Rpt. 4b

Date of writing report — Received London 11 SEP 1957 / 26 APR 1957 — Port Newcastle/Tyne — No. 114244

Survey held at Newcastle/Tyne — No. of visits: In shops 33; On vessel — First date 30-5-56 — Last date 4-3-57

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. — Name SEISTAN — Gross tons

Owners Strick Line Ltd. — Managers F.C. Strick & Co.Ltd. — Port of Registry

Hull built at South Shields — By Messrs.John Readhead & Sons Ltd. — Yard No. 592 — When (Year, Month)

Main Engines made at Newcastle upon Tyne — By Hawthorn Leslie(Engrs.)Ltd. — Eng. No. 4167 — When 1957

Gearing made at – — By –

Donkey boilers made at – — By – — Blr. Nos. – — When –

Machinery installed at – — By – — When –

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? –

Is refrigerating machinery fitted? – — 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 One — No. of propellers One — Brief description of propulsion system Single Screw, direct drive I.C.engine.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Doxford 67 LBD4.

No. of cylinders per engine 4 — Dia. of cylinders 670 m/m — stroke(s) 2320 m/m — 2 stroke cycle 2 — Single acting Single

Maximum approved BHP per engine 4, 400 at 115 RPM of engine and 115 RPM of propeller.

Corresponding MIP 89 lbs/sq.in. (For DA engines give MIP top & bottom) — Maximum cylinder pressure 640 lbs/sq.in. — Machinery numeral 880 — J.H. 30/5/57

Are the cylinders arranged in Vee or other special formation? Opposed piston — If so, number of crankshafts per engine One

TWO STROKE ENGINES. Is the engine of opposed piston type? Yes — If so, how are upper pistons connected to crankshaft? side crankpins, rods & transverse beams

Is the exhaust discharged through ports in the cylinders [crossed out] ports in cyl. — No. and type of mechanically driven scavenge pumps or blowers per engine and how driven (2) Lever driven from No.1 & 2 ME cylinder crossheads.

No. of exhaust gas driven scavenge blowers per engine NIL. — Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action? –

If stand-by or emergency pump or blower is fitted, state how driven – — No. of scavenge air coolers NIL — Scavenge air pressure at full power 2.15 lbs/sq.in. — 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 Two — Inlet – — Exhaust – — Starting One — Safety One

Material of cylinder liners Cast Iron — Material of piston crowns Mild Steel — Is the engine equipped to operate on heavy fuel oil? Yes

Cooling medium for :—Cylinders Fresh water — Pistons Top fresh water, Lower oil — Fuel valves Fresh water — Overall diameter of piston rod for double acting engines –

Is the rod fitted with a sleeve? – — Is welded construction employed for: Bedplate? Yes — Frames? Yes — Entablature? Yes — Is the crankcase separated from the underside of pistons? Yes

Is the engine of crosshead type? Crosshead — Total internal volume of crankcase 3,600cub.ft. — No. and total area of explosion relief devices (8)904sq.ins. — Are flame guards or traps fitted to relief devices? Yes — 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? direct to tank top. — 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? 4 hours.

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 8/8/56. — State barred speed range(s), if imposed for working propeller 46/56RPM — For spare propeller – — Is a governor fitted? Yes — Is a torsional vibration damper or detuner fitted to the shafting? Yes

Where positioned? Forward end of crankshaft — Type Doxford Bibby Detuner — No. of main bearings 5 — Are main bearings of ball or roller type? No

Distance between inner edges of bearings in way of crank(s) 2020 m/m — Distance between centre lines of side cranks or eccentrics of opposed piston engines 1300 m/m

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

Diameter of journals 500 m/m — Diameter of crankpins: Centre 500 m/m.175m/m centrehole.; Side 500 m/m. — Breadth of webs at mid-throw 710 m/m — Axial thickness of webs 285 m/m

If shrunk, radial thickness around eyeholes 221 m/m — Are dowel pins fitted? No — Crankshaft material: Pins Forged steel; Journals Forged steel; Webs Forged steel — Minimum Approved Tensile strength: 28-32 tons.sq.in.; 28-32 tons.sq.in.; 31-35 tons.sq. in.

Diameter of Turning wheel 2493m/m — Weight 1.15tons — Are balance weights fitted? No — Total weight – — Radius of gyration

Diameter of flywheel shaft 450 m.m. — Material Forged steel — Minimum approved tensile strength 28-32 Tons sq.in.

Flywheel shaft: [crossed out], integral with thrustshaft. (State which) integral with crankshaft.

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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. *(A small diagram should be attached showing gas cycle.)*
HP drives - at RPM HP gas inlet temperature - pressure -
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 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 500 m/m Material Forged steel Minimum approved tensile strength 28-32 tons sq.in.

