

L.P.

REPORT ON STEAM TURBINE MACHINERY.

No. 14 DEC 1936

Rpt. 4a.

Received at London Office

Date of writing Report 9th Dec. 1936 When handed in at Local Office 19 Port of BREMEN

No. in Survey held at BREMEN & WESERMÜNDE Date, First Survey 4th April 1936 Last Survey 23rd Nov. 1936

Reg. Book. 68579 on the STEEL SC. TRAWLER NORTHERN DUKE (Number of Visits 15)

Gross Tons 655
Net Tons 243

Built at WESERMÜNDE By whom built DESCHIMAG, WERK: SEEBECK Yard No. 559 When built 1936

TURBINE Engines made at BREMEN By whom made DESCHIMAG, WERK: A.G. WESER Engine No. D.T. 825 When made 1936

Boilers made at WESERMÜNDE By whom made DESCHIMAG, WERK: SEEBECK Boiler No. 760 When made 1936

Shaft Horse Power at Full Power 313 Owners MAC LINE LTD. Port belonging to LONDON

Nom. Horse Power as per Rule 167 As Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

Trade for which Vessel is intended FISHING

STEAM TURBINE ENGINES, &c. — Description of Engines L.P. TURBINE, DOUBLE REDUCTION GEARED, WITH HYDRAULIC COUPLING

No. of Turbines Ahead 1 Direct coupled, single reduction geared } to 1 propelling shafts. No. of primary pinions to each set of reduction gearing 1
Astern 1 double reduction geared }

direct coupled to { Alternating Current Generator 1 phase 3 periods per second } rated 1 Kilowatts 1 Volts at 1 revolutions per minute;
for supplying power for driving 1 Propelling Motors, Type 1

rated 1 Kilowatts 1 Volts at 1 revolutions per minute. Direct coupled, single or double reduction geared to 1 propelling shafts.

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							35	470	1			
2ND							49	498	1			
3RD							63	526	1			
4TH							77	554	1			
5TH							94	588	1			
6TH							112	624	1			
7TH												
8TH												
9TH												
10TH												
11TH												
12TH												

Shaft Horse Power at each turbine { H.P. 1 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 1 } 1st reduction wheel 700/675
I.P. 1 } I.P. 1 } main shaft 116
L.P. 313 } L.P. 6066 }

Rotor Shaft diameter at journals { H.P. 1 } Pitch Circle Diameter { 1st pinion 124.28 } 1st reduction wheel 1077.00 } Width of Face { 1st reduction wheel 110 }
I.P. 1 } 2nd pinion 202.52 } main wheel 1178.32 } { main wheel 340 }
L.P. 100 }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 112 } 1st reduction wheel 1 }
2nd pinion 269 } main wheel 380 } = 257 }

Flexible Pinion Shafts, diameter { 1st 100 } Pinion Shafts, diameter at bearings { External 1st 100 } 2nd 180 } diameter at bottom of pinion teeth { 1st 114.57 }
2nd 192.26 } Internal 1st 100 } 2nd 180 } { 2nd 192.26 }

Wheel Shafts, diameter at bearings { 1st 410 } diameter at wheel shroud, { 1st 1 } Generator Shaft, diameter at bearings 1 }
main 420 } { main 1 } Propelling Motor Shaft, diameter at bearings 1 }

Intermediate Shafts, diameter as per rule 1 } Thrust Shaft, diameter at collars as per rule 217 }
as fitted 1 } as fitted 220 }

Tube Shaft, diameter as per rule 1 } Screw Shaft, diameter as per rule 1 } Is the { tube } shaft fitted with a continuous liner { 1 }
as fitted 1 } as fitted 1 } { screw } }

Bronze Liners, thickness in way of bushes as per rule 1 } Thickness between bushes as per rule 1 } Is the after end of the liner made watertight in the propeller boss 1 }
as fitted 1 } as fitted 1 } If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner 1 }

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 1 }

If two liners are fitted, is the shaft lapped or protected between the liners 1 } Is an approved Oil Gland or other appliance fitted at the after end of the tube shaft 1 }
If so, state type 1 } Length of Bearing in Stern Bush next to and supporting propeller 1 }

Propeller, diameter 1 } Pitch 1 } No. of Blades 1 } State whether Moveable 1 } Total Developed Surface 1 } square feet. 1 }

If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine 1 } Can the H.P. or I.P. Turbine exhaust direct to the Condenser 1 }

