

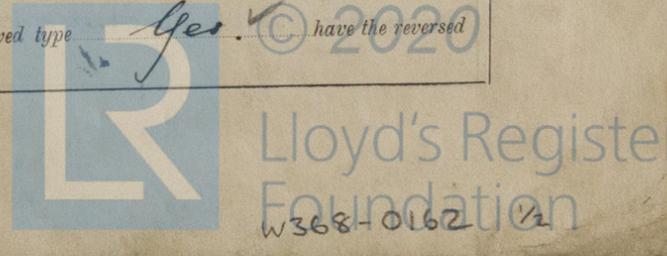
# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

21 JUL 1936

Date of writing Report 19... When handed in at Local Office **20 JUL 1936** Port of **HULL**  
 No. in Survey held at **Goole** Date, First Survey **16<sup>th</sup> June 1936** Last Survey **11<sup>th</sup> July 1936**  
 Reg. Book. **87768** on the **M/S Knel** **CABENDA** (Number of Visits **5**)  
 Tons { Gross **534**  
 Net **274**  
 Built at **Goole** By whom built **Goole S. B. & Repg. Co.** Yard No. **314** When built **1936**  
 Owners **J. E. Evans & Co.** Port belonging to **London**  
 Electric Light Installation fitted by **The Humber Electrical Co.** Contract No. When fitted **1936**  
 Is the Vessel fitted for carrying Petroleum in bulk **No.**

**System of Distribution** **Parallel. constant pressure - two wire.**  
**Pressure of supply for Lighting** **220** ✓ volts, Heating ✓ volts, Power **220** ✓ volts.  
**Direct or Alternating Current, Lighting** **Direct** ✓ Power **Direct** ✓  
 If alternating current system, state frequency of periods per second ✓  
 Has the **Automatic Governor** been tested and found efficient when the whole load is suddenly thrown on or off **Yes** ✓  
**Generators**, do they comply with the requirements regarding temperature rise **Yes** ✓, are they compound wound **Yes** ✓  
 are they over compounded 5 per cent. **Yes** ✓, if not compound wound state distance between each generator ✓  
 Where more than one generator is fitted are they arranged to run in parallel **No** ✓, is an adjustable regulating resistance fitted in series with each shunt field **Yes** ✓ Have certificates of test results for machines under 100 kw. been submitted and approved **Certificates received** Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing ✓  
 Are all terminals accessible, clearly marked, and furnished with sockets **Yes** ✓, are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched **Yes** ✓ Are the lubricating arrangements of the generators as per Rule **Yes** ✓  
**Position of Generators** **Port Side of Engine Room** ✓, is the ventilation in way of the generators satisfactory **Yes** ✓ are they clear of all inflammable material **Yes** ✓ if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the generators ✓ and are the generators protected from mechanical injury and damage from water, steam or oil **Yes** ✓, are their axes of rotation fore and aft **Small generators at front ship** ✓  
**Earthing**, are the bedplates and frames of the generating plant efficiently earthed **Yes** ✓ are the prime movers and their respective generators in metallic contact **Yes** ✓ **Main Switch Boards**, where placed **Port Side Engine Room** ✓  
 If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard ✓  
**Switchboards**, are they placed in accessible positions, free from inflammable gases and acid fumes **Yes** ✓, are they protected from mechanical injury and damage from water, steam or oil **Yes** ✓, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards ✓ and are they constructed wholly of durable, non-ignitable non-absorbent materials **Yes** ✓, is all insulation of high dielectric strength and of permanently high insulation resistance **Yes** ✓, is it of an approved type **Imclau go** ✓, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micamite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework ✓ is the non-hygroscopic insulating material of an approved type ✓, and is the frame effectively earthed **Yes** ✓ Are the fittings as per Rule regarding: — spacing or shielding of live parts **Yes** ✓, accessibility of all parts **Yes** ✓, absence of fuses on back of board **Yes** ✓, temperature rise of omnibus bars **Yes** ✓, individual fuses to voltmeter, pilot or earth lamp **Yes** ✓ Are moving parts of switches alive in the "off" position **No** ✓ are all screws and nuts securing connections effectively locked **Yes** ✓ are any fuses fitted on the live side of switches **No** ✓ **Main Switchgear**, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches **15 K.W. General D.P. Circuit Breakers. 2.5 K.W. Generators & all outgoing circuits D.P. Switches & fuses.**  
 Are turbine driven generators fitted with emergency trip switch as per rule ✓ Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material ✓ **Instruments** on main switchboard **2** ammeters **2** voltmeters ✓ synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection ✓  
**Earth Testing**, state what means are provided at the main switchboard for indicating the state of the insulation of the system **2 sets of earth lamps** ✓ **Switches, Circuit Breakers and Fusible Cut-outs**, do these comply with the requirements of the Rules **Yes** ✓ are the fusible cutouts of an approved type **Yes** ✓ have the reversed



