

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office JAN 14 1939

Date of writing Report 19 When handed in at Local Office 12/11/39 Port of Newcastle-on-Tyne

No. in Survey held at Newcastle. Date, First Survey 3 Oct/38 Last Survey 16 Dec 1938  
Reg. Book. Supp. (Number of Visits 10)

90231 on the S.S. Turkistan Tons { Gross 6935 Net 4228

Built at South Shields By whom built J. Readhead & Son Ltd Yard No. 514 When built 1939

Owners Strick Line (1923) Ltd Port belonging to London

Electric Light Installation fitted by Clarke Chapman & Co Ltd Contract No. 514 When fitted 1939

Is the Vessel fitted for carrying Petroleum in bulk no

System of Distribution Double wire

Pressure of supply for Lighting 110 volts, Heating 110 volts, Power 110 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 Yes

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 Yes

Have certificates for generators under 100 kw. been supplied and approved Yes (2 in no)

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 Engine room starboard side

is 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

are the generators protected from mechanical injury and damage from water, steam or oil Yes, are their axes of rotation fore and aft Yes

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 Engine room starboard side

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

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

is it of an approved type Yes, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework Yes

is the non-hygroscopic insulating material of an approved type Yes, 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

D.P.S + D.P. fuses on dynamo mains, D.P. C.O.S + D.P. fuses on each outgoing circuit

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 ammeters 2

Retina motor 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

E lamps coupled to E through switches + fuses. 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

2. Generator Test Sheets

current protection devices been tested under working conditions — are all fuses labelled as per rule 400 22058.

**Joint Boxes, Section and Distribution Boards,** is the construction, protection, insulation, material, and position of these as per rule 400

**Cables:** Single, twin, concentric, or multicore single are the cables insulated and protected as per Tables IV, V, X, XI, XII or XIII of the Rules 400

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 3.5 volts **Cable Sockets,** are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets 400 **Paper Insulated and Varnished Cambric Insulated Cables,** are they of an approved type — **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 flanges, steam pipes, valves or other hot parts, or to avoidable risk of mechanical damage — are cables laid under machines or floorplates no if so, are they adequately protected —

Are cables in machinery spaces, galleys, lavatories, bathrooms and lavatories lead covered or run in conduit 400 **Support and Protection of Cables,** state how the cables are supported and protected ER & BR V.I.R in galv steel conduit. Main cables 1939 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 unarmoured lead covered cables are secured by metal clips, are the clips spaced as per Table VIII 170

**Refrigerated Chambers,** are the cables and fittings in accordance with the special requirements 400

**Joints in Cables,** state if any, and how made, in — protected home made **Watertight Glands and Deck Tubes,** are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands 400 **Bushes in Beams and Non-watertight Partitions,** where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed 400 state the material of which the bushes are made 400 lead

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas 400 are their connections made as per Rule —

**Alternative Lighting,** are the groups of lights in the propelling machinery space arranged as per Rule 400 **Emergency Supply,** state position and method of control of the emergency supply and how the generator is driven 400

**Navigation Lamps,** are these separately wired 400 controlled by 400 separate switch and separate fuses 400 are the fuses double pole 400 are the switches and fuses grouped in a position accessible only to the officers on watch 400 has each navigation lamp an automatic indicator as per Rule 400 **Batteries,** are they constructed and fitted as per Rule 400 are they ventilated as per Rule 400

**Fittings,** are all fittings on weather decks, in stowholds and engine rooms and wherever exposed to drip or condensed moisture, watertight 400 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 400 are any fittings placed in spaces where inflammable or explosive dust or gases are liable to accumulate: if so, how are they protected 400 where are the controlling switches situated 400 are all fittings suitably ventilated 400 switches and lampholders constructed wholly of non-ignitable, non-absorbent materials —

**Heating and Cooking Appliances,** are they constructed and fitted as per Rule — are air heaters constructed and fitted as per Rule —

