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TUG MATTERHORN Sunk at Mount Carmel, St. Mary's Bay, NL

Technical Assessment and Removal Options



Date: December 2020



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EXECUTIVE SUMMARY

The tug, MATTERHORN, was secured alongside another vessel at a marine facility at Mount Carmel, St. Mary's Bay, Newfoundland. On or about 10 August 2014 the vessel sank, coming to rest on her port side with the bow in approximately 5m of water and the stern in approximately 14m.

Pollution response in the form of rigid boom and sorbent material was initially provided by the vessel's owner but after a period of time it was apparent that the owner had ceased maintaining the boom etc.

As a result, the Canadian Coast Guard (CCG) Environmental Response team took over pollution control. In August 2015 an assessment of the wreck was carried out and damage to the stbd bow was noted, at this time one oil drum was removed from the deck of the vessel. In 2016 diving operations were undertaken to assess the vessel. A number of holes were drilled in the hull and some pollutants removed, however, at this time, it is not known exactly which locations were accessed.

Since August 2016 there does not appear to have been any reports of pollution from the vessel, however, recent assessment by the CCG Vessel of Concern (VOC) team identified that a risk exists to operations at the adjacent marine facility as well as other environmental hazards. Based on the proximity to the marine facility LOC would concur that the wreck would have an impact on the operations at the facility. There is a hazard to vessel movements in and out of the facility and potentially the wreck is blocking use of some of the facility.

1 SCOPE OF WORK

1.1 Instructions Received

- 1.1.1 LOC, acting on behalf of Canadian Coast Guard (CCG), was requested to attend at the marine facility at Mount Carmel, NL to assess the wreck of the tug MATTERHORN and provide an opinion as to the current state of the vessel, assessment of pollutants and possible onboard risks and whether the wreck poses a hazard to the operation of other vessels in the area.
- 1.1.2 In addition, LOC were instructed to update the previous assessment report 004460.00/LOCC/CCG/R001 dated 16 March 2016 to reflect the additional actions taken and information provided since March 2016.

1.2 Attendance

- 1.2.1 Darrin Hickey of this office attended at the site on 26 November 2020

1.3 Scope of the Summary Report

- 1.3.1 This report provides an update to LOC Report Ref: 004460.00/LOCC/CCG/R001 dated 12 March 2016 and further comments on possible remediation options and likely costs.
- 1.3.2 It details the findings of the site survey carried out on 26 November 2020 with respect to facilities available at the adjacent marine facility.
- 1.3.3 Comment is made on the impact of the wreck in its current location with respect to operations and marine traffic in the vicinity of the MATTERHORN.
- 1.3.4 Comment is also made on the evidence or lack thereof as regards visible pollution.

1.4 Limitations of Survey

- 1.4.1 No access to the wreck was possible, all observations were made from the marine facility and surrounding area.
- 1.4.2 Comments are based on conditions observed and documents presented.

2 VESSEL DETAILS

Name:	MATTTERHORN
Previous Names:	CHEBUCTO SEA, ST. CHARLES
Builder:	Saint John Dry Dock Company Ltd., NB
Built:	1957
IMO Number:	8973722
Port of Registry:	Not Registered
Length overall:	47.34m
Breadth Moulded:	10.10m
Depth Moulded:	5.53m
Draft (Summer):	5.00m
Deadweight:	338MT
GRT:	535
Material:	Steel

:

- 2.1 A copy of the ship's particulars is attached as "Appendix A".
- 2.2 Referencing the General Arrangement drawing it appears that the vessel was fitted with a total of 13 fuel oil tanks of varying sizes.
- 2.3 A copy of the General Arrangement drawing is attached as "Appendix B".

3 BACKGROUND

- 3.1 Following World War II, the Canadian Navy built three Saint Class tugs. These were tugs with ocean going capability fitted for towing but which could also assist in berthing large ships such as aircraft carriers.
- 3.2 Powered by a single 12-cylinder Fairbanks Morse engine developing 1950 bhp, they were also fitted with a controllable pitch propeller. Initially commissioned as RCN vessels, they were soon transferred to the Canadian Naval Auxiliary fleet, and worked with civilian crews.
- 3.3 The three tugs were named ST. ANTHONY, ST. CHARLES, and ST. JOHN.
- 3.4 The final tug in the class was ST. CHARLES. Also built in Saint John, it was launched July 10, 1956 and commissioned in November 1956 with pennant number ATA 533.
- 3.5** After naval service, the tug was acquired in 1994 by Secunda Marine of Dartmouth and renamed CHEBUCTO SEA. It went to work barge towing and even figured in salvage projects. Eventually Secunda bareboat chartered the tug to haul pulpwood barges. It was aground at Rimouski in August 1996 and repaired at Ile-aux-Coudres.
- 3.6** In October 1998 it lost power off Corner Brook and in May 1999 it broke its tail shaft on a voyage to Stephenville. It was towed back to Halifax by fleet mate TIGNISH SEA and laid up.
- 3.7** A lengthy legal dispute ensued, which was not resolved until 2005. The tug had a refit in Shelburne in 2006 but remained laid up until 2009 when it was sold.
- 3.8** The tug KEEWATIN towed it to Marystown, NL where it was renamed MATTERHORN by new owners. At time of sale its controllable pitch was not functioning.
- 3.9 Deleted
- 3.10 Deleted.

3.11 It is understood that at some time on or about 10 August 2014 the vessel sank whilst berthed alongside another vessel.

3.12 The picture in figure 1 shows the location of the tug and other assets in the vicinity in 2015. Of particular interest is the overturned barge adjacent to the tug. At the time of the initial sinking the stbd side of the tug's bow was above the water at low tide but this barge has repeatedly impacted the tug and gradually forced the tug approximately 3m back into deeper water.

