

Rpt. 4b

Date of writing report 4th January 1960.

Received London

Port of Antwerp

No.

35215

Survey held at Tamise

In shops

No. of visits

On vessel

37

First date

22. 4. 59

Last date

3.12.59.

# FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. 40444 Name M.V. "HECTOR HAWK"

Gross tons 16300

Owners Hector Whaling Ltd

Managers --

Port of Registry London

Hull built at Tamise, Belgium.

By J. Boel &amp; Fils S.A.

Yard No. 1362

Year Month

When 1959 12

Main Engines made at Copenhagen

By Burmeister &amp; Wain

Eng. No. 6488

When 1959 2

Gearing made at --

By --

Donkey boilers made at Aalborg

By Aalborg Vaerft A/S.

Blr. Nos. 1732-33

When 1959 1

Machinery installed at Tamise Belgium

By J. Boel &amp; Fils S.A.

When 1959 12

Particulars of restricted service of ship, if limited for classification

Particulars of vegetable or similar cargo oil notation, if required

Is ship to be classed for navigation in ice?

Is ship intended to carry petroleum in bulk? yes

Is refrigerating machinery fitted? no

If so, is it for cargo purposes? --

Type of refrigerant --

Is the refrigerating machinery compartment isolated from the propelling machinery space? --

Is the refrigerated cargo installation intended to be classed? --

The following particulars should be given as fully and as clearly as possible. Where the answer is "No" or "None", say so! Ticks and other signs of doubtful meaning are not to be used. Where the wording is not applicable to the installation, a black line may be inserted. If the main engines have been constructed at another port and are covered by a separate report, the particulars given in that report need not be repeated below, but the port and report number should be stated.

No. of main engines 1

No. of propellers 1

Brief description of propulsion system

8 Cylinder 2 stroke single acting.

Reversible heavy oil engine supercharged directly coupled to intermediate shaft.

874 VTBF - 160 turbo charged. Solid injection.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. B &amp; W - DM.

No. of cylinders per engine 8

Dia. of cylinders 740 mm.

stroke(s)

1600 mm.

2 or 4 stroke cycle 2

Single or double acting

single

Maximum approved BHP per engine 10,000

at 115

RPM of engine and

115

RPM of propeller.

Corresponding MIP 8.0 Kg/cm<sup>2</sup>

(For DA engines give MIP top &amp; bottom)

Maximum cylinder pressure

55 Kg/cm<sup>2</sup>

Machinery numeral

2,000

Are the cylinders arranged in Vee or other special formation?

no

If so, number of crankshafts per engine --

TWO STROKE ENGINES. Is the engine of opposed piston type? no

If so, how are upper pistons connected to crankshaft? --

Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers? valves in cylinder cover

engine and how driven none

No. and type of mechanically driven scavenge pumps or blowers per

No. of exhaust gas driven scavenge blowers per engine 2

Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action? yes

If a stand-by or emergency pump or blower is fitted, state how driven electrically driven

No. of scavenge air coolers 2

Scavenge air pressure at full

power 0.42 Kg/cm<sup>2</sup>

Are scavenge manifold explosion relief valves fitted? yes

FOUR STROKE ENGINES. Is the engine supercharged?

Are the undersides of the pistons arranged as supercharge pumps? --

No. of exhaust gas driven blowers per

engine --

No. of supercharge air coolers per engine

Supercharge air pressure

Can engine operate without supercharger? --

TWO &amp; FOUR STROKE ENGINES--GENERAL. No. of valves per cylinder: Fuel 2

Ports

Inlet in cyl. Exhaust 1

Starting 1

Safety 1

Material of cylinder covers cast steel

Material of piston crowns

cast steel

Is the engine equipped to operate on heavy fuel oil? yes

Cooling medium for: Cylinders fresh water

Pistons lub. oil

Fuel valves diesel oil

Overall diameter of piston rod for double acting engines --

Is the rod fitted with a sleeve? no

Is welded construction employed for: Bedplate? no

Frames? no

Entablature? no

Is the crankcase separated from the

underside of pistons? yes

Is the engine of crosshead or trunk piston type? cross-head

Total internal volume of crankcase 156 m<sup>3</sup>

No. and total area of explosion relief

devices 17-9010 m<sup>2</sup>

Are flame guards or traps fitted to relief devices?

Is the crankcase readily accessible? yes

If not, must the engine be removed for

overhaul of bearings, etc? --

Is the engine secured directly to the tank top or to a built-up seating? built-up seating

How is the engine started? compressed air

Can the engine be directly reversed? yes

If not, how is reversing obtained? --

Has the engine been tested working in the shop? yes

How long at full power? 6 hours.

CRANK &amp; FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 25-3-1958.

