

See Cleve. Certs. C-9416 to 9421 Incl.
C-9426 & C-9427

4b

writing report Jan. 16, 1957

Received London REC'D NEW YORK JAN 24 1957
Port Cleveland, Ohio No. 1831
In shops MAR 1957 8-27-54 9-12-54
No. of visits On vessel First date Last date

held at Harden, Conn
Peoria, Ill

TEST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

Name EIGHT ENGINES & GEARS FOR ROYAL CANADIAN NAVY Gross tons

Canadian Government Managers Port of Registry Year Month

By Caterpillar Tractor Co Yard No. When 1954

Eng. No. See 'Remarks' When 1954

By Snow & Nabstedt Corp

By Blr. Nos. When

By When

ars of restricted service of ship, if limited for classification

ars of vegetable or similar cargo oil notation, if required

to be classed for navigation in ice? Is ship intended to carry petroleum in bulk?

erating machinery fitted? If so, is it for cargo purposes? Type of refrigerant

frigerating machinery compartment isolated from the propelling machinery space? Is the refrigerated cargo installation intended to be classed?

owing 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 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 eed not be repeated below, but the port and report number should be stated.

main engines 8 No. of propellers Brief description of propulsion system Trunk piston, solid injection

RECIPROCATING ENGINES. Licence Name and Type No. Caterpillar Type D-337

ylinders per engine 6 Dia. of cylinders 5.125" stroke(s) 6" 2 or 4 stroke cycle 4 Single or double acting S

imum approved BHP per engine 170 at 1600 RPM of engine and RPM of propeller.

ounding MIP 152 psi (For DA engines give MIP top & bottom) Maximum cylinder pressure 1200 psi Machinery numeral

ylinders arranged in Vee or other special formation? No If so, number of crankshafts per engine

STROKE ENGINES. Is the engine of opposed piston type? If so, how are upper pistons connected to crankshaft?

haust discharged through ports in the cylinders or through valve(s) in the cylinder covers? No. and type of mechanically driven scavenge pumps or blowers per

nd how driven

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

nd-by or emergency pump or blower is fitted, state how driven No. of scavenge air coolers Scavenge air pressure at full

Are scavenge manifold explosion relief valves fitted?

STROKE ENGINES. Is the engine supercharged? No Are the undersides of the pistons arranged as supercharge pumps? No No. of exhaust gas driven blowers per

No. of supercharge air coolers per engine Supercharge air pressure Can engine operate without supercharger?

FOUR STROKE ENGINES--GENERAL. No. of valves per cylinder: Fuel 1 Inlet 1 Exhaust 1 Starting 1 Safety 1

of cylinder covers Cast Iron Material of piston crowns Cast Iron Is the engine equipped to operate on heavy fuel oil? No

edium for :-Cylinders Pistons Fuel valves Overall diameter of piston rod for double acting engines

d fitted with a sleeve? Is welded construction employed for: Bedplate? Frames? Entablature? Is the crankcase separated from the

of pistons? No Is the engine of crosshead or trunk piston type? Trunk Total internal volume of crankcase No. and total area of explosion relief

Are flame guards or traps fitted to relief devices? Is the crankcase readily accessible? If not, must the engine be removed for

of bearings, etc? Is the engine secured directly to the tank top or to a built-up seating? How is the engine started?

engine be directly reversed? If not, how is reversing obtained?

engine been tested working in the shop? Yes How long at full power?

& FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system State barred speed range(s), if imposed

ing propeller For spare propeller Is a governor fitted? YES Is a torsional vibration damper or detuner fitted to the shafting?

ositioned? Type No. of main bearings 7 Are main bearings of ball or roller

No Distance between inner edges of bearings in way of crank(s) 5-1/4" Distance between centre lines of side cranks or eccentrics of opposed piston engines

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

of journals 4.25" Diameter of crankpins Centre 3.375" Breadth of webs at mid-throw 5-3/4" Axial thickness of webs 1-5/16"

