

## REPORT ON MACHINERY.

No. 6182-THU. 15 SEP. 1921

Received at London Office

Date of writing Report 18<sup>th</sup> August 1921 When handed in at Local Office 18<sup>th</sup> August 1921 Port of Copenhagen  
 No. in Survey held at Aarhus & Aalborg Date, First Survey 23<sup>rd</sup> June 1920 Last Survey 20<sup>th</sup> July 1921  
 Reg. Book. 33000 on the STEEL S.S. "THORS DAL" (YARD No 19) (Number of Visits 39) Gross 2095 Tons Net 1236  
 Master A. D. Nelson Built at Aalborg By whom built P. H. Sühr's charmer of Skibbyggeri When built 1921  
 Engines made at Aarhus By whom made A/S Frichs when made 1921  
 Boilers made at Aalborg By whom made P. H. Sühr's charmer of Skibbyggeri when made 1921  
 Registered Horse Power 1950 Owners Nelson & Nelson Port belonging to Danish  
 Nom. Horse Power as per Section 28 222 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Vertical triple expansion surface condensing No. of Cylinders 3 No. of Cranks 3  
 Dia. of Cylinders 21" - 33" - 55" Length of Stroke 36" Revs. per minute 75 Dia. of Screw shaft as per rule 286 mm Material of S.M.I. steel  
 Is the screw shaft fitted with a continuous liner the whole length of the stern tube Yes Is the after end of the liner made water tight  
 in the propeller boss Yes If the liner is in more than one length are the joints burned No 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 Yes If two  
 liners are fitted, is the shaft lapped or protected between the liners Yes Length of stern bush 1320 mm  
 Dia. of Tunnel shaft as per rule 261 mm Dia. of Crank shaft journals as per rule 10.86" Dia. of Crank pin 10 7/8" Size of Crank webs 7 3/4" x 20 1/4" Dia. of thrust shaft under  
 collars 10 7/8" Dia. of screw 4100 mm Pitch of Screw 4230 mm No. of Blades 4 State whether moveable No Total surface 6.3 m<sup>2</sup>  
 No. of Feed pumps 2 Diameter of ditto 3 1/4" Stroke 20" Can one be overhauled while the other is at work Yes  
 No. of Bilge pumps 2 Diameter of ditto 3 1/4" Stroke 20" Can one be overhauled while the other is at work Yes  
 No. of Donkey Engines 2 Sizes of Pumps 50 x 100 - 50 x 250 - 190 x 250 mm No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room 6 off 3" 1 off 6" In Holds, &c. F. & A. Hold 2 off 3" Tunnel well 1 off 3" F.P. tank 1 off 2 1/4"  
A.P. tank 1 off 2 1/4" N. 1 D.B. tank 2 off 2 1/4" 1 off 3 1/2" N. 2 do. 2 off 3" 1 off 4 1/2" N. 3 do. 2 off 2" 2 off 2 1/2" N. 4 do. 2 off 2 1/4" N. 5 do. 2 off 2 1/2" 1 off 4" N. 6 do. 1 off 3 1/2"  
 No. of Bilge Injections 1 sizes 6" Connected to condenser, or to circulating pump Circ. pump a separate Donkey Suction fitted in Engine room & size Yes, 3"  
 Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes Are the sluices on Engine room bulkheads always accessible None  
 Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks valves except blow off cocks  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Yes Are the Discharge Pipes above or below the deep water line above  
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Yes Are the Blow Off Cocks fitted with a spigot and brass covering plate Yes  
 What pipes are carried through the bunkers None How are they protected Yes  
 Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes  
 Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges Yes  
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from upper deck  
Notes: David Colville & Sons Ltd, Motherwell.  
Tubes: The British Mannesmann Tube Co Ltd, London.  
Stays: Klostern abrieholag, Långshyttan, Sweden.