State barred speed range(s), if imposed

for working propeller --

For spare propeller --

Is a governor fitted? yes

Is a torsional vibration damper or detuner fitted to the shafting? no

Where positioned? --

Type --

No. of main bearings 10

Are main bearings of ball or roller

type? no

Distance between inner edges of bearings in way of crank(s) 958 mm

Distance between centre lines of side cranks or eccentrics of opposed piston engines --

Crankshaft type: Built, semi-built, solid. (State which) built

Diameter of journals 550 mm.

Diameter of crankpins

Centre 550 mm.

Side hole.

Breadth of webs at mid-throw 1180 mm.

Axial thickness of webs 335/280 mm.

with 115 mm. centre hole.

Pins SM. Steel

Minimum 44 Kg/mm<sup>2</sup>.

If shrunk, radial thickness around eyeholes

Are dowel pins fitted?

Crankshaft material Journals SM. Steel

Approved

Webs SM. Steel

Tensile strength

WD2 Diameter of flywheel 4400 Kgmm<sup>2</sup>

Weight --

Are balance weights fitted? yes

Total weight 29,900 Kgmm<sup>2</sup>

Radius of gyration --

Diameter of flywheel shaft 520 mm

Material SM Steel

Minimum approved tensile strength 44 Kg/mm<sup>2</sup>

160 mm. centre hole.

Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft.

(State which) Integral with thrustshaft.

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# ~~MAIN GAS TURBINES~~ Name and Type No.

No. of sets of turbines ..... Open or closed cycle ..... BHP per set ..... at ..... RPM of output shaft .....

How is drive transmitted to propeller shaft? .....

ARRANGEMENT OF TURBINES. HP drives ..... at ..... RPM HP gas inlet temperature ..... pressure .....  
 (A small diagram should be attached showing gas cycle.) IP drives ..... at ..... RPM IP gas inlet temperature ..... pressure .....  
 LP drives ..... at ..... RPM LP gas inlet temperature ..... pressure .....

No. of air compressors per set ..... Centrifugal or axial flow type? ..... Material of turbine blades ..... Material of compressor blades .....  
 No. of air coolers per set ..... No. of heat exchangers per set ..... How are turbines started? .....

How is reversing effected? ..... Are the turbines operated in conjunction with free piston gas generators? .....

Total No. of free piston gas generators ..... Diameter of working pistons ..... Diameter of compressor pistons ..... No. of double strokes per minute at full power .....  
 Gas delivery pressure ..... Gas delivery temperature ..... Have the turbines and attached equipment been tested working in the shop? ..... How long at full power? .....

## ~~ELECTRIC PROPULSION~~ (Reciprocating engines or gas turbines. Electrical particulars to be reported on Form 4d.)

No. of generators ..... KW per generator ..... at ..... RPM AC or DC? ..... Position .....

No. of propulsion motors ..... SHP per motor ..... at ..... RPM Position .....

How is power obtained for excitation of generators? ..... Motors? .....

## ~~REDUCTION GEARING~~ (Reciprocating engines or gas turbines. A small line sketch should be attached showing arrangement of gearing.)

Is gearing of single or double helical type? ..... If single, position of gear thrust bearing ..... Is gearing of epicyclic type? .....

PCD of pinions: First reduction ..... Second reduction ..... PCD of wheels: First reduction ..... Main .....

Material of pinions ..... Tensile strength ..... Material of wheel rims ..... Tensile strength .....

Are gear teeth surface hardened? ..... How are teeth finished? ..... Diameter of pinion journals ..... Wheel shaft journals .....

Are the wheels of welded construction? ..... Is gearcase of welded construction? ..... Has the wheel/gearcase been heat treated on completion of welding? ..... Where is the propeller thrust bearing located? ..... Are gear bearings of ball or roller type? .....

## ~~CLUTCHES, FLEXIBLE COUPLINGS, ETC.~~ If a clutch or other flexible connection is fitted between engine/turbine and gearing or between engine and line shafting give brief description and, for clutches, state how operated .....

Can the main engine be used for purposes other than propulsion when declutched? ..... If so, what? .....

STRAIGHT SHAFTING. Diameter of thrustshaft. 520 mm ✓ Material S.M. Steel Minimum approved tensile strength 44 Kg/mm<sup>2</sup>  
 160 mm. central hole

Shaft separate or integral with crank or wheel shaft? separate Diameter of intermediate shaft 430 mm ✓ Material S.M. Steel

Minimum approved tensile strength 44 Kg/mm<sup>2</sup> Diameter of screwshaft cone at large end 500 mm Is screwshaft fitted with a continuous liner? yes

Diameter of tube shaft. (If these are separate shafts) ..... Is tube shaft fitted with a continuous liner in way of stern tube ..... Thickness of screw/tube shaft liner at aft=23.5 mm.

bearings for a=24 mm. Thickness between bearings 18 mm. Material of screw/tube shaft S.M. Steel Minimum approved tensile strength 44 Kg/mm<sup>2</sup>

Is an approved oil gland fitted? no If so, state type ..... Length of bearing next to and supporting propeller 2000 mm.