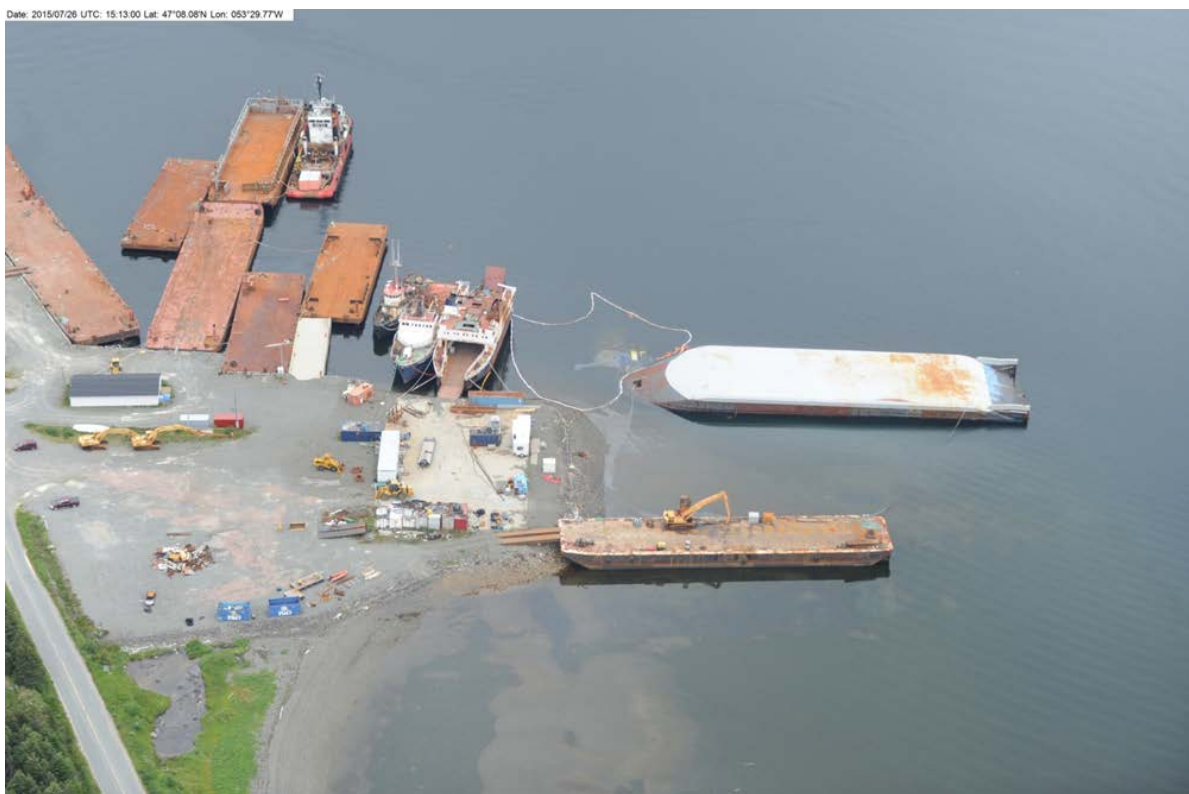


Figure 1 – Overview of the sinking location, photo courtesy of CCG circa 2015

3.13 Following the sinking, oil was noted to be forming a sheen around the vessel's location.

3.14 Owners did respond to the initial pollution with some solid floatation boom and sorbent material. CCG monitored his response as per Part 8 of the Canada Shipping Act.

3.15 It is understood that as time went on it became harder to contact the owner and have him maintain the boom arrangement. A "Direction Order" was given to him which he ignored. At

that point, following legal advice, it was decided that the CCG had the authority to proceed with measures to deal with the pollution.

- 3.16 At the instigation of CCG a dive assessment was carried out on the vessel on 5 August 2015. The vessel was found to be sitting in approximately 14m of water at the stern and approximately 5m at the bow resting on its port side with the bow into the shore.
- 3.17 During the dive survey some damage was noted in way of the stbd bow and appears consistent with impact damage from the barge striking the vessel repeatedly.
- 3.18 Only the outside of the vessel was inspected during the dive assessment. The divers were able to confirm that all vents were either closed when located or closed then by the divers. The dive assessment did not identify a particular source of the sheening other than a 205ltr drum strapped to the deck. This drum was recovered by the divers and disposed of ashore.
- 3.19 A copy of the dive report is attached as Appendix C.
- 3.20 In July 2016 a further dive survey was carried out to assess the vessel. Initially a total of 9 holes were drilled into various sections of the vessels. No oil or pollutants were found. The holes were sealed with plugs.
- 3.21 Subsequently an additional 15 holes drilled into vessel in way of the engine room and waste oil tank. Initially approximately 2,500ltr of waste oil and 8,809ltr of wastewater were reported removed. The following day further pumping was carried out and a further 2,000ltr of waste oil and 9,000ltr of wastewater were removed. These holes were also sealed with plugs.
- 3.22 Towards the end of July further leakage was reported and the source was determined to be a vent line. Divers cut a hole in the hull to access the source and approximately 80ltr of oil and 3,400ltr of wastewater were pumped out.
- 3.23 Based on the above it is estimated that a total of approximately 4,600ltr of waste oil and 21,400ltr of wastewater were removed during operations in July 2016.
- 3.24 At this time, the exact location of the test holes is not known.
- 3.25 Monitoring of the vessel was continued by CCG ER until August 2016 and no further release of oil was noted.

- 3.26 In April 2020 a preliminary assessment of the vessel by the CCG VOC officers determined that the vessel was a hazard to the marine environment and required additional assessment.



Figure 2 – Overview of the sinking location taken 26 November 2020

- 3.27 It was noted that the vessel is generally submerged just under the waterline adjacent to the marine facility but as can be seen from the above photograph the stbd bow area is visible at low tide.
- 3.28 Given the positioning of the vessel, the VOC officers concluded that the submerged vessel posed a hazard to the marine environment and the free operation of the marine facility.



Figure 3 – Updated overview of the sinking location circa July 2020. Photo courtesy of CCG VOC team.

4 POSSIBLE HAZAROUS MATERIALS

- 4.1 From information available, it is understood that when the vessel was towed from Marystown, NL in 2011 the vessel had onboard approximately 15,000ltr of marine diesel oil and that, after arrival at Mount Carmel, 12,000ltr of the fuel were pumped out as payment for the towage. This left a balance of approximately 3,000ltr believed to have remained onboard.
- 4.2 Assuming that the balance of 3,000ltr of marine diesel oil was onboard at the time of sinking it is not possible to accurately predict in which of the fuel tanks this quantity may have been located. It is possible that it was in a single tank but equally possible that it was in several tanks. The extracts from the General Arrangement in *figures 2 and 3* below indicate the location of the fuel tanks within the hull.

