

Report on Steam Turbine Machinery.

No. 133976

pt. 4a.

Date of writing Report 30th JUNE 1956. When handed in at Local Office 26th July 1956 Port of LONDON Received at London Office 30 JUL 1956
 No. in Survey held at PETERBOROUGH Date, First Survey 17:4:56 Last Survey 22nd June 1956
 Reg. Book "San Flavians" (Number of Visits 10.)

on the "San Flavians" Tons {Gross
 Net
 Built at BIRKENHEAD By whom built MESSRS CAMELL LAIRD & CO LTD Yard No. 1242 When built
 Engines made at PETERBOROUGH By whom made P BROTHERHOOD, LTD. Engine No. 30511 Z When made 1956
 Boilers made at " " By whom made " " Boiler No. " " When made " "
 Shaft Horse Power at Full Power " " Owners " " Port belonging to " "
 Nom. Horse Power as per Rule " " Is Refrigerating Machinery fitted for cargo purposes " " Is Electric Light fitted " "
 Trade for which Vessel is intended " "

STEAM TURBINE ENGINES, &c.—Description of Engines 22 1/2" 1+7 stages, single cyl, axial flow, impulse steam turbine
 No. of Turbines 1 Direct coupled, single reduction geared 1 to propelling shafts No. of primary pinions to each set of reduction gearing 1
 Astern 1 double reduction geared 1
 Direct coupled to { Alternating Current Generator 3 phase 60 periods per second { rated 687.5 KVA 450 Volts at 1200 revolutions per minute;
 Direct Current Generator
 for supplying power for driving Propelling Motors, Type
 rated " " Kilowatts " " Volts at " " revolutions per minute. Direct coupled, single or double reduction geared to " " propelling shafts.

TURBINE BLADING.	H. P.	I. P.	L. P.	ASTERN.
Impulse blading { No. of rows <u>2mm CURTIS + 7 RATEAU</u>				
Reaction blading { No. of stages <u>" "</u>				
No. of rows in each stage <u>" "</u>				

Shaft Horse Power at each turbine { H.P. 1,000 I.P. " " L.P. " " Revolutions per minute, at full power, of each Turbine Shaft { H.P. 6,000 1st reduction wheel 1,200
 I.P. " " main shaft " "
 L.P. " "
 Motor Shaft diameter at journals { H.P. 3.5" I.P. " " L.P. " " Pitch Circle Diameter { 1st pinion 5.356 1st reduction wheel 26.638 Width of Face { 1st reduction wheel 10"
 2nd pinion " " main wheel " " main wheel " "
 1st pinion 8.5" 1st reduction wheel 9.5"
 2nd pinion " " main wheel " "

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 4.25" 2nd { diameter at bottom of pinion teeth 1st 5.133"
 Internal 1st { 2nd { diameter at bottom of pinion teeth 2nd " "
 External 1st { 2nd { diameter at bottom of pinion teeth 2nd " "
 Flexible Pinion { 1st 5" x 6" BORE diameter at wheel shroud, { 1st 23.25 Generator Shaft, diameter at bearings
 Shafts, diameter { 2nd " " Propelling Motor Shaft, diameter at bearings
 Intermediate Shafts, diameter as per rule " " as fitted " " Thrust Shaft, diameter at collars as per rule " " as fitted " "

Tube Shaft, diameter as per rule " " as fitted " " Screw Shaft, diameter as per rule " " as fitted " " Is the { tube screw } shaft fitted with a continuous liner {
 Bronze Liners, thickness in way of bushes as per rule " " Thickness between bushes as per rule " " as fitted " " Is the after end of the liner made watertight in the
 propeller boss. If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner
 the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive.
 two liners are fitted, is the shaft lapped or protected between the liners. Is an approved Oil Gland or other appliance fitted at the after end of the tube
 aft. If so, state type Length of Bearing in Stern Bush next to and supporting propeller " " square feet.