Shaft ~~XXXXXX~~ integral with crank ~~XXXXX~~ shaft? integral with crankshaft. Diameter of intermediate shaft - Material -

Minimum approved tensile strength - Diameter of screwshaft cone at large end - Is screwshaft fitted with a continuous liner? -

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 liners in way of bearings - Thickness between bearings - Material of screw/tube shaft - Minimum approved tensile strength -

Is an approved oil gland fitted? - If so, state type - Length of bearing next to and supporting propeller

Material of bearing - 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 - Pitch - Built up or solid - Total developed surface -

No. of blades - Blade thickness at top of root fillet - Blade material - Moment of inertia of dry propeller -

If propeller is of special design, state type - Is propeller of reversible pitch type? - If so, is it of approved design? -

State method of control - Material of spare propeller - Moment of inertia -

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine - Can they be declutched? -

No. of independently driven air compressors. *(State capacity, prime mover, position in ship, and Port and No. of certificate)* -

No. of starting air receivers. *(Main and Aux. State capacity of each, position in ship and Port and No. of Certificate)* -

How are receivers first charged? - Maximum working pressure of starting air system - Are the safety devices in accordance with the Rules? - Has the starting of the main engines been tested and found satisfactory? -

COOLERS. No. of main engine fresh water coolers - No. of main engine lubricating oil coolers -

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure -

MAIN ENGINE DRIVEN PUMPS *(No. and Purpose)* Driven from No. 2 ME crosshead (1) S.W. circulating cooler 1 F.W. jacket and upper piston cooling (1) Lub. oil, bearings and lower piston cooling.

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	SUCTION: Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed Tanks	Lub. Oil	DELIVERY: Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling

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

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room -

No. and size connected to main bilge line in main engine room - In tunnel

In aux. engine room - Size and position of direct bilge suctions in machinery spaces -

Size and position of emergency bilge suctions in machinery spaces -

Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? - 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)*. -

STEAM & OIL ENGINE AUXILIARIES

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
			-	

Is electric current used for essential services at sea? - If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea - Is an electric generator driven by Main Engine? -

STEAM INSTALLATION. No. of donkey boilers burning oil fuel - W.P. - Type -

Position -

Is a superheater fitted? - Are these boilers also heated by exhaust gas? - No. of donkey boilers heated by exhaust gas only? - W.P. -

Type - Position - 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? - Port and No. of report on donkey boilers - Is steam essential for operation of the ship at sea? - Are any steam pipes over 3 ins. bore? - If so, what is their material? - For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? - No. of oil burning pressure units - No. of steam condensers - No. of Evaporators -

STEERING GEAR. *(State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars)* -

Have the Rule Requirements for fire extinguishing arrangements been complied with? - Brief description of arrangements -

Has the spare gear required by the Rules been supplied? Yes Has all the machinery been tried under full working conditions and found satisfactory? - Date and duration of full-power sea trials of main engines - 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)*.

HAWTHORN LESLIE (ENGINEERS) LTD.
[signature]
Builder

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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.

5a.

This engine has been constructed under special survey in accordance with the Rules, approved plans and Secretary's letters. The material and workmanship is good.

During full power trials in shop the behaviour of all parts was found satisfactory and the engine is eligible in my opinion for installation in a classed vessel with the record of ✠ LMC (with date) on completion, main engine not to be run continuously between 46-56 RPM and the tachometer to be marked accordingly.

The engine is being dispatched to South Shields for installation in Messrs. Readheads Yard No. 592.

NEWCASTLE-ON-TYNE. No 111698

This engine now satisfactorily installed in Messrs John Readhead's ship No 592 (M.S. SEISTAN)

J.W. Walker

SURVEYOR TO LLOYD'S REGISTER. NEWCASTLE-ON-TYNE.

Chas R Rowcliffe

C.R. ROWCLIFFE.

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 Lower piston Shf. S.5960,1,2 & 3 E.P. upper piston Shf. S.5799, 5900 & 1, 5922 E.P. Side Shf. S.5952, 3, 4, 5, 6, 7, 8 & 9 E.P. Side connecting Shf. S.6511 & 2 S.6567, 8, 9 & S.6704&5. Centre connecting Shf. S.5514&5, S.5577&8 E.P.

CRANKSHAFT ~~OR ROTORSHAFT~~ Gls. No. 33323 NWC. CRR. 11.10.56.

FLYWHEEL SHAFT incorporated in crankshaft.

THRUSTSHAFT incorporated in crankshaft.

GEARING –

INTERMEDIATE SHAFTS –

SCREW AND TUBE SHAFTS –

PROPELLERS –

OTHER IMPORTANT ITEMS Centre crossheads Shf. S.5918, 9, 20021 E.P. Side crossheads Shf. S.5902, 3, 4, 5, 6, 7, 8 & 9 E.P. Scavenge pump piston rods Sld: 4233,KF. Transverse centre pins Gls. H.6925, 6, 7 & 8, H.A.1.

Is the installation a duplicate of a previous case? No — **If so, state name of vessel** –

Date of approval of plans for crankshaft 28.3.57 — **Straight shafting** – — **Gearing** – — **Clutch** –

Separate oil fuel tanks – — **Pumping arrangements** – — **Oil fuel arrangements** –

Cargo oil pumping arrangements – — **Air receivers** – — **Donkey boilers** –

Dates of examination of principal parts:—

Fitting of stern tube – — **Fitting of propeller** – — **Completion of sea connections** – — **Alignment of crankshaft in main bearings** in shop 10.12.

Engine chocks & bolts – — **Alignment of gearing** – — **Alignment of straight shafting** – — **Testing of pumping arrangements** –

Oil fuel lines – — **Donkey boiler supports** – — **Steering machinery** – — **Windlass** –

Date of Committee FRIDAY 27 SEP 1957

Decision Sc Rpt. 1.

Special Survey Fee Construction £198. E.W. Construction (66T) £17.

Expenses

Date when A/c rendered 3 APR 1957

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