current protection devices been tested under working conditions  **Joint Boxes, Section and Distribution Boards**, is the construction, protection, insulation, material, and position of these as per rule Yes.

**Cables:** Single, twin, concentric, or multicore Single & twin are the cables insulated and protected as per Tables IV, V, X or XI of the Rules Yes.

If the cables are insulated otherwise than as per Rule, are they of an approved type  **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load 2 volt lights / 5 volt power **Cable Sockets**, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets Yes **Paper Insulated and Varnished Cambric Insulated Cables**.

If conductors are paper or varnished cambric insulated, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound  or waterproof insulating tape  **Cable Runs**, are the cables fixed as far as possible in accessible positions not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical damage Yes Are cables in machinery spaces, galleys, lavatories, bathrooms and lavatories lead covered or run in conduit Yes

**Support and Protection of Cables**, state how the cables are supported and protected Clipped to steel work or perforated sheet metal; or run in conduit

If cables are run in wood casings, are the casings and caps secured by screws , are the cap screws of brass , are the cables run in separate grooves  If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII Yes

**Refrigerated Chambers**, are the cables and fittings in accordance with the special requirements None

**Joints in Cables**, state if any, and how made, insulated, and protected None

**Watertight Glands and Deck Tubes**, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands Yes **Bushes in Beams and Non-watertight Partitions**, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed Yes state the material of which the bushes are made lead

**Earthing Connections**, state what earthing connections are fitted and their respective sectional areas  are their connections made as per Rule

**Alternative Lighting**, are the groups of lights in the propelling machinery space arranged as per Rule Yes **Emergency Supply**, state position and method of control of the emergency supply and how the generator is driven None

**Navigation Lamps**, are these separately wired Yes, controlled by separate switch and separate fuses Yes, are the fuses double pole Yes, are the switches and fuses grouped in a position accessible only to the officers on watch Yes has each navigation lamp an automatic indicator as per Rule Yes **Secondary Batteries**, are they constructed and fitted as per Rule None

**Fittings**, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight Yes are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected None

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected None, how are the cables led

where are the controlling switches situated

are all fittings suitably ventilated Yes, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials Yes

**Heating and Cooking Appliances**, are they constructed and fitted as per Rule None, are air heaters constructed and fitted as per Rule

**Searchlight Lamps**, No. of None, whether fixed or portable , are their fittings as per Rule

**Arc Lamps**, other than searchlight lamps, No. of None, are their live parts insulated from the frame or case , are their fittings as per Rule

**Motors**, are their working parts readily accessible Yes, are the coils self-contained and readily removable for replacement Yes, are the brushes, brush holders, terminals and lubricating arrangements as per Rule Yes, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material Yes, are they protected from mechanical injury and damage from water, steam or oil Yes are their axes of rotation fore and aft None **Winches**, if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type  if not of this type, state distance of the combustible material horizontally or vertically above the motors  and

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing  **Control Gear and Resistances**, are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule Yes **Lightning Conductors**, where lightning conductors are required, are these fitted as per Rule Yes **Ships carrying Oil having a Flash Point less than 150° F.** Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings  are all fuses of the filled cartridge type  are they of an approved type

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office

**Spare Gear**, if the vessel is for open sea service have spares been supplied as per Rule Yes

**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 ...	One	15	220	68	1000	Trak Diesel Engine	Heavy oil	above 150° F
AUXILIARY ...	One	2.5	"	11.4	1050	do	do	do
EMERGENCY ...	None							
ROTARY TRANSFORMER	None							

