

## REPORT ON MACHINERY.

No. 681.

Date of writing Report Nov. 30<sup>th</sup> 18 When handed in at Local Office Nov 30<sup>th</sup> 18 Port of Vancouver B.C.  
 No. in Survey held at Vancouver B.C. Date, First Survey June 8<sup>th</sup> 18 Last Survey Nov 27<sup>th</sup> 1918  
 Reg. Book. 1 on the Sea-Steaming "Har Charger" (Number of Visits 31)  
 Master A.P. Wacker Built at Vancouver B.C. By whom built J. Goughan & Sons Tons { Gross 5787.33  
 Engines made at Hillsville N.Y. By whom made Ken Lubins Co. When built 1918  
 Boilers made at Vancouver B.C. By whom made Vulcan Iron Works when made 1918  
 Registered Horse Power 242 Owners Messrs. Ruchman & Verel when made 1918  
 Shaft Horse Power at Full Power 2650 Is Refrigerating Machinery fitted for cargo purposes No Port belonging to Vancouver B.C.  
 Is Electric Light fitted Yes

TURBINE ENGINES, &c.—Description of Engines Curtis Rotor, Double Reduction Gear No. of Turbines 1  
 Diameter of Rotor Shaft Journals, H.P. 4.992 L.P. ✓ Diameter of Pinion Shaft High Speed 5.992 Low Speed 9.487  
 Diameter of Journals 4.594 4.594 4.594 Distance between Centres of Bearings 45 2 1/2 15 62 Diameter of Pitch Circle 45 7.402 15 8.78  
 Diameter of Wheel Shaft 14 Distance between Centres of Bearings 15 65 1/2 Diameter of Pitch Circle of Wheel 45 55.59 15 52.11  
 Width of Face 4 1/2 on wheel 16 1/2 on shafts each 19 1/2 Diameter of Thrust Shaft under Collars 13 9/16 13 1/4 Diameter of Tunnel Shaft as per rule 12.21 12.28  
 Diameter of same as fitted 14 Diameter of Propeller 17-0 Pitch of Propeller 12 ft  
 of Screw Shafts One State whether Moveable Yes Total Surface 81 sq ft Diameter of Rotor Drum, H.P. 3 1/2 L.P. 3 1/2 Astern 3 1/2  
 of Blades A Thickness at Bottom of Groove, H.P. ✓ L.P. ✓ Revs. per Minute at Full Power, Turbine 3600 Propeller 100

## 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.
EXPANSION	6" x 1"	33 1/2"	2				6" x 1"	33 1/2"	2
"	6" x 1"	33 1/2"	2				6" x 3"	35 3/8"	1
"	2"	35 3/8"	1						
"	3"	35 3/8"	1						
"	4"	35 3/8"	1						
"	5"	36 3/8"	1						
"	6"	39 3/8"	1						
"	6 3/8"	41 3/4"	1						

and size of Feed pumps 2 @ 12 x 8 x 16  
 and size of Bilge pumps 1 @ 12 x 8 1/2 x 12 Duplex  
 and size of Bilge suction in Engine Room 4 @ 3 1/2" dia  
 In Holds, &c. 2 in each @ 3 1/2" dia (10 in all)

of Bilge Injections One sizes 10" Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine Room & size 2 @ 3 1/2"  
 All the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes  
 All connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Both Valves and Cocks  
 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  
 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  
 Pipes are carried through the bunkers None How are they protected ✓  
 All Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes  
 The Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges Yes  
 Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Top Engine Platform

