

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

9<sup>th</sup> MAR 1948

Date of writing Report... 19<sup>th</sup> February 1948... When handed in at Local Office... 25 FEB 1948... Port of... NEWCASTLE-ON-TYNE  
 No. in Survey held at WALLSEND - ON-TYNE... Date, First Survey... 12<sup>th</sup> AUGUST, 1947... Last Survey... 18<sup>th</sup> FEBRUARY, 1948  
 Reg. Book... 36544... on the S.S. "HYALINA" (Number of Visits... 23... 12167  
 Tons { Gross... 2200... Net... 7367  
 Built at WALLSEND... By whom built SWAN HUNTER & WIGHAM RICHARDSON LTD., Yard No. 1753... When built 1944-48.  
 Owners... ANGLO SAXON PETROLEUM CO. LTD... Port belonging to LONDON.  
 Electrical Installation fitted by SWAN HUNTER & WIGHAM RICHARDSON LTD... Contract No. —... When fitted 1944-8  
 Is vessel fitted for carrying Petroleum in bulk... YES... Is vessel equipped with D.F. YES... E.S.D. YES... Gy.C. YES... Sub.Sig. —

Have plans been submitted and approved... YES... System of Distribution Two Wire - Insulated... Voltage of supply for Lighting 110.  
 Heating 110 Power 220 Direct or Alternating Current, Lighting D.C. Power D.C. If Alternating Current state periodicity — Prime Movers,  
 has the governing been tested and found as per Rule when full load is suddenly thrown on and off YES... Are turbine emergency governors fitted with a  
 trip switch as per Rule YES... Generators, are they compound wound YES... are they level compounded under working conditions YES...  
 if not compound wound state distance between generators — and from switchboard — Where more than one generator is fitted are they  
 arranged to run in parallel 110 Volts - No 220 Volts - YES... are shunt field regulators provided YES... Is the compound winding connected to the negative or positive pole  
 NEGATIVE... Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing YES... Have certificates of  
 test for machines under 100 kw. been supplied YES... and the results found as per rule YES... Are the lubricating arrangements and the construction  
 of the generators as per rule YES... Position of Generators ENGINE ROOM - TURBO FLAT...  
 is the ventilation in way of generators satisfactory YES... are they clear of inflammable material YES... if situated  
 near unprotected combustible material state distance from same horizontally — and vertically — are the generators protected from mechanical  
 injury and damage from water, steam and oil YES... are the bedplates and frames earthed YES... and the prime movers and generators in metallic  
 contact YES... Switchboards, where are main switchboards placed IN ENGINE ROOM NEAR TURBO GENERATORS...  
 are they in accessible positions, free from inflammable gases and acid fumes YES... are they protected from mechanical injury and damage from water, steam  
 and oil YES... if situated near unprotected combustible material state distance from same horizontally — and vertically — what insulation  
 material is used for the panels INTEROUM... if of synthetic insulating material is it an Approved Type YES... if of  
 semi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule — Is the frame effectually earthed YES...  
 Is the construction as per Rule YES... including accessibility of parts YES... absence of fuses on the back of the board YES... individual fuses  
 to pilot and earth lamps, voltmeters, etc. YES... locking of screws and nuts YES... labelling of apparatus and fuses YES... fuses on the "dead"  
 side of switches YES... Description of Main Switchgear for each generator and arrangement of equaliser switches TURBO-GENERATORS - 3 POLE CIRCUIT  
 BREAKER WITH O/L ON 2 POLES, REVERSE CURRENT AND OVERSPEED TRIPS, 3<sup>rd</sup> POLE FOR EQUALISER. — 110 VOLT GENERATORS AND M/G. SETS  
 2 POLE CIRCUIT BREAKER WITH OVERLOAD TRIPS...  
 and for each outgoing circuit 2 POLE CIRCUIT BREAKER WITH O/L TRIPS OR D.P. SWITCH WITH A FUSE ON EACH POLE FOR 220 VOLTS CIRCUITS,  
 AND DOUBLE POLE CHANGEOVER SWITCH WITH A FUSE ON EACH POLE FOR 110 VOLT CIRCUITS...  
 Are compartments containing switchboards composed of fire-resisting material or lined as per Rule YES... Instruments on main switchboard 6  
 ammeters 6 voltmeters — synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the  
 equaliser connection YES... Earth Testing, state means provided EARTH LAMPS...  
 Switches, Circuit Breakers and Fuses, are they as per Rule YES... are the fuses an approved type YES... are all fuses labelled as  
 per Rule YES... If circuit breakers are provided for the generators, at what overload current did they open when tested 3700 AMPS... are the reversed current  
 protection devices connected on the pole opposite to the equaliser connection YES... have they been tested under working conditions, and at what current  
 did they operate YES 350 AMPS... Joint Boxes, Section Boards and Distribution Boards, is the construction and position as per Rule YES...  
 Cables, are they insulated and protected as per the appropriate Tables of the Rules YES... if otherwise than as per Rule are they of an approved type —  
 state maximum fall of pressure between bus bars and any point under maximum load 13.2 VOLTS ON 220 VOLTS,  
 4.6 VOLTS ON 110 VOLTS... are the ends of all cables having a sectional area of 0.04  
 square inch and above provided with soldering sockets YES... Are paper insulated and varnished cambric insulated cables sealed at the ends YES...