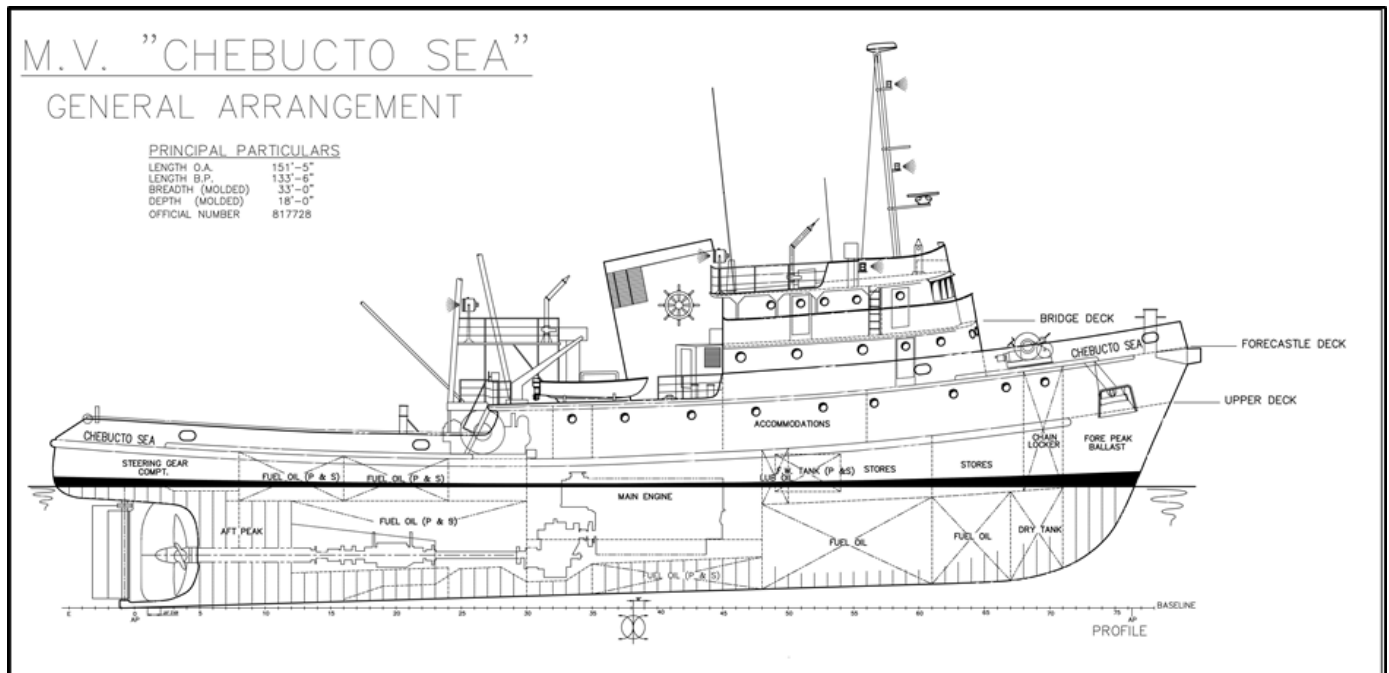


Figure 4 – Vessel Profile

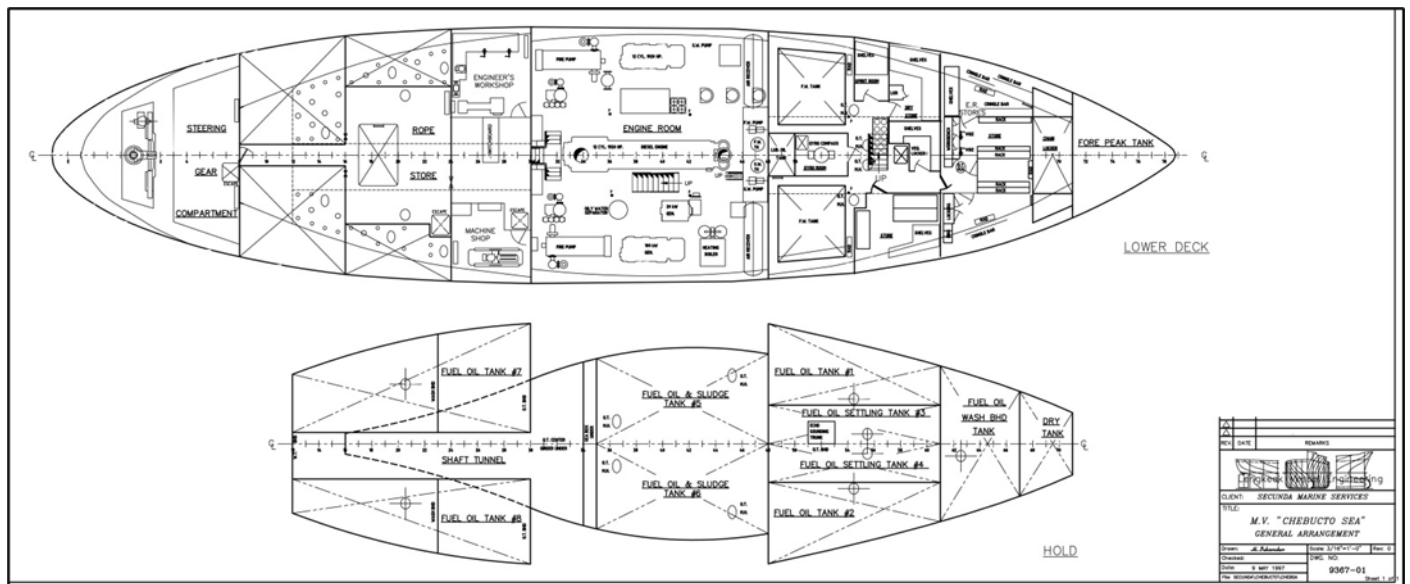


Figure 5 – Plan View of Lower Deck

4.3 Referencing the General Arrangement, the tanks are arranged as follows:

- 4.3.1 Forward double bottom cross tank located between frames 61 and 67.
- 4.3.2 #1 and #2 double bottom tanks located outboard port and stbd between frames 48 – 61.
- 4.3.3 #3 and #4 double bottom tanks (port and stbd fuel settling tanks) located inboard, either side of the centre line, between frames 48 and 61.
- 4.3.4 #5 and #6 double bottom tanks located between frames 35 and 48.
- 4.3.5 #7 and #8 deep tanks located between frames 12 and 30.
- 4.3.6 There are 2 small wing tanks that are located port and stbd between frames 24 and 16, approximately centred on the waterline.
- 4.3.7 There are a further 2 larger wing tanks between frames 8 and 16, also approximately centred on the waterline. These tanks extend almost to the centre line and are separated by the access alleyway to the steering gear compartment.

- 4.4 In addition to the diesel oil there would have been lubricating oil in the main engine and generator sumps as well as hydraulic oil for controllable pitch propeller, winches etc. Exact quantities are unknown but we would expect the total to be several hundred litres. It is likely that there would have been spare lubricating and hydraulic oil onboard the vessel stored in drums and / or pails, (one such drum was removed from the deck during the dive assessment), but there is also a lubricating oil storage tank located at the forward end of the engine room on the centre line between frames 48 and 50.
- 4.5 Approximately 3,400ltr of oil (referred to as waste oil in CCG ER timeline) was removed in 2016. Information suggests this was from the engine room and waste oil tanks. This is likely to have included oil from the main engine and generator sumps which would most likely have been released at or shortly after the vessel's sinking that was then trapped within the confines of the engine room.
- 4.6 Within the various stores there may well be quantities of grease, paint and solvents, however given the extended period that the vessel has been out of service it is unlikely there would be any significant quantities of these items.
- 4.7 Whilst not of immediate concern, it is highly likely that a vessel of this age would contain asbestos in pipe and deck and bulkhead lagging. Should the vessel be raised then this could become an issue in any potential vessel disposal.
- 4.8 At the time of writing, it appears that there has been no further release of oil from the vessel since 2016. However, it should be noted that oil is likely still trapped within the various compartments.

Appendix A

Ship's Particulars

SHIP DETAIL

Ship Name	MATTERHORN	Shiptype	Tug
LR/IMO No.	8973722	Gross	535
Call Sign	CFD7759	Deadweight	338
MMSI No.		Year of Build	1957
Flag	Canada	Status	Total Loss
Operator	Arctic Offshore International	Shipbuilder	Saint John Dry Dock Co ...



