

## REPORT ON OIL ENGINE MACHINERY.

No. 4650

Date of writing Report SEP. 5<sup>th</sup> 1923. When handed in at Local Office SEP. 5<sup>th</sup> 1923. Port of PHILADELPHIA. Received at London Office MON. 24 SEP. 1923

No. in Survey held at CHESTER, PA. Date, First Survey DEC. 6<sup>th</sup> 1922 Last Survey SEP. 5<sup>th</sup> 1923.

Reg. Book. 14672 on the Single Twin Triple Screw vessel "BIDWELL" Tons { Gross 6974 Net 4284

Master ✓ Built at BALTIMORE By whom built BALTIMORE D.D. YARD Yard No. — When built 1920

Engines made at CHESTER, PA. By whom made SUN S.B. & D.D. CO. Engine No. 7501 When made 1923

Donkey Boilers made at BALTIMORE By whom made BALTIMORE D.D. & S.B. CO. Boiler No. — When made 1920

Brake Horse Power — Owners SUN S.B. & D.D. CO. Port belonging to PHILADELPHIA

Nom. Horse Power as per Rule 430 Is Refrigerating Machinery fitted for cargo purposes NO Is Electric Light fitted YES

OIL ENGINES, &c.—Type of Engines DANFORD OPPOSED PISTON 2 or 4 stroke cycle Single or double acting SINGLE

Maximum pressure in cylinders 400 lb. No. of cylinders 4 No. of cranks 12 Diameter of cylinders 580<sup>7</sup>/<sub>16</sub>

Length of stroke 14<sup>1</sup>/<sub>2</sub> Revolutions per minute 90 Means of ignition COMPRESSED AIR Kind of fuel used CRUDE OIL

Is there a bearing between each crank YES Span of bearings (Page 92, Section 2, par. 7 of Rules) 2750<sup>7</sup>/<sub>16</sub>

Distance between centres of main bearings 2750<sup>7</sup>/<sub>16</sub> Is a flywheel fitted YES Diameter of crank shaft journals 430<sup>7</sup>/<sub>16</sub>

Diameter of crank pins 460<sup>7</sup>/<sub>16</sub> Breadth of crank webs 850<sup>7</sup>/<sub>16</sub> Thickness of ditto 260<sup>7</sup>/<sub>16</sub>

Diameter of flywheel shaft 430<sup>7</sup>/<sub>16</sub> Diameter of INT. shaft 14<sup>1</sup>/<sub>2</sub> Diameter of thrust shaft 430<sup>7</sup>/<sub>16</sub>

Diameter of screw shaft 15<sup>7</sup>/<sub>16</sub> 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 watertight in the propeller boss YES If the liner is in more than one length are the joints burned —

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 — If without liners, is the shaft arranged to run in oil —

Type of outer gland fitted to stern tube NONE Length of stern bush 5'-10" Diameter of propeller 18'-0"

Pitch of propeller 15'-6" No. of blades 4 state whether moveable YES Total surface 102 square feet

Method of reversing DIRECT Is a governor or other arrangement fitted to prevent racing of the engine when declutched YES Thickness of cylinder liners 25<sup>7</sup>/<sub>16</sub>

Are the cylinders fitted with safety valves YES Means of lubrication FORCED LUBRICATION Are the exhaust pipes and silencers water cooled or lagged with non-conducting material LAGGED If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine EXHAUST LED UP STACK

No. of cooling water pumps TWO Is the sea suction provided with an efficient strainer which can be cleared within the vessel YES No. of bilge pumps fitted to the main engines NONE Diameter of ditto — Stroke —

Can one be overhauled while the other is at work — No. of auxiliary pumps connected to the main bilge lines TWO How driven STEAM

Sizes of pumps 14" x 10" x 12" & 14" x 12" x 12" No. and sizes of suctions connected to both main bilge pumps and auxiliary bilge pumps: — In engine room 4" x 3<sup>1</sup>/<sub>2</sub>"

in holds, etc. 1-3<sup>1</sup>/<sub>2</sub>" IN COFFER DAM No. of ballast pumps ONE How driven STEAM Sizes of pumps 14" x 12" x 12"