with insulating compound. or waterproof insulating tape. Are all the cable runs in accessible positions, not exposed to drip or accumulation of water or oil, high temperatures or risk of mechanical damage. Are cables laid under machines or floorplates. if so, are they adequately protected. Are cables in machinery spaces, galleys, laundries, etc., lead covered. or run in conduit. State how the cables are supported and protected.

MAIN CABLES - LEAD COVERED ARMOURED & BRIDGED OR LEAD COVERED AND ARMOURED CLIPPED TO STEEL TANKS.

GENERATOR MAINS - COPPER BAR CLIPPED IN SINDANYO CLAMPS.

ACCOMMODATION CABLES - LEAD COVERED CLIPPED TO WOOD GROUNDS.

Are all lead sheaths, armouring and conduits effectually bonded and earthed. Refrigerated chambers, are the cables and fittings as per Rule.

Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands. where unarmoured cables pass through beams, etc., are the holes effectively bushed. and with what material. Alternative Lighting, are

the groups of lights in the engine and boiler rooms arranged as per Rule. Emergency Supply, state position.

and method of control.

Navigation Lamps, are they separately wired. controlled by separate

double pole switches. and fuses. Are the switches and fuses in a position accessible only to the officers on watch. is an

automatic indicator fitted. Secondary Batteries, are they constructed and fitted as per Rule. are they adequately ventilated.

what is the battery capacity in ampere hours.

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof. Are fittings

installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present. if so, how are they protected.

"WIGAN" FLAMEPROOF FITTINGS

and where are the controlling switches fitted. OUTSIDE SPACE IN ACCOMMODATION ALLEYWAY. are all fittings suitably ventilated.

are all fittings and accessories constructed and installed as per Rule. Searchlight Lamps, No. of. whether fixed or portable.

are their fittings as per Rule. Heating and Cooking, is the general construction as per Rule.

are the frames effectually earthed. are heaters in the accommodation of the convection type. Motors, are all motors constructed and

installed as per Rule. and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water,

steam and oil. if situated near unprotected combustible material state minimum distance from same horizontally. and vertically. Are

motors coupled to oil fuel transfer and unit pressure pumps capable of being stopped from a position accessible in the event of fire in the pump compartment.

Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing. Have certificates of test for motors under

100 BHP intended for essential services been supplied and the results found as per Rule. Control Gear and Resistances, are they constructed and

fitted as per Rule. Lightning Conductors, where required are they fitted as per Rule. Ships carrying Oil having a Flash Point

less than 150° F. Have all the special requirements of the Rules for such ships been complied with. are all fuses of the cartridge type.

are they of an approved type. Are the fittings for pump rooms, 'tween deck spaces, etc., in accordance with the special requirements for such

ships. Are the cables lead covered as per Rule. Spare Gear, if the vessel is for open sea service have spares been provided as per

Rule. are they suitably stored in dry situations. Insulation Tests, has the insulation resistance of all circuits and apparatus been tested

and found satisfactory.

#### PARTICULARS OF GENERATING PLANT.

| DESCRIPTION OF GENERATOR. | No. of | RATED AT   |        |          |                | DRIVEN BY       | WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE. |                      |
|---------------------------|--------|------------|--------|----------|----------------|-----------------|--|----------------------|
|                           |        | Kilowatts. | Volts. | Ampères. | Revs. per Min. |                 | Fuel Used.                                     | Flash Point of Fuel. |
| MAIN                      | 2      | 550        | 220    | 2500     | 1000           | STEAM TURBINE.  |  |                      |
|                           | 1      | 60         | 110    | 546      | 600            | STEAM ENGINE.   |  |                      |
| EMERGENCY                 |        |            |        |          |                |                 |  |                      |
| ROTARY TRANSFORMER        | 1      | 60         | 110    | 546      |                | ELECTRIC MOTOR. |  |                      |

#### GENERATOR CABLES.

| DESCRIPTION.              | KILOWATTS. | CONDUCTORS.               |  | MAXIMUM CURRENT IN AMPERES. |       | APPROX. LENGTH (lead plus return feet). | INSULATED WITH. | HOW PROTECTED. |
|---------------------------|------------|---------------------------|--|-----------------------------|-------|---|-----------------|----------------|
|                           |            | No. in Parallel Per Pole. | Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm. | In the Circuit.             | Rule. |   |                 |                |
| MAIN GENERATOR            | 550        | 2                         | 4" x 1/4"  | 2500                        | -     | 50                                      | COPPER BAR.     |                |
| " " EQUALISER             |            | 1                         | 4" x 1/4"  | 1250                        | -     | 25                                      | COPPER BAR.     |                |
| GENERATOR.                | 60         | 1                         | 91-093.  | 546                         | 624   | 90                                      | V.C.            | L.C.+A.        |
| EMERGENCY GENERATOR       |            |                           |  |                             |       |   |                 |                |
| ROTARY TRANSFORMER: MOTOR | 91HP       | 1                         | 37-103.  | 345                         | 385   | 168                                     | V.C.            | L.C.+A.        |
| " " GENERATOR             | 60KW.      | 1                         | 91-093.  | 546                         | 624   | 120                                     | V.C.            | L.C.+A.        |