REGISTRATION, P&I, AND COMMUNICATIONS

Port of Registry	St John's, NL	Flag	Canada
Official Number	817728	Sat Com ID	
Sat Com Ans Back		Fishing Number	

P&I Club History

Date	P&I Club
2007-04-01	Shipowners' Protection Ltd
2006-02-20	Unknown

OWNERSHIP

Group Owner	Unknown	Location	
Shipmanager	Arctic Offshore International	Location	Canada
Operator	Arctic Offshore International	Location	Canada
DOC Company	Unknown	Location	IMO Company No (DOC)
Registered Owner	Matterhorn Ltd	Location	Canada IMO Registered Owner No 4159562
Technical Manager	Arctic Offshore International	Location	Canada
Bareboat Owner		Location	

* Please kindly be advised that the Location referred to above, is the companies address location; for full details of the company(s) please follow the hyperlinks through the company name.

COMMERCIAL HISTORY

Date	Name	Flag	Group Owner	Operator	Manager	Registered Owner	DOC	Price
2010-02			Unknown					
2009-06	MATTERHORN	Canada		Arctic Offshore International	Arctic Offshore International	Matterhorn Ltd		
2009-04			McDermott International Inc					
2007-08				J Ray McDermott Canada Ltd	J Ray McDermott Canada Ltd	J Ray McDermott Canada Ltd		
1997-11							Unknown	
1994-11	Chebucto Sea		Secunda Marine Services Ltd	Secunda Marine Services Ltd	Secunda Marine Services Ltd	Secunda Marine Services Ltd		
1957-06	St. Charles (ATA-533)	Canada						

Originally St. Charles (ATA-533)

CLASS

SURVEYS

CONSTRUCTION OVERVIEW

Shiptype	Tug	Built	1957	GT	535	Deadweight	338
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SHIP BUILDER

1957-06 [Saint John Dry Dock Co Ltd - Saint John NB](#) Yard/hull No.: 1033

STATUS

Date	Status
2014-08-10	Total Loss
1957-06-07	In Service/Commission
1955-06-07	On Order/Not Commenced

CONSTRUCTION DETAIL

Statcode5:B32A2ST; Hull Material:Steel; Hull Connections:Welded; Decks:1 dk

SERVICE CONSTRAINTS

Trading, Commercial; Deep Sea

ALTERATIONS & CONVERSIONS

DIMENSIONS

Length Overall	47.340	Length (BP)	0.000
Length (Reg)	42.900	Bulbous Bow	No
Breadth Extreme	10.360	Breadth Moulded	10.100
Draught	5.000	Depth	0.000
Height	0.000		
Displacement	0	T/CM	0.0

TONNAGES

Tonnage Type	One tonnage, unspecified	Tonnage System	New System (International 1969)
Effective Date	1994-11	Effective Date	1994-11
Gross Tonnage (GT)	535	Net Tonnage (NT)	160
Deadweight (DWT)	338	Compensated Gross Tonnage (CGT)	0
Formula Deadweight	0	Light Displacement Tonnage (LDT)	0

ARRANGEMENT

SISTER SHIPS

SUPPLEMENTARY FEATURES

Fire-fighting

CARGO OVERVIEW

Grain 0 Bale 0 TEU 0

COMPARTMENTS

TANKS

HATCHES

CAPACITIES

Crew 10

SPECIALIST

CARGO HANDLING GEAR

RO-RO (LANES, RAMPS & DOORS)

TOWAGE

Bollard Pull 34.00t

MISCELLANEOUS

MACHINERY OVERVIEW

2 oil engines geared to screw shaft driving 1 CP propeller
Total Power: Mcr 1,766kW (2,402hp)
Max. Speed: 14.50kts

PRIME MOVER DETAIL

Design: Unknown, Engine Builder: Unknown
2 x Unknown, Stroke Cycle Unassigned, Unknown Cyl Arrangement
, Mcr: 883 kW (1,201 hp)

AUXILIARY ENGINES

BOILERS

AUXILIARY GENERATORS

Aux Generator: 2 x 200kW

BUNKERS

THRUSTERS

INSPECTIONS & DETENTIONS

Data as reported by Port State Control Authorities

INSPECTED CERTIFICATES

Data as reported by Port State Control Authorities in last 12 Months

SAFETY MANAGEMENT CERTIFICATES

THREE YEAR EVENT SUMMARY

Significant Event	Last 12 months	Between 1 and 2 years ago	2-3 years ago
Casualties	0	1	0
Class status changes	0	0	0
Detentions	0	0	0
DOC certificates	0	0	0
Flag changes	0	0	0
Group Owner changes	0	0	0
Inspections	0	0	0
Name changes	0	0	0

CASUALTIES

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CREW LIST

PHOTOGRAPHS



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Chebucto Sea
Photo Date:
Copyright: Ken
Watson



Photo 1 of 3

© 20

age or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has a contract with IHS Global Limited and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

Appendix B

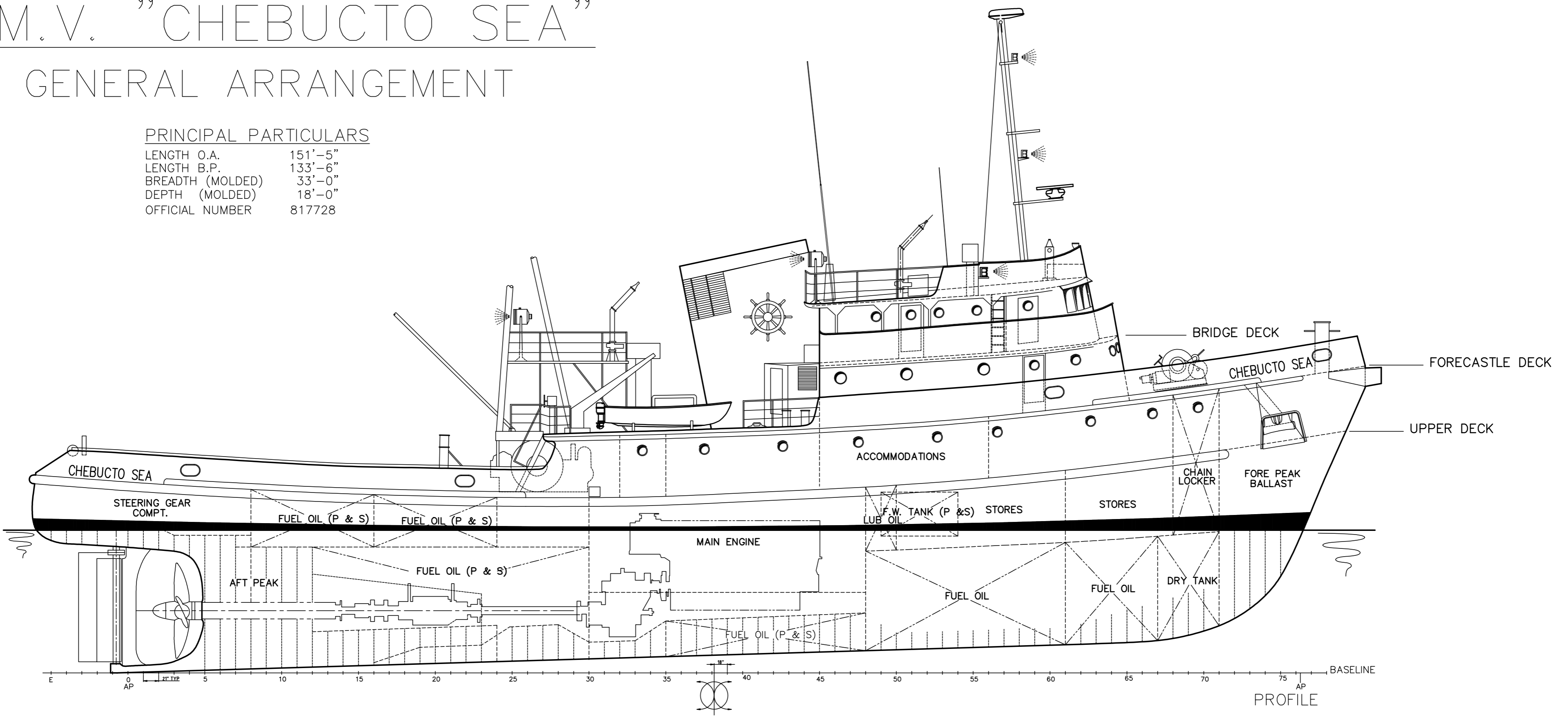
General Arrangement

M.V. "CHEBUCTO SEA"