Propeller, diameter " " Pitch " " No. of Blades " " State whether Moveable " " Total Developed Surface " "
 Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine. Can the H.P. or I.P. Turbines exhaust direct to the
 condenser. No. of Turbines fitted with astern wheels " " Feed Pumps { No. and size " " How driven " "

Pumps connected to the Main Bilge Line { No. and size " " How driven " "
 Bilge Pumps, No. and size " " Lubricating Oil Pumps, including Spare Pump, No. and size ONE ~ 30 gall. p. min.
 Are two independent means arranged for circulating water through the Oil Cooler " " Suctions, connected both to Main Bilge Pumps and Auxiliary
 Bilge Pumps, No. and size:—In Engine and Boiler Room " " In Pump Room " "

Holds, &c. " "
 Main Water Circulating Pump Direct Bilge Suctions, No. and size " " Independent Power Pump Direct Suctions to the Engine Room
 No. and size " " Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes " "
 the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges.
 all Sea Connections fitted direct on the skin of the ship. Are they fitted with Valves or Cocks " "
 they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates. Are the Overboard Discharges above or below the deep water
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel. Are the Blow Off Cocks fitted with a spigot and brass
 covering plate. What pipes pass through the bunkers. How are they protected " "
 at pipes pass through the deep tanks. Have they been tested as per rule " "

all Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times.
 the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery
 spaces, or from one compartment to another. Is the Shaft Tunnel watertight " " Is it fitted with a watertight door " " worked from " "

Boilers, &c.—(Letter for record " ") Total Heating Surface of Boilers " "
 Forced Draft fitted " " No. and Description of Boilers " " Working Pressure " "
 Report on Main Boilers now forwarded? " "

Is { a Donkey } Boiler fitted? If so, is a report now forwarded?

Is the donkey boiler intended to be used for domestic purposes only?

Plans. Are approved plans forwarded herewith for Shafting Main Boilers Auxiliary Boilers Donkey Boilers

Superheaters General Pumping Arrangements Oil Fuel Burning Arrangements

Geared turbines } Have torsional vibration characteristics of system been approved Date of approval

SPARE GEAR.

Has the spare gear required by the Rules been supplied

State the principal additional spare gear supplied Spare gear detailed on Report for turbine 30511Y - being for the same vessel - covers both turbines.

The foregoing is a correct description,

Dates of Survey while building During progress of work in shops - - 17+20:4:56, 27:4:56, 8, 29+30:5:56, 4, 14, 18, 22:6:56. During erection on board vessel - - Total No. of visits.

Dates of Examination of principal parts-Casings 30:5:56 Rotors 14:6:56 Blading 20+27:4:56 Gearing 14+18:6:56

Wheel shaft Thrust shaft Intermediate shafts Tube shaft Screw shaft

Propeller Stern tube Engine and boiler seatings Engine holding down bolts

Completion of fitting sea connections Completion of pumping arrangements Boilers fixed Engines tried under steam

Main boiler safety valves adjusted Thickness of adjusting washers

Rotor shaft, Material and tensile strength Electric furnace steel 50.1 tms/a Identification Mark 3.8481

Flexible Pinion Shaft, Material and tensile strength Identification Mark

Pinion shaft, Material and tensile strength Siemens steel 32/33 tms/a Identification Mark 38193

; Chemical analysis

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment

1st Reduction Wheel Shaft, Material and tensile strength Identification Mark 4427800A

Wheel shaft, Material Identification Mark Thrust shaft, Material Identification Mark

Intermediate shafts, Material Identification Marks Tube shaft, Material Identification Marks

Screw shaft, Material Identification Marks Steam Pipes, Material Test pressure

Date of test Is an installation fitted for burning oil fuel

Is the flash point of the oil to be used over 150°F Have the requirements of the Rules for the use of oil as fuel been complied with

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo If so, have the requirements of the Rules been complied with

If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with

Is this machinery a duplicate of a previous case If so, state name of vessel

General Remarks. (State quality of workmanship, opinions as to class, &c.) This turbine has been built under Special Survey in accordance with approved plans (H.O. letter 30:5:53) and Rules of the Society, from materials manufactured under the Supervision of Surveyors to the Society. WORKMANSHIP throughout is satisfactory.

The turbine was tested in the shops for 4 hours on full load & 2 hours on 25% overload, driving through the reduction gearing G.E.C. alternator N°ESP/549/1, connected to resistance tanks, governor & overspeed trip were checked giving satisfactory performance. POST TRIAL examination of turbine & reduction gear internals showed all in good condition. The turbine is eligible to be fitted in a classed vessel, in my opinion.

Liverpool 5-10-1956.

The above Generator has been properly installed on board the vessel, examined under full load, full working conditions, & found satisfactory.

W. Waddle

Engineer Surveyor to Lloyd's Register of Shipping.

The amount of Entry Fee ... £ 30 : - : When applied for 30 JUL 1956 Special ... £ : : Donkey Boiler Fee ... £ : : Travelling Expenses (if any) £ 5 : 5 : When received

18 OCT 1956

Committee's Minute

Assigned See dir 7.8



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