#### MAIN DISTRIBUTION CABLES.

| DESCRIPTION.                                  | CONDUCTORS.               |  | MAXIMUM CURRENT IN AMPERES. |       | APPROX. LENGTH (lead plus return feet). | INSULATED WITH. | HOW PROTECTED. |
|---|---------------------------|--|-----------------------------|-------|---|-----------------|----------------|
|   | No. in Parallel Per Pole. | Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm. | In the Circuit.             | Rule. |   |                 |                |
| AUX. SWITCHBOARDS AND SECTION BOARDS          | 1                         | 7-044.   | 20                          | 42    | 240                                     | V.C.            | L.C.+A.        |
| SECTION BOX. "A" SWITCHBOARD PLATFORM.        | 1                         | 19-064.  | 100                         | 135   | 45                                      | V.C.            | L.C.+A.        |
| SECTION BOX. "B" TOP OF ENGINE CASING.        | 1                         | 37-072.  | 240                         | 246   | 150                                     | V.C.            | L.C.+A.        |
| SECTION BOX. "C" UPPER DECK APT. PORT PASSAGE | 1                         | 19-064.  | 110.3                       | 135   | 210                                     | V.C.            | L.C.+A.        |
| SECTION BOX. "D" TURBO. MACHINERY ROOM.       | 1                         | 19-064.  | 84.3                        | 135   | 45                                      | V.C.            | L.C.+A.        |
| SECTION BOX. "E" MIDSHIP SWITCHBOARD ROOM     | 1                         | 19-064.  | 100.9                       | 135   | 18                                      | V.C.            | L.C.           |
| SECTION BOX. "G" WORKSHOP.                    | 1                         | 7-064.   | 62                          | 46    | 210                                     | V.C.            | L.C.+A.        |
| SECTION BOX. "H" TOP OF ENGINE CASING         | 1                         | 7-064.   | 64                          | 46    | 150                                     | V.C.            | L.C.+A.        |
| SECTION BOX. "J" BRIDGE DECK PORT.            | 1                         | 7-064.   | 64                          | 46    | 18                                      | V.C.            | L.C.           |
| SHORE CONNECTION BOX.                         | 1                         | 37-072.  | 200                         | 246   | 120                                     | V.C.            | L.C.+A.        |
| MIDSHIP SWITCHBOARD.                          | 1                         | 61-093.  | 300                         | 464   | 955                                     | V.C.            | L.C.+A.        |
| SUEZ CANAL PROTECTOR.                         | 1                         | 19-064.  | 28                          | 135   | 735                                     | V.C.            | L.C.+A.        |
| GYRO COMPASS CIRCUITS.                        | 1                         | 7-036.   | 20                          | 28    | 105                                     | V.C.            | L.C.           |

#### LIGHTING AND HEATING, ETC., CABLES.

|   |   |        |      |    |     |      |         |
|---|---|--------|------|----|-----|------|---------|
| WIRELESS  | 1 | 7-052. | 30   | 54 | 150 | V.C. | L.C.    |
| NAVIGATION LIGHTS D.B. "F" CHARTROOM.               | 1 | 7-044. | 23   | 42 | 135 | V.C. | L.C.    |
| LIGHTING AND HEATING D.B. "D.I." E.R. BOILER ROOMS. | 1 | 7-044. | 19.2 | 42 | 105 | V.C. | L.C.+A. |
| D.B. "D.2" ENGINE ROOM AND BOILER ROOM.             | 1 | 7-044. | 12.1 | 42 | 195 | V.C. | L.C.+A. |
| D.B. "D.3" ENGINE ROOM AND BOILER ROOM              | 1 | 7-044. | 12   | 42 | 15  | V.C. | L.C.+A. |
| D.B. "D.4" ENGINE ROOM AND BOILER ROOM              | 1 | 7-044. | 12.7 | 42 | 90  | V.C. | L.C.+A. |
| D.B. "D.5" ENGINE ROOM AND BOILER ROOM              | 1 | 7-044. | 19.7 | 42 | 210 | V.C. | L.C.+A. |
| D.B. "D.6" ENGINE ROOM AND BOILER ROOM              | 1 | 7-044. | 10.6 | 42 | 195 | V.C. | L.C.+A. |
| D.B. "C.1" POOP DECK PORT PASSAGE.                  | 1 | 7-044. | 16.2 | 42 | 30  | V.C. | L.C.    |
| D.B. "C.2" POOP DECK STAR. PASSAGE.                 | 1 | 7-044. | 19.8 | 42 | 90  | V.C. | L.C.    |
| D.B. "C.3" POOP DECK PORT PASSAGE                   | 1 | 7-044. | 22.3 | 42 | 120 | V.C. | L.C.    |
| D.B. "C.4" UPPER DECK + APT. STAR. PASSAGE.         | 1 | 7-044. | 17.0 | 42 | 210 | V.C. | L.C.    |
| D.B. "C.5" UPPER DECK + APT. PORT PASSAGE           | 1 | 7-044. | 17.5 | 42 | 81  | V.C. | L.C.    |
| D.B. "E.1" UPPER BRIDGE DECK.                       | 1 | 7-044. | 17.2 | 42 | 45  | V.C. | L.C.    |
| D.B. "E.2" BRIDGE DECK PORT.                        | 1 | 7-044. | 18   | 42 | 81  | V.C. | L.C.    |
| D.B. "E.3" BRIDGE DECK PORT.                        | 1 | 7-044. | 30   | 42 | 81  | V.C. | L.C.    |
| D.B. "E.4" BRIDGE DECK STAR.                        | 1 | 7-044. | 20.5 | 42 | 99  | V.C. | L.C.    |
| D.B. "E.5" FORECASTLE.                              | 1 | 7-064. | 15.2 | 75 | 480 | V.C. | L.C.+A. |
| D.B. "L" BRIDGE DECK PORT.                          | 1 | 7-044. | 25   | 42 | 90  | V.C. | L.C.    |