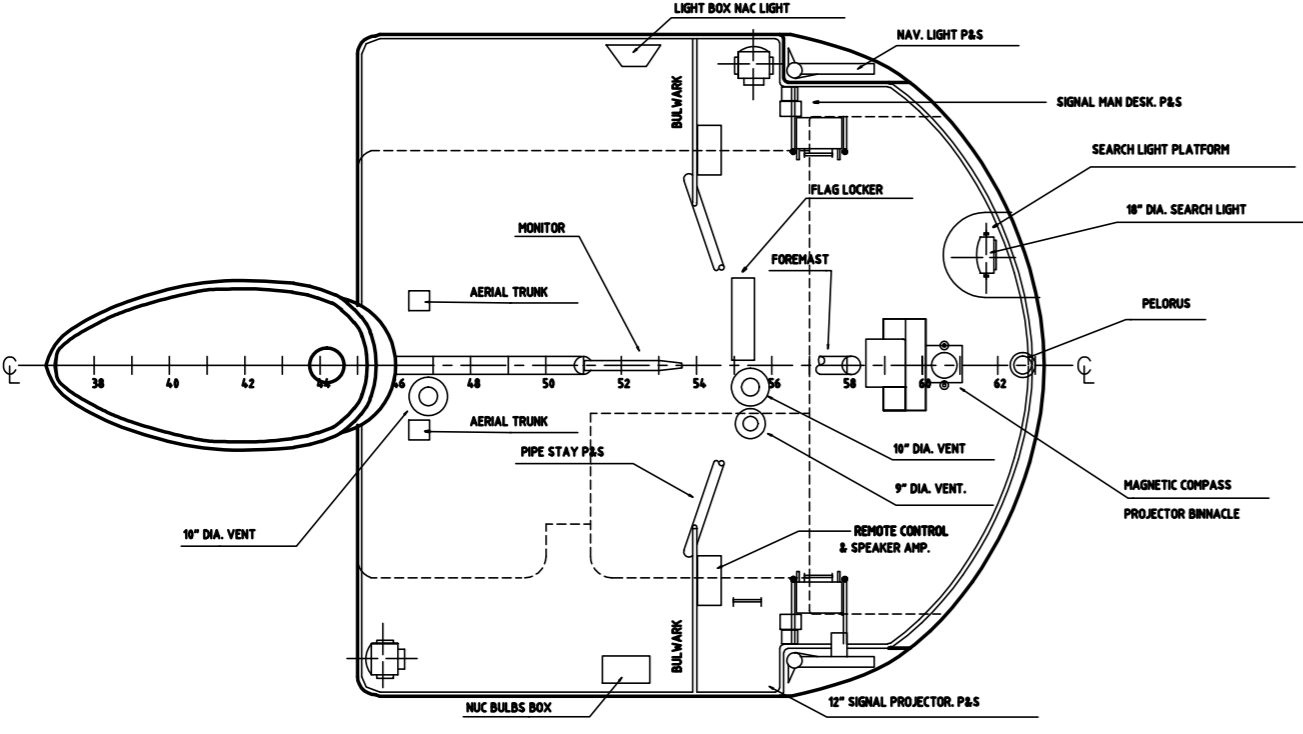
GENERAL ARRANGEMENT

PRINCIPAL PARTICULARS

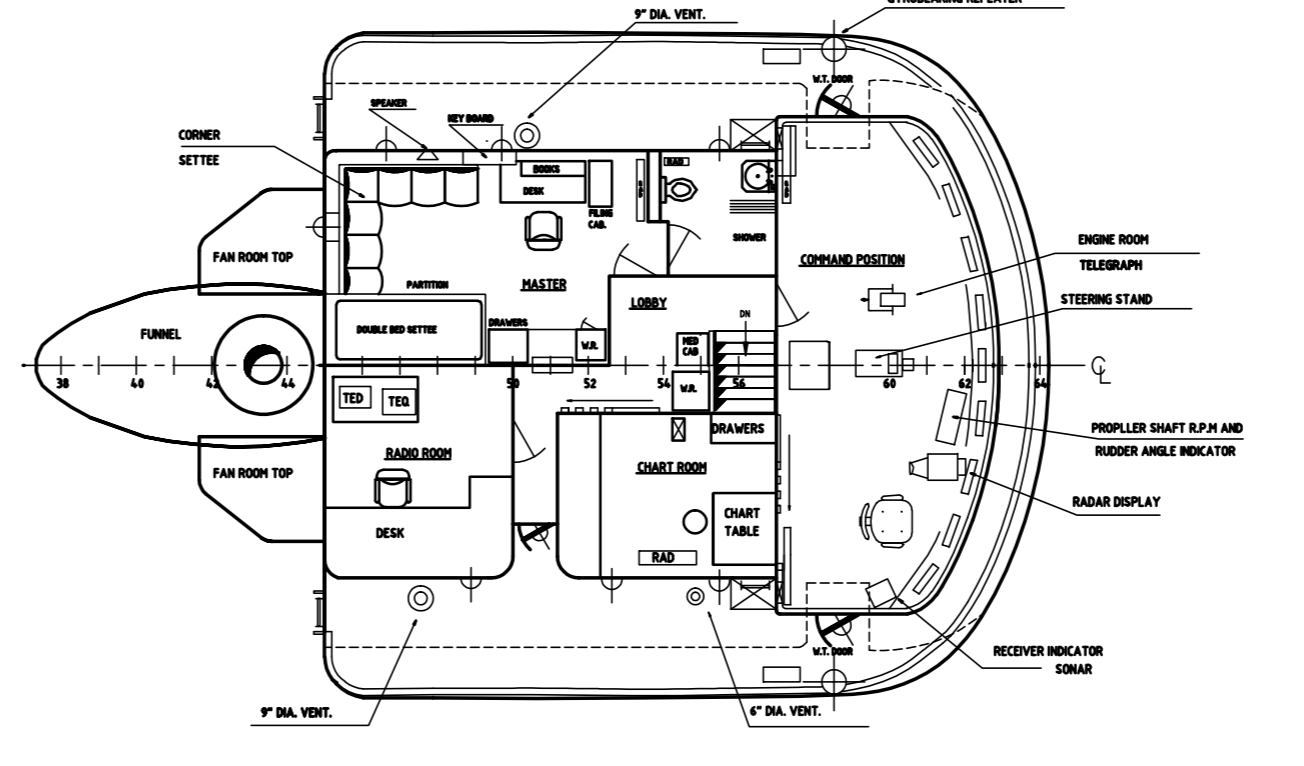
LENGTH O.A.	151'-5"
LENGTH B.P.	133'-6"
BREADTH (MOLDED)	33'-0"
DEPTH (MOLDED)	18'-0"
OFFICIAL NUMBER	817728