Condenser No. of Turbines fitted with astern wheels 1 } Feed Pumps { No. and size 1 }
How driven 1 }

Pumps connected to the Main Bilge Line { No. and size 1 }
How driven 1 }

Ballast Pumps, No. and size 1 } Lubricating Oil Pumps, including Spare Pump, No. and size 1 }

Are two independent means arranged for circulating water through the Oil Cooler 1 } Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room 1 }
In Pump Room 1 }

In Holds, &c. 1 }

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1 } Independent Power Pump Direct Suctions to the Engine Room 1 }

Bilges, No. and size 1 } Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes 1 }

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 1 }

Are all Sea Connections fitted direct on the skin of the ship 1 } Are they fitted with Valves or Cocks 1 }

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates 1 } Are the Overboard Discharges above or below the deep water line 1 }

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel 1 } Are the Blow Off Cocks fitted with a spigot and brass covering plate 1 }

What pipes pass through the bunkers 1 } How are they protected 1 }

What pipes pass through the deep tanks 1 } Have they been tested as per rule 1 }

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times 1 }

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 1 } Is the Shaft Tunnel watertight 1 } Is it fitted with a watertight door 1 } worked from 1 }

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 an Auxiliary 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 ^{TURBINE}Shafting 18.11.35 Main Boilers Auxiliary Boilers Donkey Boilers
(If not state date of approval)

Superheaters General Pumping Arrangements Oil Fuel Burning Arrangements

Has the spare gear required by the Rules been supplied **SPARE GEAR.**

State the principal ~~additional~~ spare gear supplied

One compl. set of force off turbine bearing brass. 1 spring for quick closing governor
 2nd pinion " " 1 " " main steering & oil pressure valve
 10 pads & bolts for turbine thrust 8 pipes for oil cooler
 8 " " " 2nd pinion thrust 3 glasses for thermometer
 12 " " " Main Turbine Bearing 1 set of washers for quick closing regulator
 2 bushes for hydraulic clutch

**Deutsche Schiff- und Maschinenbau
Aktiengesellschaft
Werk: Act. Ges. Weser**

Bremen 7.12.1936 J. H. Kämpf Manufacturer.

The foregoing is a correct description,

1936
 Dates of Survey while building { During progress of work in shops -- April 4, 11 May 15, 19 June 5, 19, 27, 28 July 6, 13, 28.
 { During erection on board vessel --- Nov. 6, 10, 17, 23
 Total No. of visits 15

Dates of Examination of principal parts—Casings 19/6, 6/7, 28/7, 36 Rotors 15/4, 27/6, 28/7, 36 Blading 27/6, 28/7, 36 Gearing 6/7, 13/7, 29/7, 36

THRUST
 Wheel shaft 15/4, 28, 7, 36 Thrust shaft Intermediate shafts Tube shaft Screw shaft
 Propeller Stern tube Engine and boiler seatings Engine holding down bolts 17, 11, 36

Completion of fitting sea connections Completion of pumping arrangements Boilers fixed Engines tried under steam 23, 11, 36

Main boiler safety valves adjusted Thickness of adjusting washers

Rotor shaft, Material and tensile strength *Y. M. Steel 50.8 kg/mm²* Identification Mark *LLOYD'S 596 G.B. 28.7.36*

Flexible Pinion Shaft, Material and tensile strength Identification Mark

2nd Pinion shaft, Material and tensile strength *Pilbeam Mangan Steel 79.7 kg/mm²* Identification Mark *LLOYD'S 10814 J.L. 18.12.35*

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

THRUST
 Wheel shaft, Material *Y. M. Steel* Identification Mark *LLOYD'S 594 G.B. 28.7.36* 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 *NORTHERN PRIDE*

General Remarks (State quality of workmanship, opinions as to class, &c.) *This L.P. Turbine & Gear with hydraulic clutch are built under Special Survey in accordance with the approved plans, the Secretary's letters, and in conformity with the requirements of the Rules. Materials and workmanship are of good quality.*

During the vessels trial trip all parts have been tried under full working and manovering condition and found satisfactory in all respects.

The amount of Entry Fee	£	:	:	When applied for,
Special	£	:	:	19
Donkey Boiler Fee	£	:	:	When received,
Travelling Expenses (if any)	£	:	:	19

includ in Rpt 4

J. H. C. Kämpf *A. Carstensen*
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **FRI. 18 DEC 1936**

Assigned *See minute on F.E. rpt-*



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