**Searchlight Lamps,** No. of one whether fixed or portable portable are their fittings as per Rule 400

**Motors,** are their working parts readily accessible 400 are the coils self-contained and readily removable for replacement 400 are the brushes, brush holders, terminals and lubricating arrangements as per Rule 400 are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material 400 are they protected from mechanical injury and damage from water, steam or oil 400 are their axes of rotation fore and aft 400 if situated near unimpregnated woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type 400 if not of this type, state distance of the combustible material horizontally or vertically from the motors — and — have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing — have certificates for all motors for essential services been supplied and approved — **Lightning Conductors,** where lightning conductors are required, are these fitted as per Rule — **Ships carrying Oil having a Flash Point less than 75° 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 flameproof type approved for use in dangerous spaces — **Spare Gear,** if the vessel is for open sea service have spares been supplied as per Rule 400 are they suitably stored in 400

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	1	20	110	184	600	Steam engine		
AUXILIARY	1	5	110	45	600	do		
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		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.			
MAIN GENERATOR	1	.2	37	.083	184	188	30	Y.I.R	in galv steel conduit
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR									
EMERGENCY GENERATOR	1	.0225	7	.064	45	46	25	do	do
ROTARY TRANSFORMER									
MOTOR GENERATOR									
ENGINE ROOM	1	.01	7	.044	20	31	30	do	do
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
ACCOMMODATION Saloon	1	.06	19	.064	52	83	320	do	do
" Engine	1	.007	7	.036	17	24	120	do	do
" aft	1	.01	7	.044	9	31	400	do	do
" hangar	1	.0045	7	.029	4	18.2	350	do	do
WIRELESS	1	.01	7	.044	15.0	31	128	do	do
SEARCHLIGHT	1	.06	19	.064	60	83	730	do	do
MASTHEAD LIGHT	1	.002	3	.029	4	7.8	220	do	do
SIDE LIGHTS	1	.002	3	.029	14	7.8	60	do	L.C.
COMPASS LIGHTS	1	.002	3	.029	26	7.8	30	do	L.C.
SEARCHLIGHTS	1	.002	3	.029	4	7.8	450	do	in galv steel pipe
CARGO LIGHTS	1	.01	7	.044	22	31	120	do	do
HEATERS	1	.0225	7	.064	22	46	320	do	do

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		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										
WINDLASS										
WINCHES, FORWARD										
WINCHES, AFT										
STEERING GEAR										
(a) MOTOR GENERATOR										
(b) MAIN MOTOR										
WORKSHOP MOTOR										
VENTILATING FANS 9"	2	1	.003	3	.036	6	12.0	20	Y.I.R	in galv steel tube
Refing motor	1	1	.0145	7	.052	36.0	37.0	270	do	do

The Electrical Equipment is installed in accordance with the approved plans.

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

The foregoing is a correct description

For Clarke, Chapman & Co., Ltd.

W. Taylor

Director

Electrical Engineers.

Date 19<sup>th</sup> Dec 1938

COMPASSES.

Minimum distance between electric generators or motors and standard compass 130 feet

Minimum distance between electric generators or motors and steering compass 124 feet

The nearest cables to the compasses are as follows:—

A cable carrying 25 Ampères on the ~~standard~~ standard compass 8 feet from steering compass.

A cable carrying 25 Ampères 8 feet from standard compass on the ~~steering~~ 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.

FOR JOHN READHEAD & SONS, LTD.,

Builder's Signature.

Date 9<sup>th</sup> JANUARY, 1939.

J. M. H. Readhead  
CHAIRMAN & MANAGING DIRECTOR.

Is this installation a duplicate of a previous case *yes*. If so, state name of vessel *S.S. "SHAH RISTAN"*

General Remarks (State quality of workmanship, opinions as to class, &c. *The above inst<sup>n</sup> has been fitted out under special survey. The materials used & workmanship were good. The insulation resistance is good. The inst<sup>n</sup> was tested under working conditions & found satisfactory. The vessel is eligible in my opinion for notation DF & ESD.*

*Noted  
R.P.  
17/1/39*

Total Capacity of Generators 25 Kilowatts.

The amount of Fee ... £ 20 : 0 : 7-1-1939

Travelling Expenses (if any) £ : : 13-1-1939

W. T. Budget

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI 20 JAN 1939

Assigned

*Sec R.F. machy rpt.*