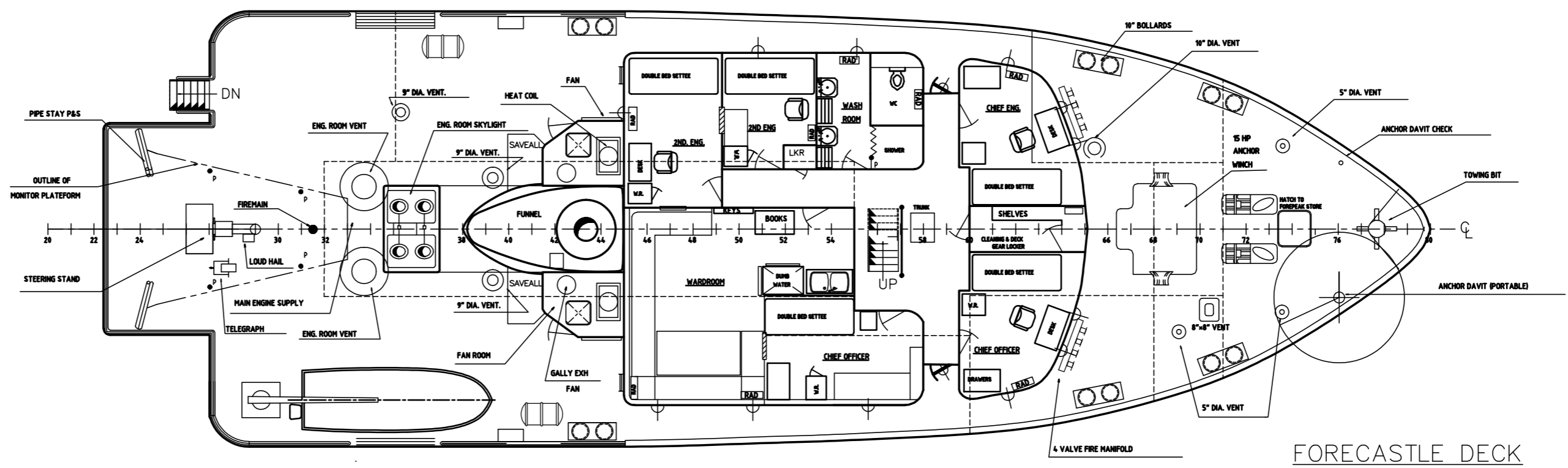
PROFILE



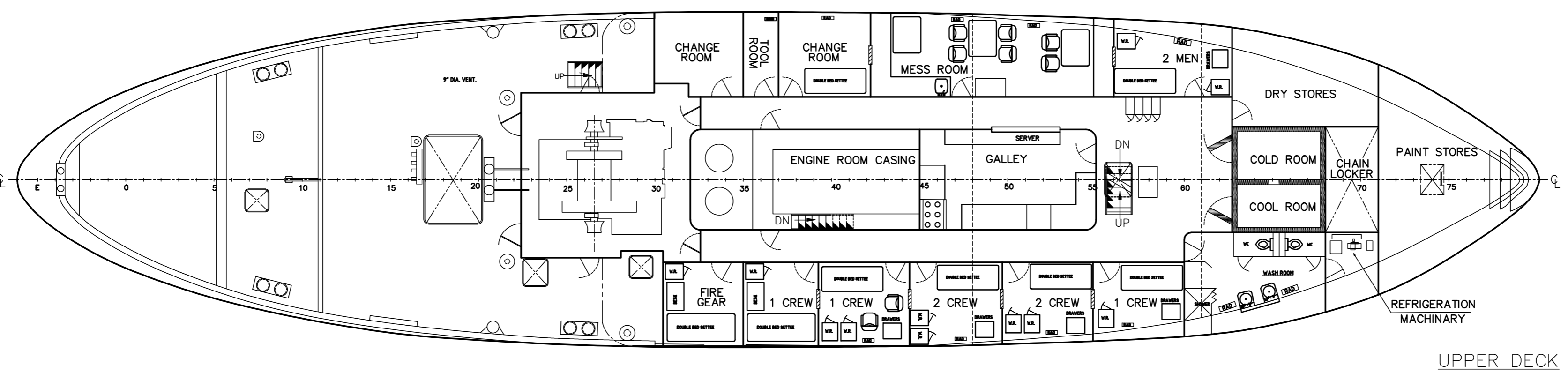
TOP OF BRIDGE DECK



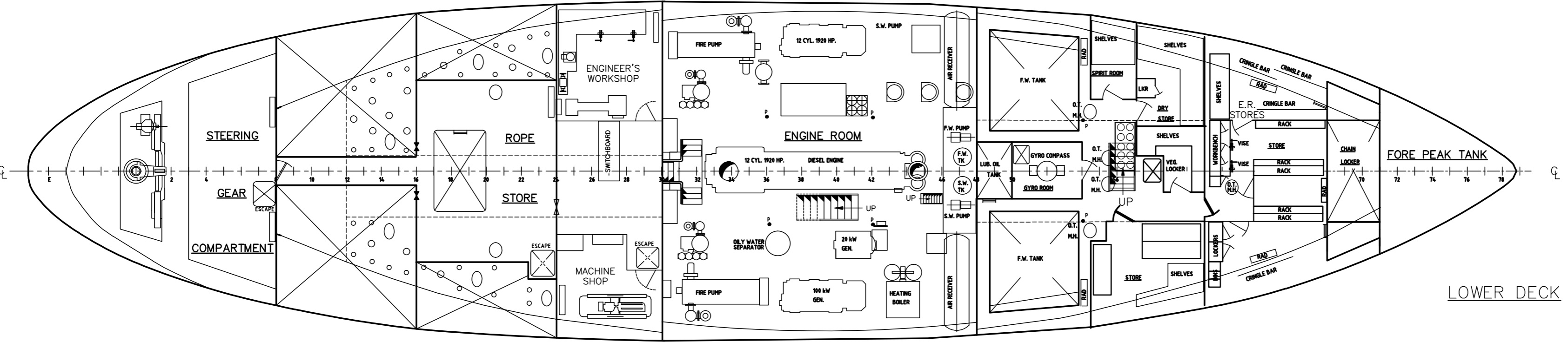
BRIDGE DECK



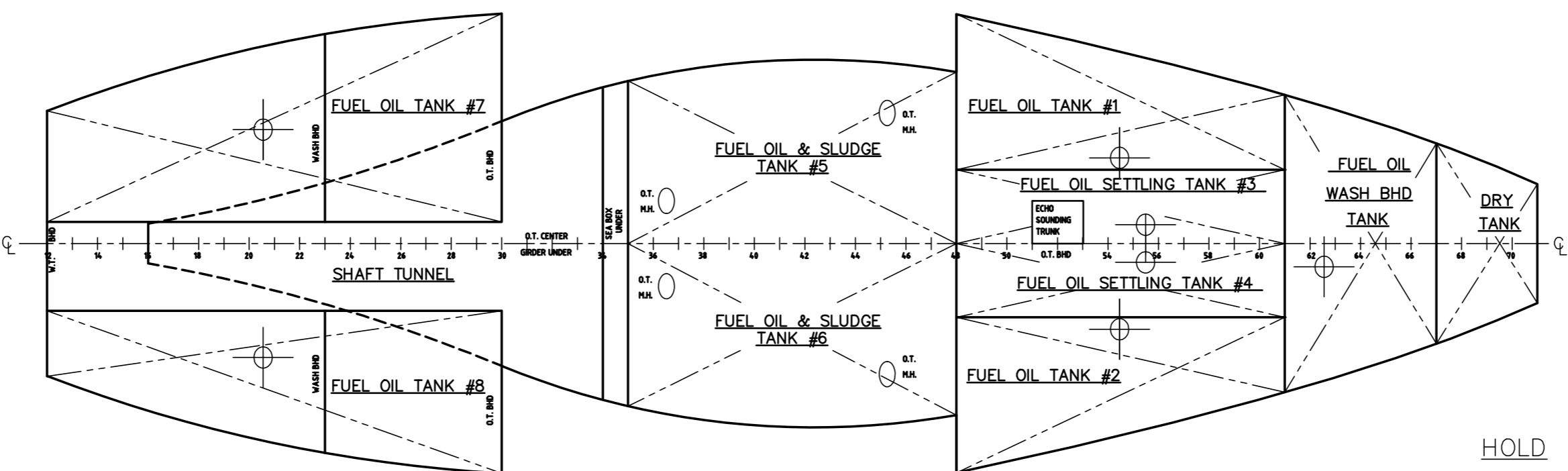
FORECASTLE DECK



UPPER DECK



LOWER DECK



HOLD

REV.	DATE	REMARKS

Drawn: *A. Flinders* Scale: 3/16"=1'-0"
 Checked: *W. J. Flinders* DWG. NO.:
 Date: 5 MAY 1997
 File: SECUNDA/CHEBUCTO/CHESEA

CLIENT: SECUNDA MARINE SERVICES
 TITLE: M.V. "CHEBUCTO SEA" GENERAL ARRANGEMENT
 Rev: 0
 9367-01
 Sheet 1 of 1

Appendix C

Dive Survey Report

**Wreck Survey
M.T. Matterhorn
Mount Carmel, Newfoundland**

DATE OF SURVEY:

August 5th, 2015

LOCATION:

M.T. Matterhorn
Mount Carmel, Newfoundland

REPORT WRITTEN BY:

Tony O'Driscoll, Dive Supervisor
Sea-Force Diving Ltd.

DIVING CREW:

Dennis Tulk, Supervisor
Chris O'Driscoll, Diver
Dave Pritchard, Diver
Jason Bungay, Diver
Phillip Brace, Diver

WEATHER CONDITIONS:

Temperature: 19 °C
Wind: SW - 5 kts
Visibility: Clear
Tide: N/A

UNDERWATER CONDITIONS:

Temperature: + 7°C
Visibility: 4.0 m – 5.0 m
Current: Tidal

**Wreck Survey
M.T. Matterhorn
Mount Carmel, Newfoundland**

INTRODUCTION:

A diving crew was mobilized to Mount Carmel, Newfoundland. Sea-Force Diving performed an underwater hull survey on the wreck M.T. Matterhorn.

SURVEY:

The scope of work (SOW) for the survey entailed the follow details:

- a) General condition of the hull noting any hull breaches from sinking
- b) Assess the stability of the wreck as it sits on the seafloor
- c) Note any damage to bow of wreck from continuous contact from overturned barge in area.
- d) Locate possible area of pollution leaks
- e) Plug or close all vents and open pipes
- f) Identify areas that can be used for lift bags attachments point or lifting straps

Starboard Side:

The vessel is noted to be laying 90° on its Port side on a gradual slope. Bottom consists of soft gravel material with small rock and vessel has not settled into seafloor at time of survey (please refer to video). The hull is damaged on the forward section on the starboard side from impact of over turner barge in same area. The damage is limited to the area on the starboard side near the paint locker and hull has small penetration (see pictures below). Both anchors are noted to be secured in place and no release of chain from locker. The dive crew noted an oxygen and acetylene tanks secured on the deck. This will need to be address before salvage can begin.



