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REPORT ON STEAM TURBINE MACHINERY. No/03730

Date of writing Report 19 When handed in at Local Office 30.5.46 Port of NEWCASTLE-ON-TYNE Received at London Office 1 JUN 1946 OCT 19

No. in Survey held at Newcastle on Tyne Date, First Survey (1946) Apr. 16 Last Survey May 27 1946
Reg. Book. on the STEEL SCREW STEAMER "MALMO" (Number of Visits 7)

Built at WEST HARTLEPOOL By whom built WM GRAY & CO. Yard No. 1191 When built 1946
Engines made at West Hartlepool By whom made Central Max Eng Works Engine No. 298 When made 1946
B.W. TURBINE Boilers made at Newcastle By whom made Swan Hunter & Wigham Shipbuilders Ltd. No. B.W. 160 When made 1946
OF B.W. TURBINE Shaft Horse Power at Full Power 700 Owners ELLERMAN'S WILSON LINE Port belonging to HULL
Nom. Horse Power as per Rule 167 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted
Trade for which Vessel is intended OCEAN GOING

STEAM TURBINE ENGINES, &c.—Description of Engines BAUERWACH L.P. TURBINE WITH D.R. GEARING & VULCAN COUPLING

No. of Turbines Ahead ONE Direct coupled, single reduction geared to ONE propelling shafts. No. of primary pinions to each set of reduction gearing ONE
Astern ✓ double reduction geared
Direct coupled to Alternating Current Generator ✓ phase ✓ periods per second ✓
Direct Current Generator ✓ rated ✓ Kilowatts ✓ Volts at ✓ revolutions per minute;
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 LOADING.	H.P.			I.P.			L.P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1st EXPANSION												
2nd							46 1/2"	642 1/2"	1			
3rd							61 7/8"	672 1/2"	1			
4th							76 1/2"	702 1/2"	1			
5th							92 1/2"	734 1/2"	1			
6th							110 1/2"	770 1/2"	1			
7th							130 1/2"	810 1/2"	1			
8th							150 1/2"	850 1/2"	1			
9th												
10th												
11th												
12th												
13th												
14th												
15th												

Shaft Horse Power at each turbine { H.P. ✓
I.P. ✓
L.P. 700
Revolutions per minute, at full power, of each Turbine Shaft { H.P. ✓
I.P. ✓
L.P. 4720
1st reduction wheel 731
main shaft 115
Generator Shaft diameter at journals { H.P. ✓
I.P. ✓
L.P. 125 1/2"
Pitch Circle Diameter { 1st pinion 206.3614 1st reduction wheel 1338.481 1st reduction wheel 225 1/2"
2nd pinion 309.541 main wheel 1911.5618 main wheel 400 1/2"
227.5 1/2" AFT 882.5 1/2" AFT
242.5 1/2" FOR 1467.5 1/2" FOR

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 242.5 1/2" FOR 1st reduction wheel 1467.5 1/2" FOR
2nd pinion 390 1/2" main wheel 480 1/2"
Exible Pinion Shafts, diameter { 1st ✓
2nd ✓
Pinion Shafts, diameter at bearings { External 1st 115 1/2" 2nd 280 1/2" diameter at bottom of pinion teeth { 1st 191.716 1/2"
Internal 1st ✓ 2nd 230 1/2" 2nd 294.8966 1/2"
220 1/2" AFT

Steel Shafts, diameter at bearings { 1st 190 1/2" FOR
main 440 1/2"
diameter at wheel shroud, { 1st 1260 1/2" Generator Shaft, diameter at bearings ✓
main 1820 1/2" Propelling Motor Shaft, diameter at bearings ✓
Intermediate Shafts, diameter as per rule ✓
as fitted ✓ Thrust Shaft, diameter at collars as per rule 10.72
as fitted 290 1/2" (11.41) ✓
Screw Shaft, diameter as per rule ✓
as fitted ✓ Is the { tube } shaft fitted with a continuous liner { ✓
screw } ✓

Bronze Liners, thickness in way of bushes as per rule
as fitted 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
If so, state type Length of Bearing in Stern Bush next to and supporting propeller

Propeller, diameter Pitch No. of Blades State whether Moveable Total Developed Surface square feet.
Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Can the H.P. or I.P. Turbine 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

Last Pumps, No. and size Lubricating Oil Pumps, including S, are Pump, No. and size Two- 8" x 7" x 18"
Two independent means arranged for circulating water through the Oil Cooler Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge
Pumps, No. and size:—In Engine and Boiler Room In Pump Room

Folds, &c. 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

Are 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
Are 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 line
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
How are they protected
Do pipes pass through the tankers Have they been tested as per rule
Do pipes pass through the deep tanks

All Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times
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

005089-005097-0071

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

Is { a Donkey } Boiler fitted? ✓ If so, is a report now forwarded? ✓
{ an Auxiliary }
Is the donkey boiler intended to be used for domestic purposes only ✓
Plans. Are approved plans forwarded herewith for Shafting 2-2-45 Main Boilers ✓ Auxiliary Boilers ✓ Donkey Boilers ✓
(If not state date of approval) See attached letter from M.V.C. 18.6.46
Superheaters ✓ General Pumping Arrangements ✓ Oil Fuel Burning Arrangements ✓

SPARE GEAR.

Has the spare gear required by the Rules been supplied

State the principal additional spare gear supplied One bearing for each size fitted
" set of thrust pads for each thrust bearing
" spring one set of washers for emergency governor
" coupling bolt-nut for 1st reduction pinion shaft
" " " " 2nd " wheel "

SWAN, HUNTER, & WIGHAM RICHARDSON LTD. P.L. Jones Manufacture

The foregoing is a correct description,

Dates of Survey { During progress of work in shops --- (1946) Apr. 16, 18, 23, 29 May 2, 22, 27 }
while building { During erection on board vessel --- }
Total No. of visits 7

Dates of Examination of principal parts—Casings 18-4-46 Rotors 18-4-46 Blading 18-4-46 Gearing 23-4-46

Wheel shaft 23-4-46 Thrust shaft 23-4-46 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 O.H. STEEL 38.4 Tons Identification Mark 14321 T 57

1st REDUCTION Pinion Shaft, Material and tensile strength O.H. STEEL 48.0 Tons Identification Mark 14321 T F 6

2nd REDUCTION Pinion shaft, Material and tensile strength O.H. STEEL 48.5 Tons Identification Mark 14321 T F 6

1st Reduction Wheel Shaft, Material and tensile strength O.H. STEEL 31.4 Tons Identification Mark 14321 T 57

2nd " " " " " " O.H. STEEL 31.0 Tons Identification Mark 14321 T 57

Wheel shaft, Material ✓ Identification Mark ✓ Thrust shaft, Material O.H. STEEL Identification Mark 14321 T 57

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 machinery has been constructed under special survey in accordance with

rule requirements & approved plans.

Materials & workmanship are good.

This machinery has been sent to Central Marine Eng. Works—West Hartlepool.

This machinery has now been satisfactorily fitted and tried in

full working conditions and found satisfactory

Arthur W. Oxford. West Hartlepool.

The amount of Entry Fee ... £ : : When applied for,

Special ... £ 10 : 14 : 31 MAY 1946

Donkey Boiler Fee ... £ : : When received,

Travelling Expenses (if any) £ : : 19

Committee's Minute FRI. 8 NOV 1946

Assigned See F.E. Welch. rpt.