

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

30 JUN 1941

Date of writing Report. 26<sup>th</sup> June 1941. When handed in at Local Office. 28<sup>th</sup> June 1941. Port of LeithNo. in Survey held at Leith Reg. Book. Date, First Survey 10<sup>th</sup> Feb<sup>y</sup> Last Survey 19<sup>th</sup> June 1941 (Number of Visits) 20

90402 on the M/V "UNDERWOOD" Tons { Gross 1990 Net 1359

Built at Leith By whom built Henry Robb Ltd Yard No. 291 When built 1941

Owners Union Steamships Co of New Zealand Port belonging to London

Electrical Installation fitted by Henry Robb Ltd Contract No. When fitted 1941

Is vessel fitted for carrying Petroleum in bulk No Is vessel equipped with D.F. E.S.D. Gy.C. No Sub.Sig. No

Have plans been submitted and approved yes System of Distribution Two wire Voltage of supply for Lighting 220

Heating 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 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 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 - Port 1-100kw Port, 1-100kw Star, 1-20kw Centre

Aft 1-20kw Port belt drive 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 Forward end of Engine Room Port

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 Sindango 1/4" thick, 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 Of Stator Manufacture for

100kw Gen? 500 Amp Capacity For 20kw machines 100 Amp Capacity D.P. switches with 1/2 x Reverse

current trips &amp; time lag interlocked Equaliser switch, closes before main contacts, opens after main contacts

and for each outgoing circuit D.P. &amp; T. Knife Switches &amp; fuses 2-500 Amp 3-150 Amp 1-100 Amp 1-50 Amp

2-30 Amp 1-30 Amp D.P.C.O. &amp; D.P. fuses for lighting 1-30 Amp 4 Pole C.O. Switch for Batteries &amp; Aids cut in/out

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule yes Instruments on main switchboard yes

ammeters yes 4 voltmeters yes 4 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 Lamps in series across bus bars Centre point earthed

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 10%, 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 20% 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 4.5, 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



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. yes, are cables laid under machines or floorplates. yes, if so, are they adequately protected. yes Are cables in machinery spaces, galleys, laundries, etc., lead covered. ✓ or run in conduit. yes State how the cables are supported and protected. V.I.R. cables in conduit throughout.

Are all lead sheaths, armouring and conduits effectually bonded and earthed. yes Refrigerated chambers, are the cables and fittings as per Rule. yes Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands. yes, 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. yes Emergency Supply, state position. ✓ and method of control.

Navigation Lamps, are they separately wired. yes controlled by separate double pole switches. yes and fuses. yes Are the switches and fuses in a position accessible only to the officers on watch. yes, is an automatic indicator fitted. yes Secondary Batteries, are they constructed and fitted as per Rule. yes, are they adequately ventilated. yes what is the battery capacity in ampere hours. 61

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof. yes Are fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present. No, if so, how are they protected. ✓

and where are the controlling switches fitted. ✓, are all fittings suitably ventilated. yes

are all fittings and accessories constructed and installed as per Rule. yes Searchlight Lamps, No. of ✓, whether fixed or portable. ✓, are their fittings as per Rule. ✓ Heating and Cooking, is the general construction as per Rule. yes

are the frames effectually earthed. yes, are heaters in the accommodation of the convection type. ✓ Motors, are all motors constructed and installed as per Rule. yes and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water, steam and oil. yes, 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. yes

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. yes Control Gear and Resistances, are they constructed and fitted as per Rule. yes Lightning Conductors, where required are they fitted as per Rule. yes 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. yes, are they suitably stored in dry situations. yes Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory. 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	2	100 each	220	455	600	Ruston Hornsby Diesel Engs. } Emergency A.P. No. 21223	Diesel oil	Above 150° F.
	1	20	220	91	1000	Ruston Hornsby Diesel Engs. } Emergency A.P. No. 21223	"	"
	1	20	220	91	1000	Belt driven from shaft.	"	"
EMERGENCY								
ROTARY TRANSFORMER								

#### GENERATOR CABLES.

DESCRIPTION.	KILOWATTS.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULA- TION 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	100	2	37/103	455	480	45 ft.	V.I.R.	In conduit
" " EQUALISER		1	37/103			23 ft.	"	"
Generator	20	1	19/072	91	97	30 ft.	V.I.R.	In conduit
" Equaliser		1	19/044			15 ft.	"	"
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
" " GENERATOR								