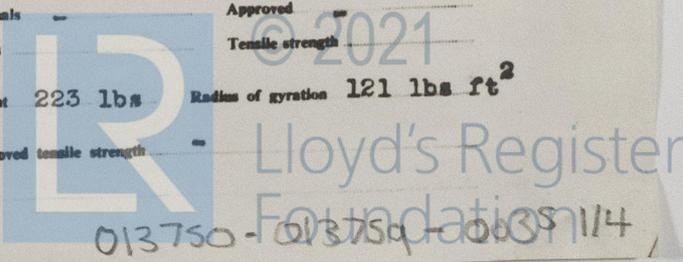
radial thickness around eyeholes Are dowel pins fitted? Crankshaft material Journals Pins Minimum Tensile strength

of flywheel 23" Weight 223 lbs Are balance weights fitted? NO Total weight 223 lbs Radius of gyration 121 lbs ft²

of flywheel shaft Material Minimum approved tensile strength

shaft: separate, integral with crankshaft, integral with thrustshaft. (State which)

Handwritten signature and date: 2/5/57



MAIN GAS TURBINES. Name and Type No.

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

Is drive transmitted to propeller shaft?

ARRANGEMENT OF TURBINES. 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?

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.)

Gearing of single or double helical type? Double If single, position of gear thrust bearing Is gearing of epicyclic type? No

OD of pinions: First reduction 3.216 Second reduction OD of wheels: First reduction Main 7.583

Material of pinions Steel Tensile strength Material of wheel rims Steel Tensile strength

Are gear teeth surface hardened? Yes How are teeth finished? Shaved Diameter of pinion journals 2.758 Wheel shaft

OD of wheels 1.269 Are the wheels of welded construction? No Is gearcase of welded construction? Has the wheel/gearcase been heat treated on completion

welding? Where is the propeller thrust bearing located? Main gear shaft Are gear bearings of ball or roller type? Ball & Roller

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 Material Minimum approved tensile strength

Shaft separate or integral with crank or wheel shaft? 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 liner at

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

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

Is propeller 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)



AL REMARKS

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 indications 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 main engines and gears have been built under the mass production system as described in Cleveland Certificates Nos. C-9416 to 9421 Incl., and C-9426/9427, and the plans have been approved by the Society's New York office. The materials have not been tested by the Surveyors but the manufacturer's test reports were examined and found satisfactory, Brinell hardness checks being made where necessary. The workmanship was found to be of good quality throughout.

It is therefore recommended that these units be assigned the record of LMC (with date) in the Muster Book, subject to their being installed and tested aboard the vessels as required by the Rules and to the Surveyors satisfaction. Remaining requirements of the Rules including those relating to torsional vibration calculations are to be carried out.

Cylinder Serial Nos.	23B342	23B348	23B343	23B355	23B354	23B344	23B362	23B363
Crankshaft Serial Nos.	T-4991	235897	T-4991	T-2850	T-2850	T-2850	T-2850	T-4991
Intermediate Gear Serial Nos.	544A360	544S335	545S127	544S359	544S356	544S357	544S336	544S324
Reduction Gear Serial Nos.	523N127	541N192	521N75	541N193	544B191	521N4	521N138	534N153

R. S. Naragene

Engineer Surveyor to Lloyd's Register of Shipping.

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

SHAFT OR ROTORSHAFT See above
 STEEL SHAFT -
 CRANKSHAFT -
 INTERMEDIATE SHAFTS -
 MAIN AND TUBE SHAFTS -
 SCREWERS -
 OTHER IMPORTANT ITEMS -

Installation a duplicate of a previous case? - If so, state name of vessel -
 Approval of plans for crankshaft 3-31/53 Straight shafting - Gearing - Clutch -
 Oil fuel tanks - Pumping arrangements - Oil fuel arrangements -
 All pumping arrangements - Air receivers - Donkey boilers -

Examination of principal parts:-
 If stern tube - Fitting of propeller - Completion of sea connections - Alignment of crank shaft in main bearings Various
 Hooks & bolts - Alignment of gearing - Alignment of straight shafting - Testing of pumping arrangements -
 Lines - Donkey boiler supports - Steering machinery - Windlass -

Committee NEW YORK FEB 6 1957
 Transmit to London
 Special Survey Fee See Certificates C-9426/9416

See Rpt. 1.
 TUESDAY 22 APR 1953



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