 9 of 15

MM order nr.: ND 176326

Report no.
Rapport nr.

RI555845712

rev.0



Water Ballast tank no 3, Portside




Water Ballast tank no 3, Portside (Bottom valve)



Water Ballast tank no 3, Portside (Webframes)



Water Ballast tank no 3, Portside (General view on bottom)

<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------



Water Ballast tank no 1, Starboardside (Bellmouth)



Water Ballast tank no 1, Starboardside (Bellmouth)



Water Ballast tank no 1, Starboardside (General view)



Water Ballast tank no 1, Starboardside (Bottom plug)


<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------

PHOTO SHEET
FOTOBLAD

Page 11 of 15

MM order nr.: ND 176326

Report no.
Rapport nr.

RI555845712

rev.0



Water Ballast tank no 2, Starboardside (Web frames)



Water Ballast tank no 2, Starboardside (Bottom plating)



Water Ballast tank no 2, Starboardside (transverse bulkhead)


<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------

PHOTO SHEET
FOTOBLAD

Page 12 of 15

MM order nr.: ND 176326

Report no.
Rapport nr.

RI555845712

rev.0



Water Ballast tank no 3, Starboardside (Bottom valve)



Water Ballast tank no 3, Starboardside (Previous bottom opening)



Water Ballast tank no 3, Starboardside (Web frames)



Water Ballast tank no 3, Starboardside (Deck head)


<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------

PHOTO SHEET
FOTOBLAD

Page 13 of 15

MM order nr.: ND 176326

Report no.
Rapport nr.

RI555845712

rev.0



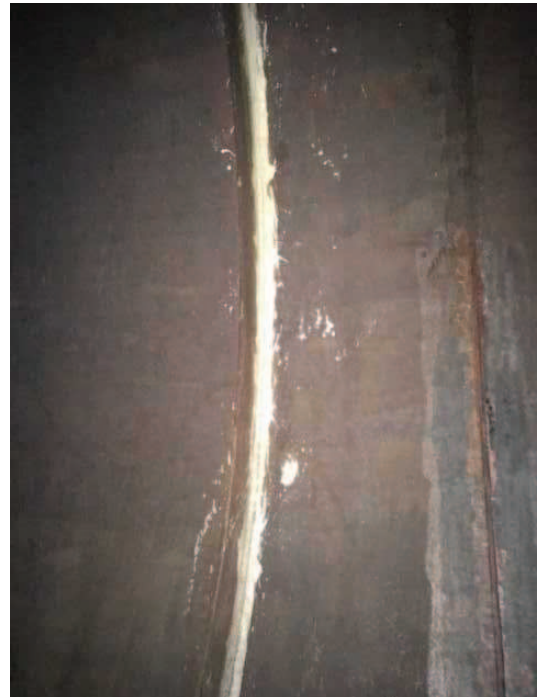
Cargo tanks



Cargo tanks



Cargo tanks



Cargo tanks


<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------

PHOTO SHEET
FOTOBLAD

Page 14 of 15

MM order nr.: ND 176326

Report no.
Rapport nr.

RI555845712

rev.0



Aft Peak Tank



Aft Peak Tank



Aft Peak Tank



Aft Peak Tank


<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------

PHOTO SHEET
FOTOBLAD

Page 15 of 15

MM order nr.: ND 176326

Report no.
Rapport nr.

RI555845712

rev.0



Main deck




Cargo tank



Cargo tank



Cargo tank

<p>Inspector/Inspecteur(s) Rien van de Velde</p>  <p>Date of report: Rapport datum: 30-5-2017</p>	<p>Level:</p> <p>Manufacturer/Fabrikant:</p> <p>Date: Datum:</p>	<p>Client/Klant:</p> <p>Date: Datum:</p>	<p>Cert. Authority/Keur instantie:</p> <p>Date: Datum:</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	----------------------------------------------	----------------------------------------------------------------

Addendum 4 Statement Bureau Veritas: Class Rules and material diminution



ATTESTATION NO. DPO/2017/0064

Issued within the scope of Bureau Veritas Marine & Offshore Division General Conditions

Type of Ship : **Type G tanker**
Name of Ship : **Rene 19**
Register Number : **909T12**

The carriage of dangerous goods on inland waters is regulated through the requirements set out in the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN). Within these requirements, the transport of Propylene Oxide (UN1280) requires the vessel to be of G-type (Gas carrier). In accordance with regulation 9.3.1.8.1, such vessels are required to be built and maintained under survey of a recognised classification society in accordance with the rules established by that classification society for its highest class.

The requirements of Bureau Veritas for inland vessels are set out in NR 217, Rules for the Classification of Inland Navigation Vessels. Part A, chapter 2, Section 2 regulates the surveys and their scope. For tankers, the required surveys are the class renewal survey and the intermediate survey. Internal examination of pressure vessels such as the cargo tanks of type G tankers are only required as part of the renewal survey.

The undersigned, F. Kersbergen, Manager Statutory Affairs, Dutch Plan Approval Office, acting within the scope of the General Conditions of Bureau Veritas Marine & Offshore Division, which regulate the interventions of this Society

Herewith declares

During the surveys of the above mentioned vessel, Bureau Veritas has found no deviations in the structure of the cargo tanks or the presence of heavy rust deposits.

In witness thereof, and with all due reservations, this Attestation is issued for the ends and purposes to which it was designed.

Rotterdam, 19th of May 2017

Frank Kersbergen
Manager Statutory Affairs

The latest published Rules of the Bureau Veritas Marine & Offshore Division and the General Conditions therein are applicable.

Any person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgment, fault or negligence committed by personnel of the Society or of its Agents in the establishment or issuance of this document, and in connection with any activities for which it may provide.