#### MAIN DISTRIBUTION CABLES.

DESCRIPTION.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULA- TION 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							
Midships Winches - 4 way	1	19/072	102	113	270	V.I.R.	In conduit
Small auxiliaries - 6 way	1	19/083	110	118	50	"	"
do - 8 way	1	7/064	26	46	100	"	"
Lighting S.B. - 4 way	1	7/036	24	24	54	"	"
Windlass	1	19/083	122	124	480	"	"
Hoisting & Sluicing Winches	2	37/072	260	304	290 ft. 120 ft.	"	"
Hoisting Winches	2	37/072	246	304	do.	"	"
Capstan	1	19/072	103	113	160	"	"
Air Compressor	1	19/052	63	64	100	"	"
Steering Gear	1	7/064	21	46	30	"	"

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

WIRELESS	1	7/044	15	31	50	V.I.R.	In conduit
NAVIGATION LIGHTS	1	3/029	2	5	90	"	"
LIGHTING AND HEATING							
Lighting S.B. to							
Navigation Board	1	3/029	2	5	90	"	"
L.R. Lighting D.B.	1	7/029	5.5	10	8	"	"
Accommodation Lighting D.B.	1	7/029	9	10	40	"	"
"	1	7/029	7.5	10	50	"	"

#### MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.						
Midships Cargo Winches	4	16	1	19/052	63	64	20	V.I.R. In conduit
Windlass	1	32	1	19/083	122	124	20	"
Hoist Motor Winches	2	66	2	37/072	246	304	60	"
Sluicing Motor Winches	2	10.5	1	7/064	42	46	60	"
Hoisting Winch	2	66	2	37/072	246	304	60	"
Bridge Pump	1	7.5	1	7/044	30	31	40	"
General Service Pump	1	7.5	1	7/044	30	31	36	"
Standby Lub. Oil Pump	1	4.5	1	7/036	19	24	30	"
Fresh Water Pumps	1	1	1	3/029	5	5	15	"
Fuel Oil Transfer Pumps	1	1.25	1	3/036	6	10	35	"
Fuel Oil Pumps	1	2	1	3/036	9	10	15	"
Refrigerator	1	1	1	3/036	5	10	10	"
Capstan	1	27	1	19/072	103	113	6	"
Steering Gear	1	5	1	7/064	21	46	135	"
Air Compressor	1	16	1	19/052	63	64	12	"



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.

HENRY ROBB, LIMITED.

J. Ashcroft:

Electrical Engineers.

Date 26 June 1941.

#### COMPASSES.

Minimum distance between electric generators or motors and standard compass 33 ft.

Minimum distance between electric generators or motors and steering compass 23 ft.

The nearest cables to the compasses are as follows:—

A cable carrying 0.7 Ampères on feet from standard compass 8 feet from steering compass. } Compasses equipped with 15 watt lamps + corrector coils.

A cable carrying 0.7 Ampères 8 feet from standard compass on 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 all course in the case of the

standard compass, and nil degrees on all course in the case of the steering compass.

HENRY ROBB, LIMITED.

J. Ashcroft:

Builder's Signature.

Date 26 June 1941

Is this installation a duplicate of a previous case No If so, state name of vessel

Plans. Are approved plans forwarded herewith yes 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 Diesel-driven generators - Grimsby Rpts Nos 21233 & 21237 - have been efficiently fitted in place, in accordance with the Rules, the material & workmanship being sound & good. A belt driven auxiliary generator has also been efficiently fitted on board. The wiring of the vessel has been carried out in a satisfactory manner, & in accordance with the approved plans. On completion the whole installation was tried out under full load & working conditions, & it was found satisfactory in all respects.

Total Capacity of Generators 240 Kilowatts.

The amount of Fee ... £ 44: 10 : When applied for, 28/6/1941  
24h 4/5-12 = £ 35-12-0  
8h 1/5-12 = £ 8-18-0  
Travelling Expenses (if any) £ : : When received, 19.....

John Houston  
Surveyor to Lloyd's Register of Shipping.

FRI. 11 JUL 1941

Committee's Minute

Assigned

See Lth. J.E. 20437



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Foundation