LERS, &c.—(Letter for record (S)) Manufacturers of Steel Work B.C. Cowesville Pa.  
 Heating Surface of Boilers 8008.5 Is Forced Draft fitted Yes No. and Description of Boilers 355 Three Scotch Marine  
 Working Pressure 190 lbs Tested by hydraulic pressure to 350 lbs Date of test 17th Sept 18 No. of Certificate one  
 Each boiler be worked separately Yes Area of fire grate in each boiler 60 sq ft No. and Description of Safety Valves to ✓  
 Boiler 2 Cowesville Pa. Road Area of each valve 9.60 Pressure to which they are adjusted 190 lbs Are they fitted with easing gear Yes  
 Least distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 14-9 1/8 Length 12-18" Material of shell plates Steel  
 Thickness 1 1/8" Range of tensile strength 60,000 - 65,000 lbs Are the shell plates welded or flanged Flanged Descrip. of riveting: cir. seams DR. Lap  
 Seams T.R. D. Butt Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 8-6 x 4-3" Lap of plates or width of butt straps 22 1/2 x 14 1/2"  
 Stages of strength of longitudinal joint 97.5 Working pressure of shell by rules 208.9 1/2 Size of manhole in shell 12 x 16"  
 Compensating ring None No. and Description of Furnaces in each Boiler 2 Morrison Material Steel Outside diameter 48 3/16"  
 of plain part 8 1/4" Thickness of plates 19 3/32 Description of longitudinal joint Seamless No. of strengthening rings None  
 Working pressure of furnace by the rules 193.9 Combustion chamber plates: Material Steel Thickness: Sides 9/16" Back 9/16" Top 9/16" Bottom 7/8"  
 of stays to ditto: Sides 6 3/32 x 10 3/32 Back 7 3/32 x 7 3/32 Top 7 3/32 x 7 3/32 If stays are fitted with nuts or riveted heads None Working pressure by rules 212.5  
 of stays 11.5 Diameter at smallest part 1.369 Area supported by each stay 51.4 Working pressure by rules 212.5 End plates in steam space ✓  
 Thickness 1 1/8" Pitch of stays 16 1/2 x 16 1/2" How are stays secured D. Nut Working pressure by rules 191.5 Material of stays 11.5  
 at smallest part 2 1/2" Area supported by each stay 264.56 Working pressure by rules 193.3 Material of Front plates at bottom Steel  
 Thickness 3 1/4" Material of Lower back plate Steel Thickness 4 1/2" Greatest pitch of stays 13 x 7 1/8" Working pressure of plate by rules 314.5  
 of tubes 3 00 Pitch of tubes 4 1/8 x 4 1/8" Material of tube plates Steel Thickness: Front 3 1/4" Back 3 1/4" Mean pitch of stays 12 3/8 x 8"  
 across wide water spaces 13" Working pressures by rules 204 Girders to Chamber tops: Material Steel Depth and ✓  
 of girder at centre 10 x 3 1/4" (double) Length as per rule 36" Distance apart 66 x 7 1/2" Number and pitch of stays in each 3 @ 7 1/2"  
 pressure by rules 236 Steam dome: description of joint to shell ✓ % of strength of joint ✓ Diameter ✓  
 of shell plates ✓ Material ✓ Description of longitudinal joint ✓ Diameter of rivet holes ✓ Pitch of rivets ✓  
 pressure of shell by rules ✓ Crown plates: Thickness ✓ How stayed ✓

SUPERHEATER. Ty, e *Foster* Date of Approval of Plan *July 11<sup>th</sup> 1917* Tested by Hydraulic Pressure to *6.30 lb*  
Date of Test *June 31<sup>st</sup> 1918* Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *No*  
Diameter of Safety Valve *3"* Pressure to which each is adjusted *210 lb* Is Easing Gear fitted *No*

IS A DONKEY BOILER FITTED? *No* If so, is a report now forwarded? *✓*

SPARE GEAR. State the articles supplied:— *Rollers: 1 Thrust Bearing complete, 2 Shaft and Nut  
Rotor Bearing, 2 Do for Main Gear Bearing, 2 Do for Pinion Bearing. 1 Set of Coupling  
Bolts, 1 1/2" Bolt: Cling Joint, Do for Turbine Joint, 2 Thermometers for Oil Cooling App.  
1 Set of Bearing Buses for 1 Gear Wheel, Do for 1 Pinion, Do for Rotor Bearing, 1 Set of  
Packing for Rotor Gland, 1 Set of G.P.B. for Kingsbury Thrust, 1 Set of Feed Pump Valve  
1 Set of Bays Pump Valves, 1 Bucket and Rod for Lub Oil Pump, Assorted Bolts and Nuts  
Nail Bars and Plates, 1 Spare Propeller Blade, Spare Tail shaft 10. Spare Boiler Tubes  
1 Set of Spare Check Valves, 2 Safety Valve springs, 1 Spare Super-heater Coil, 10 Condenser Tubes & Feet*  
The foregoing is a correct description,