BOILERS, &c.—(Letter for record 5) Manufacturers of Steel Furnaces: John Marshall & Co.  
 Total Heating Surface of Boilers 3714 sq ft Is Forced Draft fitted No No. and Description of Boilers 3 off, single ended, Scotch type  
 Working Pressure 185 lbs. per sq. in. Tested by hydraulic pressure to 328 lbs. per sq. in. Date of test 19/5 21 No. of Certificate 421-422-423  
 Can each boiler be worked separately Yes Area of fire grate in each boiler 33 sq ft No. and Description of Safety Valves to  
 each boiler 2 off directly spring loaded Area of each valve 5.16 sq ft Pressure to which they are adjusted 185 lbs. per sq. in. Are they fitted with easing gear Yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 12" Mean dia. of boilers 11'-3" Length 11' Material of shell plates S.M. steel  
 Thickness 1" Range of tensile strength 28-32 ts Are the shell plates welded or flanged No Descrip. of riveting: cir. seams 2 1/2" riveted  
 long. seams 2 1/2" butt str. 3 1/2" riv. Diameter of rivet holes in long. seams 1 5/32" Pitch of rivets 7 1/4" Lap of plates or width of butt straps 17 1/2"  
 Per centages of strength of longitudinal joint rivets 102 Working pressure of shell by rules 192 lbs. Size of manhole in shell 15" x 18 7/8"  
 plate 8 1/2" x 5" Houston type  
 Size of compensating ring 25 3/4" x 29 5/8" x 1" No. and Description of Furnaces in each boiler 2 off corrugated Material S.M. steel Outside diameter 3'-3"  
 Length of plain part top 5 1/8" bottom 5 1/8" Thickness of plates crown 5 1/8" bottom 5 1/8" Description of longitudinal joint Welded No. of strengthening rings Yes  
 Working pressure of furnace by the rules 254 lbs. Combustion chamber plates: Material S.M. steel Thickness: Sides 5 1/8" Back 5 1/8" Top 5 1/8" Bottom 1 1/16"  
 Pitch of stays to ditto: Sides 6" x 8" Back 7 1/8" x 7 1/8" Top 8" x 7 1/8" If stays are fitted with nuts or riveted heads riveted outside exc. Working pressure by rules 214 lbs.  
 Material of stays S.M. steel Area at smallest part 1.50 sq ft Area supported by each stay 62.02 sq ft Working pressure by rules 194 lbs. End plates in steam space:  
 Material S.M. steel Thickness 1 1/16" Pitch of stays 15 3/4" x 15 3/4" How are stays secured screwed into both plates Working pressure by rules 233 lbs. Material of stays S.M. steel  
 Area at smallest part 5.45 sq ft Area supported by each stay 24.8 sq ft Working pressure by rules 228 lbs. Material of Front plates at bottom S.M. steel  
 Thickness 1 1/16" Material of Lower back plate S.M. steel Thickness 1 1/16" Greatest pitch of stays 26" x 11 1/2" Working pressure of plate by rules 282 lbs.  
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates S.M. steel Thickness: Front 1 1/16" Back 1" Mean pitch of stays 9"  
 Pitch across wide water spaces 16 3/8" Working pressures by rules 183.2 Girders to Chamber tops: Material S.M. steel Depth and  
 thickness of girder at centre 1/8" x 3/16" x 2" Length as per rule 2'-3" Distance apart 8" Number and pitch of stays in each 2 off 7 3/8"  
 Working pressure by rules 207 lbs. Steam dome: description of joint to shell Yes % of strength of joint Yes  
 Diameter Yes Thickness of shell plates Yes Material Yes Description of longitudinal joint Yes Diam. of rivet holes Yes  
 Pitch of rivets Yes Working pressure of shell by rules Yes Crown plates Yes Thickness Yes How stayed Yes

SUPERHEATER. Type Smith's Patent Date of Approval of Plan 3/5 20 Tested by Hydraulic Pressure to 410 lbs. per sq. in.  
 Date of Test 11<sup>th</sup> September 1920 Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler Yes  
 Diameter of Safety Valve 1 9/16" Pressure to which each is adjusted 185 lbs. per sq. in. Is Easing Gear fitted Yes



IS A DONKEY BOILER FITTED? No.

If so, is a report now forwarded?