Material of bearing Lignum vitae In multiple screw vessels is the liner between stern tube and A bracket continuous? --- If not, is the exposed length of shafting between liners readily visible in dry dock? ---

PROPELLER. Diameter of propeller 5.900mm Pitch 4.300 mm Built up or solid solid Total developed surface 14.0 m<sup>2</sup>

No. of blades 4 Blade thickness at top of root fillet 212 mm Blade material bronze GD 2. 108928 Kg

If propeller is of special design, state type --- Is propeller of reversible pitch type? no If so, is it of approved design? ---

State method of control --- Material of spare propeller bronze GD2 111677 Kg m<sup>2</sup>

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine none Can they be declutched? ---

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) 2 Main. 245 m<sup>3</sup>/h. Electric motor

Starbd in E/R. Cert Copenhagen Dated 23.12.58; 1 Aux. 12m<sup>3</sup>/h. Diesel engine. Starbd. in E/R. C Winterthur N°. 8089

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 2 Main. 12m<sup>3</sup>. For'd on Interdeck in

E/R Copenhagen Cert. N°. 172627; 3 Aux. 315 Litres. Starbd in E/R. Nottingham Certs C. 29174/

How are receivers first charged? Aux. Compressor set. Maximum working pressure of starting air system 25 Kg/cm<sup>2</sup> Are the safety devices in

accordance with the Rules? yes Has the starting of the main engines been tested and found satisfactory? yes

COOLERS. No. of main engine fresh water coolers 1(one) No. of main engine lubricating oil coolers 1(one)

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure one. Port side in E/R.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) none.



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steam driven 50 m<sup>3</sup>/h.

X

# INDEPENDENT PUMPS

Name below essential pumps, state position and how driven. Give capacity of bilge pumps.

Service for which each pump is connected to be marked thus X

## SUCTION

## DELIVERY

Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed Tanks	Lub. Oil	Em. Cy Bilge	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling
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28 JAN 1960

Bilge and Ballast pump in Ford. pump room steam driven 30 m<sup>3</sup>/h.

Fuel oil transfer pump in Forward pump room steam driven.

2 feed pumps for primary system electric. P.S. in B/R.

2 feed pumps for secondary system steam driven SS. in B/R

2 Fuel Oil pressure pumps P.S. in B/R Steam driven Condenser circ. pump ford in E/R.

1 Tank cleaning pump Ford in E/R. Stm driven

To Burners.



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0961 NVR 82

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	Service for which each pump is connected to be marked thus X															
	SUCTION										DELIVERY					
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cool- ing	Sea	Feed Tanks	Lub. Oil	Em. Cy Bilge	Boiler Feed	Salt Water Cool- ing	Fresh Water Cool- ing	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cool- ing
2 M/E cooling water pumps port side in E/R electri- cally.					X	X					X	X				
2 M/E lubricating oil pps. port side in E/R electri- cally.																
S.W. cooling pump for aux. engines.								X						X		X
For'd in E/R electrically, 60 m3/h.	X		X			X										
Fuel oil transfer pump port for'd in E/R electri- cally.				X					X		X			X		
Diesel oil transfer pump. Port for'd in E/R electri- cally.													X			
Fuel oil transfer pump. Star'd aft in E/R steam driven.				X									X			
Bilge pump star'd in E/R. steam driven 50 m3/h.	X												X			
General service pump. Port side in E/R electri- cally 33.3 m3/h.	X		X			X			X		X			X		

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room For'd pump room 113 mm x 1.70 m x 1; Cofferdam 115 mm x 1; Dry cargo hold 70 mm x 3; Pump Room 150 mm x 2.

No. and size connected to main bilge line in main engine room 94.5 mm x 4; Cofferdams 94.5 mm x 2 In tunnel -

In aux. engine room - Size and position of direct bilge suction in machinery spaces 150 mm x 1 Starbd. For'd in E/R. Size and position of emergency bilge suction in machinery spaces 275 mm For'd in E/R.

Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? yes Do the piping arrangements comply with the Rules including special requirements for ships carrying petroleum in bulk, cargo oil or classed for navigation in ice? (strike out words not applicable). yes

STEAM & OIL ENGINE AUXILIARIES

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
Starbd. Forward	5S37 C	W.H. Allen Sons & Co. Ltd Bedford.	London Rpt. No. 139790	Electric Alternator 300 KVA.
Starbd. Aft.	"	"	"	"
Port	"	"	"	"

Is electric current used for essential services at sea? yes If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea one 240 KW.

