

# Report on Steam Turbine Machinery.

No. 770

Rpt. 4a.

Date of writing Report 3-6-1959 When handed in at Local Office 18-6-1959 Port of NANTES  
 No. in Survey held at BREST Date, First Survey 26-6-1958 Last Survey 26-5-1959  
 Reg. Book (Number of Visits 38)

Received at London Office

on the Single Screw Vessel " ESSO-NORWICH " Tons { Gross 23,997  
 { Twin  
 { Triple  
 { Quadruple  
 Built at ARSENAL DE BREST By whom built ATELIERS & CH. DE FRANCE Yard No. 227 When built 5-1959  
 Engines made at LILLE By whom made SEC FIVES-LILLE-CAIL Engine No. 1110-1111 When made 1956-1958  
 Boilers made at LA COURNEUVE & DUNKIRK By whom made BABCOCK WILCOX CH. DE FRANCE Boiler No. 12177 D&C When made 1958  
 Shaft Horse Power { Maximum 17,600 Owners ESSO PETROLEUM CO Port belonging to LONDON  
 { Service 16,600  
 M.N. as per Rule 3,520 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted YES  
 Trade for which Vessel is intended CARRYING PETROLEUM IN BULK

## TEAM TURBINE ENGINES, &c.—Description of Engines

No. of Turbines { Ahead Direct coupled, single reduction geared } to propelling shafts. No. of primary pinions to each set of reduction gearing  
 { Astern double reduction geared }  
 Direct coupled to { Alternating Current Generator phase periods per second } rated Kilowatts Volts at revolutions per minute;  
 { Direct Current Generator }  
 for supplying power for driving Propelling Motors, Type  
 rated Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

TURBINE BLADING.	H. P.	I. P.	ASTERN.
Impulse Blading { No. of rows			
Reaction Blading { No. of stages			
{ No. of rows in each stage			

Shaft Horse Power at each turbine { H.P. I.P. L.P. } Revolutions per minute at full power of each Turbine Shaft { H.P. I.P. L.P. }  
 { 1st reduction wheel }  
 { main shaft 103 }

Rotor Shaft diameter at journals { H.P. I.P. L.P. } Pitch Circle Diameter { 1st pinion 2nd pinion } 1st reduction wheel main wheel  
 Width of Face { 1st reduction wheel main wheel }

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

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

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

Intermediate Shafts, diameter as per rule as fitted 534 mm Thrust Shaft, diameter at collars as per rule as fitted 600 mm

Tube Shaft, diameter as per rule as fitted Screw Shaft, diameter as per rule as fitted 626 mm Is the tube screw shaft fitted with a continuous liner YES

Bronze Liners, thickness in way of bushes as per rule as fitted 32.5 Thickness between bushes as per rule as fitted 32 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 junctions made by fusion through the whole thickness of the liner

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 Is an approved Oil Gland or other appliance fitted at the after end of the tube  
 shaft NO If so, state type Length of Bearing in Stern Bush next to and supporting propeller 2760

Propeller, diameter 6700 Pitch 5715 No. of Blades 4 State whether Moveable NO Total Developed Surface 18676 square feet  
 If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine YES Can the H.P. or I.P. Turbines exhaust direct to the  
 Condenser YES No. of Turbines fitted with astern wheels 1 (L.P.) Feed Pumps { No. and size 3 EACH 395 GAL P. MIN. How driven STEAM TURBINE

Pumps connected to the Main Bilge Line { No. and size 3 BILGE PP 330 G.P.M. G.S. PP 500 G.P.M. FIRE & BUTTERWORTH PP 1000 G.P.M. How driven ELECT. MOTOR STEAM RECIP. STEAM TURBINE