*J. COUGHLIN & SONS* Manufacturer.  
*John Coughlan*

Dates of Survey while building { During progress of work in shops -- *Jan 8<sup>th</sup> 12, 17, 20, 24, 26, 28 July 4, 8, 10, 16, 18, 23, 25, 26 Aug 3, 15, 21, 30 Sept 5, 18, 27 Oct 2, 15, 19, 23 Nov 5, 1918*  
During erection on board vessel -- *31*  
Total No. of visits *Nov 5, 12, 27* Is the approved plan of main boiler forwarded herewith *✓*

Dates of Examination of principal parts—Casings *July 18<sup>th</sup> 18* Rotors *July 18-18* Blading *July 18<sup>th</sup> 18* Gearing *July 18<sup>th</sup> 18*  
Rotor shaft *July 18<sup>th</sup> 18* Thrust shaft *Aug 30<sup>th</sup> 18* Tunnel shafts *Aug 30<sup>th</sup> 18* Screw shaft *July 25<sup>th</sup> 18* Propeller *July 26<sup>th</sup> 18*  
Stern tube *July 23<sup>rd</sup> 18* Steam pipes tested *Oct 15<sup>th</sup> 18* Engine and boiler seatings *July 26<sup>th</sup> 18* Engines holding down bolts *Aug 3<sup>rd</sup> 18*  
Completion of pumping arrangements *Oct 19<sup>th</sup> 18* Boilers fixed *Sept 27<sup>th</sup> 18* Engines tried under steam *Oct 19<sup>th</sup> 18*  
Main boiler safety valves adjusted *Oct 23<sup>rd</sup> 1918* Thickness of adjusting washers *SV 1/4" AV 5/16" PV 7/32" SV 1/4" PV 11/32" AV 1/2"*  
Material and tensile strength of Rotor shaft *ONS 110,000 lbs* Identification Mark on Do. *964 W.A.R.*  
Material and tensile strength of Pinion shaft *ONS 104,000 lbs* Identification Mark on Do. *995 W.A.R.*  
Material of Wheel shaft *ONS* Identification Mark on Do. *235-CNT* Material of Thrust shaft *ONS* Identification Mark on Do. *AT 398*  
Material of Tunnel shafts *ONS* Identification Marks on Do. *3380 JD 3342 JD* Material of Screw shafts *ONS* Identification Marks on Do. *31-418*  
Material of Steam Pipes *Steel* Test pressure *650 lbs*  
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 *"War Camp"*

General Remarks (State quality of workmanship, opinions as to class, &c.) *Screw shaft fitted with carbide cutters. The Engines and Boilers of this vessel have been built and installed under special survey and in accordance with the approved plans together with auxiliaries, Piping, Mountings, Fittings and Sea Connections etc. The Material and Workmanship are both of good quality. On Completion of the Machinery the vessel steamed under full steam Sea and Land satisfactory. Safety Valves tested independently. Down Pump and Connections found satisfactory. The Machinery and Boilers are in our opinion to have to Record L.M.C. 11-18 B.P. 11-18 made in the Register Book in the case of this vessel.*

The amount of Entry Fee ... *£15 : 00 :* When applied for, *19*  
Special ... *£70 : 00 :*  
Donkey Boiler Fee ... *£8 : 10 : 00*  
Travelling Expenses (if any) *£* When received, *22/11/18*

*James Murdoch and C. Hastie*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FR 10 JAN 1919*

Assigned *+ L.M.C. 11-18*  
*J.D.*



© 2021

Lloyd's Register Foundation