Is an electric generator driven by Main Engine? no

STEAM INSTALLATION. No. of donkey boilers burning oil fuel 2 Prim. 50 Kg/cm2 Sec. 13.5 Kg/cm2 W.P. W.T. With indirect evaporation in sec. system Position Aft in Boiler Room (above line shafting)

Is a superheater fitted? yes Are these boilers also heated by exhaust gas? no No. of donkey boilers heated by exhaust gas only? one W.P. 180 p.s.i.

Type Spanner Swirlyflo Exhaust Gas Silencer. Position Above O.F. Boilers in way of funnel casing. Can the exhaust heated boilers deliver steam directly to the steam range or do they operate only as economisers in conjunction with oil fired boilers? in conjunction with O.F. Boilers

ABG. No. 17421. Port and No. of report on donkey boilers Birmingham No. 478. Is steam essential for operation of the ship at sea? yes Are any steam pipes over 3 ins. bore? yes If so, what is their material? mild steel

For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? yes No. of oil burning pressure units 2 No. of steam condensers 2 No. of Evaporators -

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) 2-11" cast iron hydraulic cylinders and rams 2-HP 12 Hele Shaw Pumps, 2 electric motors, 25 HP. 440 Volts, 34 Amp. and telemotor. Greenock

Have the Rule Requirements for fire extinguishing arrangements been complied with? yes Brief description of arrangements Fire hoses with nozzles (2 1/2" dia.) 4 in E/R; 2 in B/R. 2 Gal foam fire extinguisher 6 in E/R; 2 in B/R. 10 gal foam extinguishers. 2 in E/R. 1 in B/R. Tetrachloride Type 1 in E/R. Steam smothering fitted in way of E/R and B/R.

Has the spare gear required by the Rules been supplied? yes Has all the machinery been tried under full working conditions and found satisfactory? yes Date and duration of full-power sea trials of main engines 1-12-59 8 hours

no Does this machinery installation contain any features of a novel or experimental nature? (Give particulars)

The foregoing description of the main engine and installation is correct and the particulars are as approved for torsional vibration characteristics (strike out words not applicable).

CHANTIERS NAVALS JOS. BOEL & FILS

for NUVOS Boel & Zonen  
F. J. Van Dyck



GENERAL REMARKS

State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and give recommendations for classification, including any special notation to be assigned. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

The Machinery of this vessel has been constructed and installed on board under the Special Survey of the Society's Surveyors in accordance with the Rules, the Approved plans and the Secretary's Letters. The workmanship and materials are good. Satisfactory basin and sea trials were carried out and the ship is eligible in our opinion for the record of LMC.12.59 and notations TS.CL and two DB primary 50 Kg/cm2; secondary 13.5 Kg/cm2

710 lbs

192 lbs

John W. D. Forbes  
Engineer Surveyor to Lloyd's Register of Shipping.

PARTICULARS OF IDENTIFICATION MARKS ((Including Port of origin) of important Forgings and Castings. (Copies of certificates should be forwarded with report.)

RODS

CRANKSHAFT OR ROTORSHAFT

FLYWHEEL SHAFT

THRUSTSHAFT

GEARING

INTERMEDIATE SHAFTS LLOYD'S ROT. 1172 5-2-59 E.M.D. Lloyd's Rot. E.M.D.  
1188 E.M.D.

SCREW AND TUBE SHAFTS Service. Lloyd's Rot. 20-3-59. Spare. 1171 5-2-59. A.Nº. 156,375 39/1300.

PROPELLERS Service. Ant. 156374. Lloyd's HAM. 29-12-58 RIB. Spare. Lloyd's Ham. 10-3-59 RIB.

OTHER IMPORTANT ITEMS

Is the installation a duplicate of a previous case? no If so, state name of vessel -  
Date of approval of plans for crankshaft Straight shafting 22-1-58 Gearing - Clutch -  
Separate oil fuel tanks 27-7-59 Pumping arrangements 2-9-58; 9-12-58 Oil fuel arrangements 2-9-58.  
Cargo oil pumping arrangements 15-7-58 Air receivers - Donkey boilers -  
Dates of examination of principal parts:-  
Fitting of stern tube 12-5-59 Fitting of propeller 4-5-59 Completion of sea connections 19-5-59 Alignment of crankshaft in main bearings 25-6-59  
Engine checks & bolts 21-9-59 Alignment of gearing - Alignment of straight shafting 25-6-59 Testing of pumping arrangements 6-11-59  
Oil fuel lines 27-8-59 Donkey boiler supports 9-7-59 Steering machinery 6-11-59 Windlass 6-11-59  
Date of Committee FRIDAY - 4 MAR 1960  
Decision See Rpt. 1  
Special Survey Fee Installation Engs. & Rtrs. FRS. 35000.  
Expenses FRS. 2800.

Date when A/c rendered 12th Jan. 1960  
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