

REPORT ON MACHINERY.

No. 970.

Received at London Office 26 MAR 1930

Date of writing Report 24th March 30 When handed in at Local Office 24th March 30 Port of *Malmö*
 No. in Survey held at *Malmö* Date, First Survey 7th Sept. 1929 Last Survey 5th March, 1930
 Reg. Book. 15806 *Steel Deck "BODEN"* (Number of Visits 30)
 Master *" "* Built at *Sunderland* By whom built *J. L. Thompson & Sons, Ltd.* When built 1914-5 mo.
 Engines made at *Sunderland* By whom made *J. L. Thompson & Sons, Ltd.* when made 1914
 Boilers made at *Malmö* By whom made *Hochmanns Mekan. Verkstads Abt.* when made 1930
 Registered Horse Power *675* Owners *Trafikaktie Grängsberg-Örebro* Port belonging to *Hochholm*
 Shaft Horse Power at Full Power *675* Is Refrigerating Machinery fitted for cargo purposes *✓* Is Electric Light fitted *✓*

TURBINE ENGINES, &c.—Description of Engines *Exhaust Turbine System Runer-Wach* No. of Turbines 1
 Diameter of Rotor Shaft Journals, H.P. L.P. 140 mm Diameter of Pinion Shafts 110 and 315-260 mm
 Diameter of Journals 155 and 315 mm Distance between Centres of Bearings 540 and 720 mm Diameter of Pitch Circle 170.3 and 338.3 mm
 Diameter of Wheel Shaft 500-400 mm Distance between Centres of Bearings 960 mm Diameter of Pitch Circle of Wheels 1555.6 & 2209 mm
 Width of Face 220 & 440 mm Diameter of Thrust Shaft under Collars 352.5 mm Diameter of Tunnel Shaft as per rule *✓*
 No. of Screw Shafts *✓* Diameter of same as per rule *✓* as fitted *✓* Diameter of Propeller *✓* Pitch of Propeller *✓*
 No. of Blades *✓* State whether Moveable *✓* Total Surface *✓* Diameter of Rotor Drum, H.P. L.P. 650 mm Astern *✓*
 Thickness at Bottom of Groove, H.P. L.P. *✓* Revs. per Minute at Full Power, Turbine 4000 Propeller 66 *✓*

PARTICULARS OF BLADING.

	H.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.
1ST EXPANSION				57	764	1			
2ND				74	798	1			
3RD				91	832	1			
4TH				108	866	1			
5TH				124	898	1			
6TH				147	944	1			
7TH				170	990	1			
8TH									

No. and size of *oil pumps* including spare pumps 2 Vertical Duplex 135 x 135 x 200 mm

No. and size of Bilge pumps

No. and size of Bilge suction in Engine Room

In Holds, &c.

No. of Bilge Injections *✓* sizes *✓* Connected to condenser, or to circulating pump *✓* Is a separate Donkey Suction fitted in Engine Room & size *✓*
 Are all the bilge suction pipes fitted with roses *✓* Are the roses in Engine room always accessible *✓*
 Are all connections with the sea direct on the skin of the ship *✓* Are they Valves or Cocks *✓*
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates *✓* Are the Discharge Pipes 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 are carried through the bunkers *✓* How are they protected *✓*
 Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times *✓*
 Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges *✓*
 Is the Screw Shaft Tunnel watertight *✓* Is it fitted with a watertight door *✓* worked from *✓*

BOILERS, &c.—(Letter for record *✓*) Manufacturers of Steel

Total Heating Surface of Boilers *✓* Is Forced Draft fitted *✓* No. and Description of Boilers *✓*
 Working Pressure *✓* Tested by hydraulic pressure to *✓* Date of test *✓* No. of Certificate *✓*
 Can each boiler be worked separately *✓* Area of fire grate in each boiler *✓* No. and Description of Safety Valves to *✓*
 each boiler *✓* Area of each valve *✓* Pressure to which they are adjusted *✓* Are they fitted with easing gear *✓*
 Smallest distance between boilers or uptakes and bunkers or woodwork *✓* Mean dia. of boilers *✓* Length *✓* Material of shell plates *✓*
 Thickness *✓* Range of tensile strength *✓* Are the shell plates welded or flanged *✓* Descrip. of riveting: cir. seams *✓*
 long. seams *✓* Diameter of rivet holes in long. seams *✓* Pitch of rivets *✓* Lap of plates or width of butt straps *✓*
 Per centages of strength of longitudinal joint *✓* rivets *✓* Working pressure of shell by rules *✓* Size of manhole in shell *✓*
 plates *✓*
 Size of compensating ring *✓* No. and Description of Furnaces in each Boiler *✓* Material *✓* Outside diameter *✓*
 top *✓* crown *✓*
 Length of plain part *✓* Thickness of plates *✓* Description of longitudinal joint *✓* No. of strengthening rings *✓*
 bottom *✓*
 Working pressure of furnace by the rules *✓* Combustion chamber plates: Material *✓* Thickness: Sides *✓* Back *✓* Top *✓* Bottom *✓*
 Pitch of stays to ditto: Sides *✓* Back *✓* Top *✓* If stays are fitted with nuts or riveted heads *✓* Working pressure by rules *✓*
 Material of stays *✓* Diameter at smallest part *✓* Area supported by each stay *✓* Working pressure by rules *✓* End plates in steam space *✓*
 Material *✓* Thickness *✓* Pitch of stays *✓* How are stays secured *✓* Working pressure by rules *✓* Material of stays *✓*
 Diameter at smallest part *✓* Area supported by each stay *✓* Working pressure by rules *✓* Material of Front plates at bottom *✓*
 Thickness *✓* Material of Lower back plate *✓* Thickness *✓* Greatest pitch of stays *✓* Working pressure of plate by rules *✓*
 Diameter of tubes *✓* Pitch of tubes *✓* Material of tube plates *✓* Thickness: Front *✓* Back *✓* Mean pitch of stays *✓*
 Pitch across wide water spaces *✓* Working pressures by rules *✓* Girders to Chamber tops: Material *✓* Depth and *✓*
 thickness of girder at centre *✓* Length as per rule *✓* Distance apart *✓* Number and pitch of stays in each *✓*
 Working pressure by rules *✓* Steam dome: description of joint to shell *✓* % of strength of joint *✓* Diameter *✓*
 Thickness of shell plates *✓* Material *✓* Description of longitudinal joint *✓* Diameter of rivet holes *✓* Pitch of rivets *✓*
 Working pressure of shell by rules *✓* Crown plates: Thickness *✓* How stayed *✓*