Shows hull damage on starboard side.



Shows hull damage on starboard side.

**Wreck Survey
M.T. Matterhorn
Mount Carmel, Newfoundland**



Shows hull damage on starboard side.



Shows hull damage on starboard side.

As no hull penetration was part of work scope a detailed survey of internal damage in this area is undetermined.

During the course of the wreck survey the divers noted several pipe penetrations and fuel vents. All vents that had flappers on them were closed and secured during survey. See below for locations of found vents:

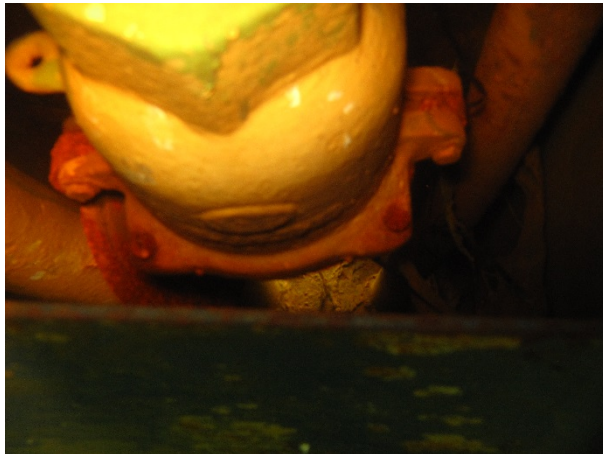
Location	Description	Secure (yes/no)
Starboard	Single vent pipe (100mm) located adjacent to forward section of wheel house. With two (2) smaller pipes measuring 35 -50mm on either side of the main pipe.	Yes
	Two (2) vent pipes labeled #2 & #4 F/O vents are located aft of 2 nd fairlead.	Yes
	Single blue vent pipe (100mm) aft of #2 & #3 F/O vents. Several liters slop oil is noted in area.	Yes
	Approximately 3200mm aft of vents 2 & 4 there is a 50mm pipe with a gate valve.	Yes
	Aft section of wheelhouse on forecastle deck is a vent pipe (100mm) painted black with several liters of slop oil in area.	Yes
	Vent pipe labeled #8 (100mm) is located near stern cleats.	Yes
Port	Single vent pipe (100mm) painted black located adjacent to forward section of wheel house.	Yes
	Located 450mm a head of black pipe are two (2) 50mm pipes with blanking plates already secured	Yes

**Wreck Survey
M.T. Matterhorn
Mount Carmel, Newfoundland**

	Located 2000mm forward of black pipe is a 50mm pipe with quarter turn valve in closed position.	Yes
	Located 3000mm a head of black pipe there is a single blue pipe with steel plated secured	Yes
	Located aft of wheel house there are two vent pipes.	Yes
	Located forward of aft cleats vent #7 is secured with steel plate.	Yes

See pictures next few pages of vents and hull.