**GENERATOR, LIGHTING AND HEATING CONDUCTORS.**

DESCRIPTION.	No. per Pole.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length (Lead and Return) Feet.	Insulated with	HOW PROTECTED.
		Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.				
MAIN GENERATOR ...	1.	0.06.	19.	.064	68.1	83	20.	V.I.R.	L.C. & Conn.	
EQUALISE CONNECTIONS ...										
AUXILIARY GENERATOR ...	1.	0.007	7.	.036	11.4	33	12.	do	do	
EMERGENCY GENERATOR ...										
ROTARY TRANSFORMER MOTOR GENERATOR ...										
ENGINE ROOM ...	1.	0.003	3	.036	2	12	28	do	do	
BOILER ROOM ...										
AUXILIARY SWITCHBOARDS ...										
ACCOMMODATION S.P.B. B.P. ...	1	0.01	7	.044	6	31	48	V.I.R.	L.C.	
FINAL CIRCUITS ...	1	0.002	3	.029	1	7.8	50	do	do	
NAVIGATION SUB B.P. ...	1	0.003	3	.036	1	12	40	do	do	
WIRELESS ...										
SEARCHLIGHT ...										
MASTHEAD LIGHT ...	1	0.002	3	.029	0.4	7.8	200	V.I.R.	L.C. & Conn.	
SIDE LIGHTS ...	1	0.0015	1	.044	0.4	6.1	20	"	"	
COMPASS LIGHTS ...	1	"	"	"	0.2	"	15	"	"	
POOP LIGHTS ...	1	"	"	"	0.4	"	50	"	"	
CARGO LIGHTS ...	1.	0.002	3	.029	1.0	7.8	50	"	"	
ARC LAMPS ...										
HEATERS ...										

**MOTOR CONDUCTORS.**

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length (Lead and Return) Feet.	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP ...										
MAIN BILGE LINE PUMPS ...										
GENERAL SERVICE PUMP ...										
EMERGENCY BILGE PUMP ...										
SANITARY PUMP ...										
CIRC. SEA WATER PUMPS ...										
CIRC. FRESH WATER PUMPS ...										
AIR COMPRESSOR ...										
FRESH WATER PUMP ...										
ENGINE TURNING GEAR ...										
ENGINE REVERSING GEAR ...										
LUBRICATING OIL PUMPS ...										
OIL FUEL TRANSFER PUMP ...	One	1	0.0225	7	.064	45	46	360	V.I.R.	In conduit
WINDLASS ...										
WINCHES, Forewinch ...	One	1	0.0145	7	.052	32	37	200	"	"
WINCHES, Aft Star ...	One	1	"	"	"	"	"	"	"	"
STEERING GEAR—										
(a) MOTOR GENERATOR ...										
(b) MAIN MOTOR ...										
WORKSHOP MOTOR ...										
VENTILATING FANS ...										

All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electro-technical Commission Publication No. 28).

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

For THE HUNTER ELECTRICAL ENGINEERING CO.  
*W.B. Plummer*  
Proprietor

Electrical Engineers.

Date

16/7/36

COMPASSES.

Distance between electric generators or motors and standard compass

25 feet

Distance between electric generators or motors and steering compass

The nearest cables to the compasses are as follows:—

A cable carrying 1 Ampères 5 feet from standard compass ✓ feet from steering compass.

A cable carrying 2 Ampères 6 feet from standard compass ✓ 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 any course in the case of the standard compass, and ✓ degrees ✓ course in the case of the steering compass.

THE GOOLE SHIPBUILDING & REPAIRING CO. LTD.

*Chas. Hand*

Builder's Signature.

Date

17/7/36

Is this installation a duplicate of a previous case. Yes. If so, state name of vessel ASHANTI. Hull No. 46845.

General Remarks (State quality of workmanship, opinions as to class, &c.)

This Electric installation has been fitted on board under Special Survey, the workmanship & materials are good & when subjected to the tests prescribed by the Rules was found satisfactory in every respect.

This vessel, in so far as the electrical installation is concerned, is eligible in my opinion to be classed.

Noted

Ham

10.8.36

Total Capacity of Generators 17.5 Kilowatts.

The amount of Fee ... £ 16 : 10 : 20 JUL 1936

Travelling Expenses (if any) £ : : Sep 10 1936

*D. J. P. Plummer*  
and *C. Moffatt*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 11 AUG 1936

Assigned

See Hull G.E. 47025