

Rpt. 4b

Date of writing report 4th January 1960.

Received London

Port of Antwerp

No. 35215

Survey held at Tamise

No. of visits

In shops

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"

Owners Hector Whaling Ltd

Gross tons 16300

Hull built at Tamise, Belgium.

Managers

Port of Registry London

Main Engines made at Copenhagen

By J. Boel & Fils S.A.

Yard No. 1362

Year Month When 1959 12

Gearing made at

By Burmeister & Wain

Eng. No. 6488

When 1959 2

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 & 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 VTB - 160 turbo charged. Solid injection.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. B & 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/cm2

(For DA engines give MIP top & bottom)

Maximum cylinder pressure 55 Kg/cm2

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?

valves in

cylinder cover

No. and type of mechanically driven scavenge pumps or blowers per engine and how driven none

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/cm2

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 & 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 m3

No. and total area of explosion relief devices 17-9010 m2

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

410 C

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 220 mm

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/mm2.

If shrunk, radial thickness around eyeholes

Are dowel pins fitted?

Crankshaft material Journals SM. Steel

Approved

Webs SM. Steel

Tensile strength

WD2

Weight

Are balance weights fitted? yes

WD2 Total weight 29,900 Kg/m2

Radius of gyration

Diameter of flywheel shaft 520 mm

Material SM Steel

Minimum approved tensile strength 44 Kg/mm2

160 mm. centre hole.

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

(State which) Integral with thrustshaft.

~~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/mm²

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/mm² 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 d=24 mm. Thickness between bearings 18 mm. Material of screw/tube shaft S.M. Steel Minimum approved tensile strength 44 Kg/mm²

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 5900 mm Pitch 4300 mm Built up or solid solid Total developed surface 14.0 m²

No. of blades 4 Blade thickness at top of root fillet 212 mm Blade material bronze GD 2. Moment of inertia of dry propeller 108928 Kg m²

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 Moment of inertia 111677 Kg m²

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 m³/h. Electric motor Starbd in E/R. Cert Copenhagen Dated 23.12.58; 1 Aux. 12m³/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. 12m³. 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/cm² 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.



0961 NVP 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 Cooling	Sea	Feed Tanks	Lub. Oil	Em. Bilge	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling
2 M/E cooling water pumps port side in E/R electrically.				X	X						X	X				
2 M/E lubricating oil pps. port side in E/R electrically.																
S.W. cooling pump for aux. engines.								X						X	X	
For'd in E/R electrically, 60 m3/h.	X		X			X			X		X			X		
Fuel oil transfer pump port for'd in E/R electrically.				X									X			
Diesel oil transfer pump. Port for'd in E/R electrically.				X									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															
General service pump. Port side in E/R electrically 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 115 mm x 1, 70 mm 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 W.P. Prim. 50 Kg/cm2 Sec. 13.5 Kg/cm2 Type 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

Port and No. of report on donkey boilers: ABG. No. 17421. 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 Cert. C. 6884.

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

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

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 2021

for NU Jos Boel & Zonen
F. et. Van Dyck Builder

Lloyd's Register Foundation

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. York
 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.N^o. 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 Special Survey Fee -

Decision See Rpt. 1 Installation Engs. & Rtrs. FAS. 35000.-

Expenses FAS. 2800.-

Date when A/c rendered 12th Jan. 1960