NOTE: Based on the assessment of the wreck lift bags can be attached at the fairleads, mooring cleats and under the aft section of the hull near the running gear. In addition forward starboard damage will have to be made watertight.



Shows vent found by diver open position.



Shows vent closed by diver.



Shows vent #8.



Shows vent #8 closed.

**Wreck Survey
M.T. Matterhorn
Mount Carmel, Newfoundland**



Shows gate valve in closed position.



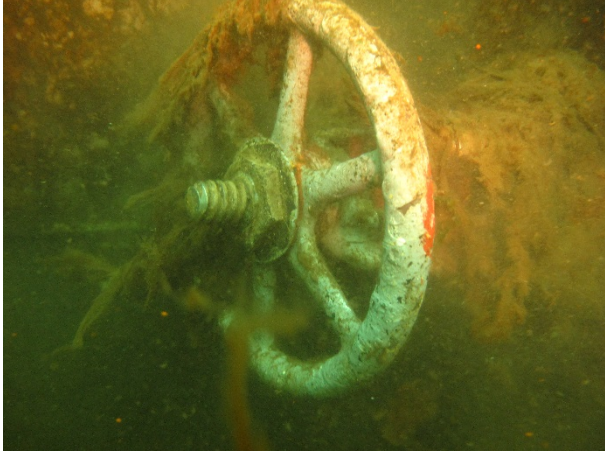
Shows pipe with cap installed.



Shows F/O vent capped.



Shows pipe penetration capped with camlock cap.



Shows gate valve in closed position and secured.



Shows two vents with steel plates installed and secured.

**Wreck Survey
M.T. Matterhorn
Mount Carmel, Newfoundland**



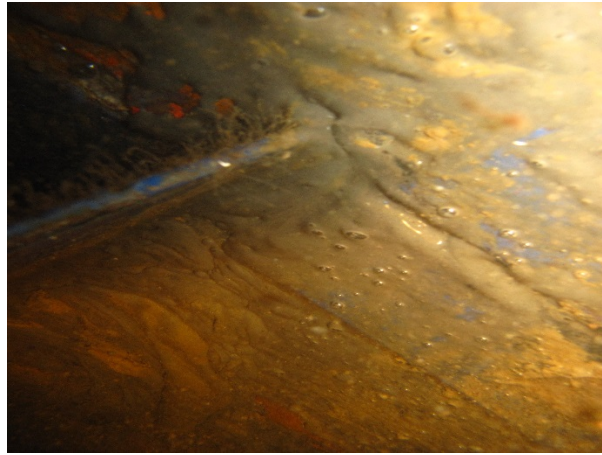
Shows penetration secured with end cap.



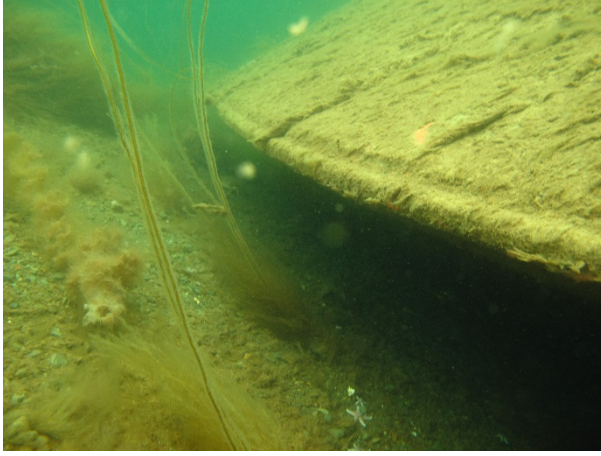
Shows vent secured with steel plate.



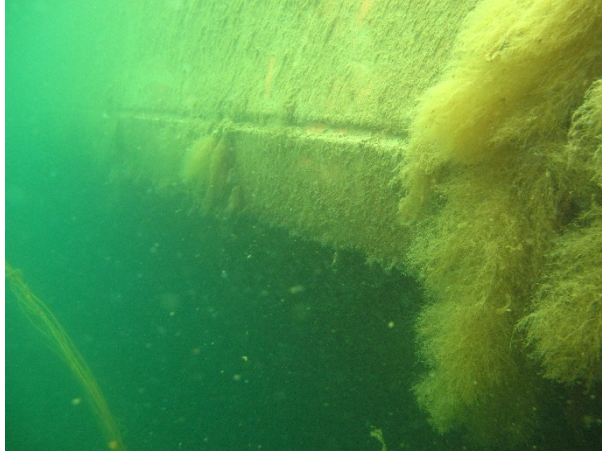
Shows slop oil by vent #2 & 4.



Shows slop oil near forecandle on starboard side.



Shows clear view of keel section near bow.

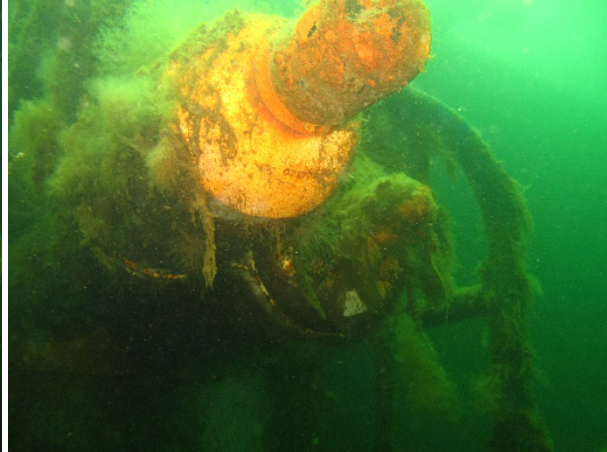


Shows keel section midway on vessel.

**Wreck Survey
M.T. Matterhorn
Mount Carmel, Newfoundland**



Shows oxygen and acetylene tanks still secured.



Shows oxygen and acetylene tanks still secured.

VIDEO:

A complete video was conducted around the wreck M.T. Matterhorn and is included on DVD format.

CONCLUSION:

If you have any further concerns regarding this report and/or survey please contact Tony O'Driscoll by phone (709) 753-2021, cell phone (709) 687-8123 and by facsimile (709) 753-2035 or by e-mail tony@seaforcediving.com.

Appendix D

Photographs from Site Visit November 2020



1. Overview of the area looking towards the north. MATTERHORN just visible



2. Bow of MATTERHORN visible at low tide



3. View facility looking north. MATTERHORN sunk behind the two barges



4. View of facility looking south



5. View of current vessels in the facility



6. "Slipway" using drill pipe as skids



7. Chain puller used to haul vessels up the "slipway"



8. Name plate showing puller capacity of 300MT



9. Remains of tug ex NORTHERN TUGGER connected to the chain puller



10. Excavator rigged with metal shears



11. Close up of shears