Is the ballast pump fitted with a direct suction from the engine room bilges YES State size 3<sup>1</sup>/<sub>2</sub>" Is a separate auxiliary pump suction fitted in engine room and size YES 4<sup>1</sup>/<sub>2</sub>"

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 Are they fixed sufficiently high on the ship's side to be seen without lifting the floor plates YES

Are the discharge pipes above or below the deep water line BELOW Are they each fitted with a discharge valve always accessible on the plating of the vessel YES

Are all pipes, cocks, valves and pumps in connection with the machinery 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 — Is it fitted with a watertight door —

Is the screw shaft tunnel watertight — If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork —

No. of main air compressors NONE No. of stages — Diameters STEAM 10<sup>5</sup>/<sub>16</sub> x 5<sup>1</sup>/<sub>2</sub> x 3<sup>1</sup>/<sub>2</sub> Stroke — Driven by —

No. of auxiliary air compressors TWO No. of stages THREE Diameters 10<sup>5</sup>/<sub>16</sub> x 5<sup>1</sup>/<sub>2</sub> x 3<sup>1</sup>/<sub>2</sub> Stroke 10" 10 Driven by STEAM

No. of small auxiliary air compressors NONE No. of stages — Diameters — Stroke — Driven by —

No. of scavenging air pumps ONE Diameter 10<sup>5</sup>/<sub>16</sub> Stroke 10<sup>5</sup>/<sub>16</sub> Driven by MAIN ENGINE

Are the air compressors and their coolers made so as to be easy of access YES

RECEIVERS:—No. of high pressure air receivers SOLID INJECTION Internal diameter — Cubic capacity of each —

Material — Seamless, lap welded or riveted longitudinal joint — Range of tensile strength —

Working pressure by Rules — No. of starting air receivers TWO Internal diameter 3'-5<sup>1</sup>/<sub>2</sub>"

Cubic capacity 220 CUB. FT. Material STEEL Seamless, lap welded or riveted longitudinal joint RIVETED LONG. JOINT

Range of tensile strength 28-32 TONS thickness 1" Working pressure by rules 605 lb. Is each receiver, which can be isolated, with a safety valve as per Rule YES Can the internal surfaces of the receivers be examined YES What means are provided for cleaning their internal surfaces MANHOLES Is there a drain arrangement fitted at the lowest part of each receiver YES



IS A DONKEY BOILER FITTED? **YES.** If so, is a report now forwarded? **YES.**  
HYDRAULIC TESTS:—

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS LINERS.....	SEE SUNDERLAND RPT. COPY ATTACHED.	—	—	—	—
" " COVERS.....	—	—	—	—	—
" " JACKETS.....	12-4-23	15 lbs.	30 lbs.	L.R.	—
" " PISTON WATER PASSAGES.....	25-4-23	15 "	30 "	L.R.	—
MAIN COMPRESSORS—1st STAGE.....	—	—	—	—	—
" 2nd ".....	—	—	—	—	—
" 3rd ".....	—	—	—	—	—
AIR RECEIVERS—STARTING.....	12-6-23	600 lbs.	1000 lbs.	ALPHA TANK 1000 lbs. JMB 12-6-23	—
" INJECTION (SAID).....	—	—	—	—	—
AIR PIPES.....	7-6-23	600 "	1200 "	L.R.	—
FUEL PIPES.....	13-6-23	6000 "	12000 "	L.R.	—
FUEL PUMPS.....	19-6-23	6000 "	12000 "	L.R.	—
SILENCER.....	—	—	—	—	—
" WATER JACKET (NONE).....	—	—	—	—	—
SEPARATE FUEL TANKS TWO 10 TONS.	—	5 "	15 "	—	—