**SPARE GEAR.** State the articles supplied:— $\frac{1}{3}$  crank shaft, 1 propeller shaft, 1 propeller, 1 valve rod complete, 1 set crank pin brasses, 2 set crosshead brasses, 2 crank pin bolts, 2 crosshead bolts w. nuts, 2 main bearing bolts, 1 set coupling bolts, 1 set piston rings for each piston, 1 set packing rings for each piston valve, 1 eccentric strap complete, 1 piston rod w. nut, 1 air pump rod, 1 circuit pump rod,  $\frac{1}{2}$  set pump links w. brasses, 1 set air & circuit pump valves, 1 set feed & barge pump valves, 2 safety valve springs, 1 set escape valve springs for cylinder, 2 feed pump escape valve springs, 2% condenser tubes, 12 plain & 3 stay tubes for boiler, 10% cyl. cover studs & nuts, 10% slide valve cover studs & nuts, 10% jacking screws, 10% air & circuit pump bolts & brass screws & nuts for air & circuit pump valves, 1 link block complete, 6 bolts & nuts for eccentric rods, 30 bolts & nuts of different sizes, 3 main feed check valves, 3 donkey feed check valves, 4 number of plugs for steam collectors for superheaters, 4 quantity of iron bars of various dimensions. The foregoing is a correct description.

FOR THE ENGINE:

A/S. FRICHS

FOR THE BOILERS:

P. PH. STUHR'S MASKIN- OG SKIBSBYGGER.

Manufacturer.

Dates of Survey while building: During progress of work in shops -- 23/6-4/8-24/9-25/9-28/9-5/11-9/11-10/11-11/11-7/12-18/12-19/12-28/12-20/1-3/1-6/1-29/1-1/2-4/2-10/2-19/2-22/2-1/3-9/3-10/3-23/3-30/4-19/5-21/5  
During erection on board vessel -- 19/2-22/2-23/3-10/5-19/5-2/6-4/6-18/6-28/6-9/7-16/7-20/7-21/7  
Total No. of visits 39.

Is the approved plan of main boiler forwarded herewith y/s.

11/11-18/12-20

" " " donkey " " "

Dates of Examination of principal parts—Cylinders 3/6-29/7-10/8-21/8 Slides 11/11-18/12-20 Covers 11/11-18/12-20 Pistons 11/11-18/12-20 Rods 11/11-18/12-20  
Connecting rods 11/11-18/12-20 Crank shaft 24/9-11/11-20 Thrust shaft 3/1-21 Tunnel shafts 4/8-25/9-20 Screw shaft 5/28-21/2-23/2-21 Propeller 23/3-19/5-21  
Stern tube 19/2-22/2-7/3-21 Steam pipes tested 28/6-9/7-21 Engine and boiler seatings 19/2-23/3-21 Engines holding down bolts 18/6-28/6-21

Completion of pumping arrangements 9/7-21 Boilers fixed 4/6-21 Engines tried under steam 16/7-20/7-21

Completion of fitting sea connections 19/2-21 Stern tube 23/3-21 Screw shaft and propeller 4/6-21

Main boiler safety valves adjusted 16/7-21 Thickness of adjusting washers No washers, check nuts fitted

Material of Crank shaft S.M.T. steel. Identification Mark on Do. LLOYD'S 3995-A.F. Material of Thrust shaft S.M.T. steel. Identification Mark on Do. LLOYD'S 3995-A.F.

Material of Tunnel shafts S.M.T. steel. Identification Marks on Do. LLOYD'S 3995-A.F. Material of Screw shafts S.M.T. steel. Identification Marks on Do. LLOYD'S 3995-A.F.

Material of Steam Pipes Seamless steel. Test pressure 555 lbs. per sq. in.

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 duplicate of a previous case No. If so, state name of vessel

**General Remarks** (State quality of workmanship, opinions as to class, &c. In accordance with the Rules for Special Survey we have examined the material and workmanship from the commencement of construction until the final trial under steam and found it good in every respect.

The dimensions are as specified and in accordance with the Rules, the approved plans and letters & dated 11/4-14/5-29/5-4/9 19 and 24/4 20.

The material used in the construction has been tested as required by the Rules, as per Certificates produced.

On the trial trip the engines and boilers worked satisfactorily.

Recommend the vessel's machinery to have notation of **L M C-7.21.**

It is submitted that this vessel is eligible for THE RECORD. + L M C-7.21. C.L.

The amount of Entry Fee ... £194: 00 :  
Special ... £304: 25 :  
ELECTRIC LIGHT Donkey Boiler Fee ... £180: 95 :  
Travelling Expenses (if any) £1575: 50 :  
TELEGRAMS ... 31: 40 :  
When applied for, 16/8 19 21.  
When received, 31. 8. 1921.

Committee's Minute

Assigned

MACHINERY DEPT.  
REGISTER

FRI. SEP. 9 1921

+ L M C-7.21

C.L.

Reel 7/9/21

A.E. Fitch. Registrar to Lloyd's Register of Shipping.



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