SUPERHEATER. *See Memo Report No. 963.*
Type _____ Date of Approval of Plan _____ Tested by Hydraulic Pressure to _____
Date of Test _____ Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler _____
Diameter of Safety Valve _____ Pressure to which each is adjusted _____ Is Easing Gear fitted _____
IS A DONKEY BOILER FITTED? ☒ If so, is a report now forwarded? ☒
SPARE GEAR. State the articles supplied:— *See Memo Report No. 963.*

The foregoing is a correct description,

KOCKUMS MEKANISKA VERKSTADS

Manufacturer.

AKTIE-BOLAG

E. Edlund.

Dates of Survey while building { During progress of work in shops -- *7/9, 9/9, 13/9, 18/9, 20/9, 24/9, 4/10, 8/10, 15/10, 22/10, 23/10, 29/10, 31/10, 1/11, 6/11, 11/11, 19/11, 20/11, 27/11, 28/11, 1929, 2/1, 19/1, 1930.*
During erection on board vessel --- *4/2, 6/2, 19/2, 18/2, 24/2, 28/2, 3/3, 9/3, 1930.*
Total No. of visits *30.*

Is the approved plan of main boiler forwarded herewith ☒

Dates of Examination of principal parts—Casings *7/9, 9/9, 13/9, 18/9, 20/9, 24/9, 4/10, 8/10, 15/10, 22/10, 23/10, 29/10, 31/10, 1/11, 6/11, 11/11, 19/11, 20/11, 27/11, 28/11, 1929, 2/1, 19/1, 1930.* " " " donkey " " " ☒
Blading *1/11, 1929, 1/1, 1930* Gearing *2/1, 19/1, 1930.*

Rotor shaft *24/10, 1929* Thrust shaft *28/12, 1929* Tunnel shafts ☒ Screw shaft ☒ Propeller ☒

Stern tube ☒ Steam pipes tested *30/1, 2/2, 1930* Engine and boiler seatings *4/2, 1930* Engines holding down bolts *10/2, 1930*

Completion of pumping arrangements ☒ Boilers fired ☒ Engines tried under steam *7/3, 1930.*

Main boiler safety valves adjusted ☒ Thickness of adjusting washers ☒

Material and tensile strength of Rotor shaft *See forging reports enclosed with Memo Rpt. 963* Identification Mark on Do. *3421, F.S. 22-10-29*

Material and tensile strength of Pinion shaft *Chrom nickel steel 975-906 kg/cm²* Identification Mark on Do. *3474, F.S. 28-10-29*

Material of Wheel shaft *Steel* Identification Mark on Do. *1074, F.S. 28-12-29* Material of Thrust shaft *Steel* Identification Mark on Do. *5818, F.S. 28-12-29*

Material of Tunnel shafts *Steel* Identification Marks on Do. *F.S. 28-12-29* Material of Screw shafts ☒ Identification Marks on Do. ☒

Material of Steam Pipes *Steel (Removed in conn. with fitting sparks)* Test pressure *40 kg/cm²*

Is an installation fitted for burning oil fuel *No* Is the flash point of the oil to be used over 150°F. ☒

Have the requirements of Section 49 of the Rules been complied with ☒

Is this machinery a duplicate of a previous case *Yes* If so, state name of vessel *S/S "NARVIK" of Stockholm.*

General Remarks (State quality of workmanship, opinions as to class, &c.)

This exhaust steam turbine has been built under special survey in accordance with approved plans and has been tested under working conditions with satisfactory result.

The workmanship is good.

Forgings as per forging reports forwarded to London with Memo report No. 963.

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

Asmundin

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned

See Memo rpt. No. 963



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