#### MOTOR CABLES.

| ALL IMPORTANT MOTORS TO BE ENUMERATED. |   | No.    | B.H.P. |         |     |     |     |      |         |
|--|---|--------|--------|---------|-----|-----|-----|------|---------|
| FORCED DRAUGHT FAN MOTORS.             | 3 | 25     | 1      | 19-064. | 95  | 135 | 480 | V.C. | L.C.+A. |
| FIRE & BILGE PUMP MOTORS.              | 2 | 15 1/2 | 1      | 19-064. | 104 | 135 | 390 | V.C. | L.C.+A. |
| FRESH WATER PUMP MOTOR.                | 1 | 3 1/2  | 1      | 7-036.  | 20  | 28  | 125 | V.C. | L.C.+A. |
| FORCED LUB. OIL PUMP MOTORS            | 2 | 11     | 1      | 7-052.  | 43  | 54  | 294 | V.C. | L.C.+A. |
| COOLER CIRC. PUMP MOTOR.               | 1 | 5 1/8  | 1      | 7-044.  | 32  | 42  | 270 | V.C. | L.C.+A. |
| TURBO-GENERATOR CIRC. PUMPS.           | 2 | 7 1/2  | 1      | 7-044.  | 40  | 42  | 135 | V.C. | L.C.+A. |
| PROPULSION MOTOR FAN MOTORS            | 2 | 15     | 1      | 7-064.  | 60  | 45  | 240 | V.C. | L.C.+A. |
| MAIN EXTRACTION PUMP MOTORS            | 2 | 13.5   | 1      | 7-064.  | 55  | 75  | 270 | V.C. | L.C.+A. |
| MAIN CIRCULATING PUMP MOTORS           | 2 | 40/90  | 1      | 37-103. | 360 | 385 | 270 | V.C. | L.C.+A. |

|                                   |   |       |   |         |    |    |     |      |         |
|-----------------------------------|---|-------|---|---------|----|----|-----|------|---------|
| AFT. ACCOMM. VENT FAN.            | 1 | 5     | 1 | 7-052.  | 40 | 54 | 150 | V.C. | L.C.+A. |
| TURNING GEAR MOTOR.               | 1 | 10    | 1 | 19-044. | 80 | 87 | 150 | V.C. | L.C.+A. |
| GRINDING MACHINE MOTOR.           | 1 | 2     | 1 | 7-036.  | 18 | 28 | 30  | V.C. | L.C.+A. |
| DRILLING MACHINE MOTOR            | 1 | 2     | 1 | 7-036.  | 18 | 28 | 30  | V.C. | L.C.+A. |
| LATHE MOTOR                       | 1 | 3     | 1 | 7-036.  | 26 | 28 | 30  | V.C. | L.C.+A. |
| BOILER ROOM VENT. FANS.           | 2 | 4 1/2 | 1 | 7-052.  | 40 | 54 | 180 | V.C. | L.C.+A. |
| ENGINE ROOM VENT. FANS.           | 4 | 4 1/2 | 1 | 7-052.  | 40 | 54 | 105 | V.C. | L.C.+A. |
| APT. PORT WINCH CONNECTIONS       | 2 | 4     | 1 | 7-044.  | 32 | 42 | 150 | V.C. | L.C.    |
| MIDSHIP BOAT WINCH CONNECTIONS    | 2 | 4     | 1 | 7-044.  | 32 | 42 | 159 | V.C. | L.C.    |
| MIDSHIP ACCOMM. VENT. FAN. MOTOR. | 1 | 5     | 1 | 7-052.  | 40 | 54 | 150 | V.C. | L.C.    |
| LUB. OIL TRANSFER PUMP MOTOR      | 1 | 1     | 1 | 7-036.  | 10 | 28 | 240 | V.C. | L.C.+A. |
| LUB. OIL PURIFIER MOTORS          | 2 | 3     | 1 | 7-036.  | 26 | 28 | 150 | V.C. | L.C.+A. |
| DOMESTIC FRESH WATER PUMP.        | 1 | 3 1/2 | 1 | 7-052.  | 28 | 54 | 180 | V.C. | L.C.+A. |