Ballast Pumps, No. and size G.S. PP 500 G.P.M. Lubricating Oil Pumps, including Spare Pump, No. and size 2 EACH 26,000 G.P.M.  
 Are two independent means arranged for circulating water through the Oil Cooler YES Branch Bilge Suctions, No. and size:—In Engine  
 and Boiler Rooms Fwd 4x90 (2 P 25) Ps 1x90 S.S. 1x90 AFT ER 2x90 (I.P. IS) SHAFT REC. 1x90 In Pump Room Fwd 2x76 AFT 2x100

In Holds, &c. Fwd STORE ROOM 2x64 Main Water Circulating Pump Direct Bilge Suctions, No. and size 1x400 Direct Bilge Suctions to the Engine and/or Boiler Room  
 Bilges, No. and size 1x128 To BILGE PP Ps 1x128 To G.S. PP Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes YES  
 AFT 1x128 To BUTTERW. PP

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  
 Are all Sea Connections fitted direct on the skin of the ship YES Are they fitted with Valves or Cocks YES  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Overboard Discharges 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 the Blow Off Cocks fitted with a spigot and brass  
 covering plate VALVE What pipes pass through the bunkers NONE How are they protected

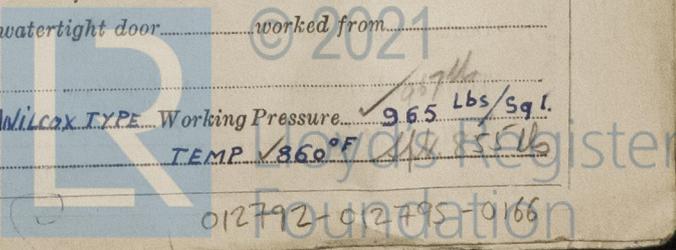
What pipes pass through the deep tanks Have they been tested as per rule  
 Are all Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times YES  
 Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery  
 spaces, or from one compartment to another YES Is the Shaft Tunnel watertight NONE Is it fitted with a watertight door

BOILERS, &c.—Total Heating Surface of Boilers 20,000 Sq. Ft. Working Pressure 965 Lbs/Sq. I.  
 Is Forced Draught fitted YES No. and Description of Boilers 2 WATERTUBE BABCOCK WILCOX TYPE TEMP 360°F

Is a Report on Main Boilers now forwarded? YES

SEE T.E. REPT VALENCIENNES L.N. 5 COPY ATTACHED

*[Handwritten signature]*  
 15/12/59



Is **a Donkey** Boiler fitted? No If so, is a report now forwarded? \_\_\_\_\_  
 Is **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 Shafting YES Main Boilers YES Auxiliary Boilers \_\_\_\_\_ Donkey Boilers \_\_\_\_\_  
 (If not, state date of approval) \_\_\_\_\_  
 Superheaters YES General Pumping Arrangements YES Oil Fuel Burning Arrangements \_\_\_\_\_  
 Geared turbines situated aft. Have torsional vibration characteristics of system been approved. YES Date of approval 25/4/59  
362.Q.

**SPARE GEAR.**

Has the spare gear required by the Rules been supplied. YES  
 State the principal additional spare gear supplied. NONE

The foregoing is a correct description.



15/6/59 Manufacturer.

Dates of Survey while building: During progress of work in shops - - - - -  
 During erection on board vessel - - - - - 1958: 26/6-16/10-7/11-13/11-24/11-25/11-23/12-1959: 7-14-15-22-23-23/1-5-10-24-25/2-3-4-11-12-19-26/3-2-7-8-13-14-2  
 Total No. of visits: 24-25-26-27-28/4 5, 14, 22, 26/5 38

Dates of Examination of principal parts—Casings \_\_\_\_\_ Rotors \_\_\_\_\_ Blading \_\_\_\_\_ FINAL EXAM. AFTER SEA Gearing TRIALS. 27-4-59  
 Wheel shaft \_\_\_\_\_ Thrust shaft \_\_\_\_\_ Intermediate shafts \_\_\_\_\_ Tube shaft \_\_\_\_\_ Screw shaft \_\_\_\_\_  
 Propeller 7-11-58 Stern tube 25-11-58 Engine and boiler seatings 23-12-58 Engine holding down bolts 11-19/3/59  
 Completion of fitting sea connections 23-12-58 Completion of pumping arrangements 14-4-59 Boilers fixed 16-10-58 Engines tried under steam 23 to 26/4/59