PLANS. Are approved plans forwarded herewith for shafting Receivers **OCT 6<sup>th</sup> 1922.** Separate Tanks —  
SPARE GEAR ONE CYLINDER LINER. ONE UPPER & ONE LOWER PISTON COMPLETE WITH RINGS, STUCCO KNU...  
ONE SET OF PISTON RINGS FOR MAIN ENGINE. TWO CON. ROD TOP END BOLTS & NUTS. TWO CON. ROD BOTTOM EN...  
BOLTS & NUTS. TWO MAIN BEARING BOLTS & NUTS. ONE SET OF COUPLING BOLTS FOR CRANK SHAFT. ...  
ONE SET COUPLING BOLTS FOR INT. SHAFT. HALF SET OF VALVES FOR AUXILIARY COMPRESSORS. ON...  
FUEL PUMP FOR MAIN ENGINE. ONE SET VALVES FOR DAILY FUEL SUPPLY PUMP. ONE SET VALV...  
FOR WATER & CIRCUL. PUMP. ONE SET VALVES FOR BILGE PUMP. ONE SET VALVES FOR SCAVENGE PUMP...  
SET OF VALVES & BUCKET & ROD FOR LUBRICATING OIL PUMP. ASSORTED BOLTS & NUTS. LENGTHS OF PIPES...  
VARIOUS SIZES.

The foregoing is a correct description.

*A. P. Hewitt*  
FOR SUN SHIPBUILDING & D.D. Co.

Manufacturer.

Dates of Survey while building  
During progress of work in shops —  
During erection on board vessel —  
Total No. of visits **33.**

Dates of Examination of principal parts—Cylinders **MAR 19** Covers — Pistons **MAR 19** Rods **MAR 19** Connecting rods **MAR 19** ...  
Crank shaft **DEC 25** Thrust shaft **MAY 2** Int. shafts **MAR 29** Screw shaft **MAR 24** Propeller **AUG 1** Stern tube **MAY 29** Engine seatings **JUNE** ...  
Engines holding down bolts **JULY 10** Completion of pumping arrangements **AUG 8** Engines tried under working conditions **AUG 23** ...  
Completion of fitting sea connections **AUG 1** Stern tube **AUG 1** Screw shaft and propeller **AUG 1** ...  
Material of crank shaft **D.H. STEEL** Identification Mark on Do. **1691-1** Material of thrust shaft **D.H. STEEL** Identification Mark on Do. **1691-1** ...  
Material of **INT.** shafts **D.H. STEEL** Identification Marks on Do. **A.B. 4.21.23** Material of screw shafts **D.H. STEEL** Identification Marks on Do. **A.B. 4.21.23** ...

Is the flash point of the oil to be used over 150° F. **YES.**  
Is this machinery duplicate of a previous case **YES.** If so, state name of vessel **"MILLER COUNTY"**

General Remarks (State quality of workmanship, opinions as to class, &c.)  
THE ENGINES HAVE BEEN BUILT UNDER SPECIAL SURVEY, THE MATERIALS AND WORKMANSHIP ARE  
OF GOOD DESCRIPTION, HYDRAULIC TESTS SATISFACTORY, THEY HAVE BEEN FITTED ON BOARD IN  
A SATISFACTORY MANNER AND ON COMPLETION WERE TRIED UNDER FULL WORKING  
CONDITIONS ON TRIAL TRIP AND FOUND TO WORK SATISFACTORILY, IN MY OPINION THE  
MACHINERY IS ELIGIBLE FOR RECORD OF **LMC 9-23** AND **B.S. 9-23** FITTED FOR OIL  
FUEL 9-23, R.A. ABOVE 150° F.

The amount of Entry Fee ... **25.00** When applied for, **7 Sep 1923**  
Special ... **498.50**  
Donkey Boiler Fee **30.00** When received, **4.12.23**  
Travelling Expenses (if any) ...  
Committee's Minute **New York SEP 11 1923**

Assigned **+ LMC-9-23**  
**DB-23** 200 lbs.

*W. Buchanan*  
Engineer Surveyor to Lloyd's Register of Shipping.  
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