

5/8 WAVE KNIGHT, LAING'S YARD NO 764, N.E. MAR. ENG. NO 3091.

NEWCASTLE-ON-TYNE, 103755

# Report on Steam Turbine Machinery.

No. 113085

Rpt. 4a.

Received at London Office - 5 SEP 1945

Date of writing Report Aug 31 19 45 When handed in at Local Office Aug 31 19 45 Port of London

No. in Survey held at London Date, First Survey 29 JUNE 1944 Last Survey 29 AUGUST 1945

Reg. Book on the Double Reduction Gearing A/M/S/N. 357 Tons {Gross Net

Built at Gearing By whom built W. & A. R. Mitchell & Co. No. 10589 When built 1945

Boilers made at W. & A. R. Mitchell & Co. By whom made Power Plant Co. Ltd. Engine No. A/M/S/N. 357 When made 1945

Shaft Horse Power at Full Power 6800 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 Double Reduction Gearing Turbines

No. of Turbines ✓ Direct coupled, single reduction geared } to ✓ propelling shafts. No. of primary pinions to each set of reduction gearing ✓

direct coupled to { Alternating Current Generator ✓ phase ✓ periods per second } rated ✓ Kilowatts ✓ Volts at ✓ 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 one propelling shaft ✓

TURBINE BLADING.	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												
3rd												
4th												
5th												
6th												
7th												
8th												
9th												
10th												
11th												
12th												

Shaft Horse Power at each turbine { H.P. 3400 I.P. 3400 L.P. 3400 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 3941 I.P. 3941 L.P. 2865 } 1st reduction wheel 431 main shaft 116

Rotor Shaft diameter at journals { H.P. 9.4264 I.P. 3.0688 L.P. 19.4894 } Pitch Circle Diameter { 1st pinion 51.2041 2nd pinion 124.6478 } Width of Face { 1st reduction wheel 20 1/2 main wheel 39 }  
Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 16.75 2nd pinion 42.00 } 1st reduction wheel 38.45 main wheel 42.00

Flexible Pinion Shafts, diameter at bearings { 1st 11 2nd 11 } Pinion Shafts, diameter at bearings { External HP 6" LP 4 1/2" Internal 13" 2nd 5" } diameter at bottom of pinion teeth { 1st HP 9.2812 L.P. 12.923 2nd 18.941 }  
Wheel Shafts, diameter at bearings { 1st 46.75 main 119.45 } Generator Shaft, diameter at bearings 119.45 Propelling Motor Shaft, diameter at bearings 119.45

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 ✓ 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 ✓  
If 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 ✓  
If 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 shaft ✓ 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 ✓  
If 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 ✓

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 ✓ }  
Ballast Pumps, No. and size ✓ Lubricating Oil Pumps, including Spare Pump, No. and size ✓

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 ✓

Main Water Circulating Pump Direct Bilge Suctions, No. and size ✓ Independent Power Pump Direct Suctions to the Engine Room Bilges, 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 ✓  
Are 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 ✓ What pipes pass through the bunkers ✓ How are they protected ✓

What pipes pass through the deep tanks ✓ Have they been tested as per rule ✓

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

Rpt. 5a.  
 RECEIVED  
 NOV 1944  
 Date of writing  
 No. in Reg. Book.  
 Engines made  
 Boilers made  
 Nominal Horse

**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..... Main Boilers..... Auxiliary Boilers..... Donkey Boilers.....  
 (If not, state date of approval)  
 Superheaters..... General Pumping Arrangements..... Oil Fuel Burning Arrangements.....

**SPARE GEAR.**

Has the spare gear required by the Rules been supplied. *Spare gear as required by R/MS/M. Specification*  
 State the principal additional spare gear supplied. *2-H.P. & 2-L.P. pinion bearings - 2-2<sup>nd</sup> Red. shaft bearings, 1-main bearing, Studs & bolts for all bearing keeps, screws, etc.*

THE POWER PLANT COMPANY LIMITED.

*R. M. Deane*  
 MANAGER

The foregoing is a correct description, ..... Manufacturer.

Dates of Survey while building  
 During progress of work in shops - - - *1944, June 29 - July 20, Aug 31, Nov 22, 1945, Jan. 3, 10, 17, 24, 31, Feb. 7, 14, 28, Mar. 14, Apr. 11, 18, 25, May 16, 23, June 7, 14, 20, 27, July 4, 11, Aug. 1, 8, 13, 20, 27, 29.*  
 During erection on board vessel - - -  
 Total No. of visits..... *30*

Dates of Examination of principal parts—Casings..... Rotors..... Blading..... Gearing..... *1944 June 29 - Aug 29, 1945*

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..... Identification Mark.....

Flexible Pinion Shaft, Material and tensile strength..... Identification Mark.....

Pinion shaft, Material and tensile strength..... *Please see attached list.* Identification Mark.....

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

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..... *Yes.* If so, state name of vessel..... *R/MS/M. 341-2-3-4-5-6.*

General Remarks. (State quality of workmanship, opinions as to class, &c.) *Gearing dispatched to Wallsend Shipyard. The above gear case & gearing have been built to approved plans, from materials made at works approved by the Committee. The workmanship throughout is considered satisfactory & in my opinion the gearing is suitable to be installed in the vessel for which it is intended. This set of D/R gearing built by Power Plant Co. SO N° 41504, Case N° 7.589. has been efficiently fitted on board S/S WAVE KNIGHT (ex EMPIRE NASEBY) by N.E. Mar. Eng'g Co. (Wallsend), Turbine N° 3091. R. W. Lett. Newcastle on Tyne 7th June 1946*

The amount of Entry Fee	£	:	:	When applied for	
Special	£	21	0	0	25 SEP 1945
Donkey Boiler Fee	£	:	:	When received	
Travelling Expenses (if any)	£	3	6	6	19

*J. L. Smith*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute..... **FRI, 28 JUN 1946**  
 Assigned..... *See F.E. machy opt.*



Certificate (if required) to be sent to  
 The Surveyors are requested not to write on or below the space for Committee's Minute.

MULTITU  
 Manufacture  
 Total Heatin  
 No. and Des  
 Tested by hyp  
 Area of Fire  
 Area of each  
 In case of do  
 Smallest dist  
 Smallest dist  
 Largest inter  
 Thickness  
 long. seams  
 Percentage o  
 Percentage o  
 Thickness of  
 Material  
 Length of p  
 Dimensions  
 End plates  
 How are sto  
 Tube plates  
 Mean pitch  
 Girders to c  
 at centre  
 in each  
 Tensile stre  
 Pitch of sta  
 Front plate  
 Thickness  
 Pitch of sta  
 Main stays  
 Diameter { At  
 Screw stay  
 Diameter { At