The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.  
All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.  
The foregoing is a correct description.

SWAN, HUNTER, & WIGMORE, LONDON, LTD.

*W. H. Jones*

Electrical Engineers.

Date 23 May 1948

#### COMPASSES.

Minimum distance between electric generators or motors and standard compass 45 FEET FROM MIDSHIP VENT. FAN MOTOR.

Minimum distance between electric generators or motors and steering compass 45 FEET FROM MIDSHIP VENT. FAN MOTOR.

The nearest cables to the compasses are as follows:—

A cable carrying 0.14 Ampères INSIDE feet from standard compass 6 feet from steering compass.

A cable carrying 0.14 Ampères 6 feet from standard compass INSIDE feet from steering compass.

A cable carrying Ampères feet from standard compass feet from steering compass.

Have the compasses been adjusted with and without the electric installation at work at full power Yes.

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted Yes.

The maximum deviation due to electric currents was found to be NIL degrees on EVERY course in the case of the

standard compass, and NIL degrees on EVERY course in the case of the steering compass.

SWAN, HUNTER, & WIGMORE, LONDON, LTD.

*W. H. Jones*

Builder's Signature.

Date 23.2.48

Is this installation a duplicate of a previous case Yes. If so, state name of vessel S.S. "HELENA"

Plans. Are approved plans forwarded herewith — If not, state date of approval —

Certificates. Are certificates of test for motors engaged on essential services and generators forwarded herewith Yes.

General Remarks (State quality of workmanship, whether insulation tests, etc., have been made, opinions as to class, etc.)

THE ELECTRICAL EQUIPMENT OF THIS VESSEL HAS BEEN INSTALLED UNDER SPECIAL SURVEY.

THE MATERIALS USED ARE OF GOOD QUALITY AND THE WORKMANSHIP IS SATISFACTORY.

ON COMPLETION THE ELECTRICAL EQUIPMENT WAS RUN UNDER WORKING CONDITIONS WITH SATISFACTORY RESULTS

THE PROTECTIVE DEVICES OF THE CIRCUIT BREAKERS WERE ADJUSTED AND OPERATED, AND THE INSULATION RESISTANCE OF ALL CIRCUITS WAS MEASURED AND FOUND GOOD.

THE EQUIPMENT IS, IN MY OPINION, SUITABLE FOR A CLASSED SHIP INTENDED TO CARRY OIL HAVING A FLASH POINT OF LESS THAN 150°F.

*Noted*

*18.3.48*

Total Capacity of Generators 1160 Kilowatts.  
INCLUDING 150KWS. FOR EXCITATION OF ELECTRICAL PROPULSION MACHINERY.

LONDON Acc 17-1-0  
The amount of fee £ 85 : 5 : 4 MAR 1948  
NEWCASTLE Acc 68-4-0  
See Propelling Machinery 175.0.0  
Travelling Expenses (if any) £ : :  
When applied for, 17/12/47  
When received, 19

*P. J. Stokely*

Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 16 APR 1948

Assigned See F.E. mahy rpt

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