Main boiler safety valves adjusted 13-4-59 Thickness of adjusting washers S. BLR { FWD: 32.1 mm AET: 32.7 SPT: 31.7 } PT BLR { FWD: 33.8 AET: 32.7 SPT: 32.2 }  
 Rotor shaft, Material and tensile strength \_\_\_\_\_ Identification Mark \_\_\_\_\_  
 Flexible Pinion Shaft, Material and tensile strength \_\_\_\_\_ Identification Mark \_\_\_\_\_  
 Pinion shaft, Material and tensile strength \_\_\_\_\_ Identification Mark \_\_\_\_\_

\_\_\_\_\_ ; Chemical analysis \_\_\_\_\_  
 If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment \_\_\_\_\_  
 1st Reduction Wheel Shaft, Material and tensile strength \_\_\_\_\_ Identification Mark \_\_\_\_\_  
 Wheel shaft, Material \_\_\_\_\_ Identification Mark \_\_\_\_\_ Thrust shaft, Material \_\_\_\_\_ Identification Mark \_\_\_\_\_  
 Intermediate shafts, Material OH STEEL Identification Marks LYO LR C 73/74/75 Tube shaft, Material \_\_\_\_\_ Identification Marks \_\_\_\_\_  
 Screw shaft, Material OH STEEL Identification Marks LYO LR C 72 Steam Pipes, Material OH S.D. STEEL & CR MO STEEL Test pressure 128 Kg/cm<sup>2</sup>  
 Date of test VARIOUS DATES FROM 10/2/59 TO 19/3/59 Is an installation fitted for burning oil fuel. YES

Is the flash point of the oil to be used over 150°F. YES Have the requirements of the Rules for the use of oil as fuel been complied with. YES  
 Full description of Fire Extinguishing Apparatus fitted in machinery spaces STEAM CO<sub>2</sub> + FOAM (FOR DETAILS SEE LIST + PLANS)  
 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. No If so, state name of vessel \_\_\_\_\_

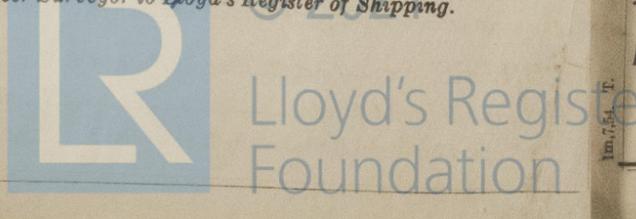
**General Remarks.** (State quality of workmanship, opinions as to class, &c.) The machinery of this vessel has been constructed and installed under Special Survey in accordance with the approved plans, Secretary's letters and Rule requirements. The material and workmanship are good.  
Upon completion the main and auxiliary machinery were tested under full working conditions at sea and found satisfactory. During the sea trials the main engine were operated under steady ahead conditions at 45 and 55 RPM of the main shaft and no evidence of gear hammer or rough running was observed. Before sea trials the reduction gear wheel and pinion teeth were coated and examination after the trials showed adequate teeth contact. The welded reduction gear case was examined during and after the sea trials and no defects were observed.  
The machinery of this vessel is in my opinion eligible to be classed with the notation:  
+ L M C - 5 - 59

Certificate (if required) to be sent to Committee's Minute.

The amount of Entry Fee	£ 546 : 610	When applied for
Special	£ : :	19
Donkey Boiler Fee	£ : :	When received
Travelling Expenses (if any)	£ 1000 : 00	19

Committee's Minute FRIDAY 21 AUG 1959  
 Assigned See Rpt. 1.

Al Singlet  
 Engineer Surveyor to Lloyd's Register of Shipping.



NOTE.—The words which do not apply should be deleted.