

TABLE NO. A.
TURBINE NO. R.1862

GOVERNING

The following governing readings were obtained with a load of 100 KW. thrown off and on the generator.

Generator Load	Steady Speed	Momentary Speed	Governing Steady
ON	7100	7100	7100 RPM
ON	7100	7100	7100 RPM
ON	7100	7100	7100 RPM
ON	7100	7100	7100 RPM
ON	7100	7100	7100 RPM

The maximum momentary speed variation is therefore 1.5% and the steady speed variation is 0.2%.

The emergency governor tripped at:-

1st Trip	2nd Trip	3rd Trip
7100 RPM	7100 RPM	7100 RPM
"	"	"
"	"	"

The test was run at 15W over speed i.e. 7475 RPM for 5 minutes.

METROPOLITAN-VICKERS ELECTRICAL CO. LTD.

REPORT NO. ER.2692.

REPORT OF OFFICIAL TEST
OF
TURBINE & REDUCTION GEARS.
AT RUGBY - 22ND JUNE, 1936.

FOR: MESSRS. BARCLAY CURLE & CO. LTD. FOR THE ELLERMAN LINES LTD.

2ND MACHINE.

RATING: 100 KW. AT 6500/800 RPM. 110 VOLTS.

TYPE OF TURBINE: H.3.C-14" 3 STAGE HIGH PRESSURE HORIZONTAL CURTIS.

TYPE OF GENERATOR: COMPOUND WOUND WITH INTERPOLES. DRIP-PROOF.

TYPE OF GEARS: DOUBLE HELICAL SINGLE REDUCTION GEARS.

SHOP ORDER NOS: TURBINE B.802348. GEARS B.802351

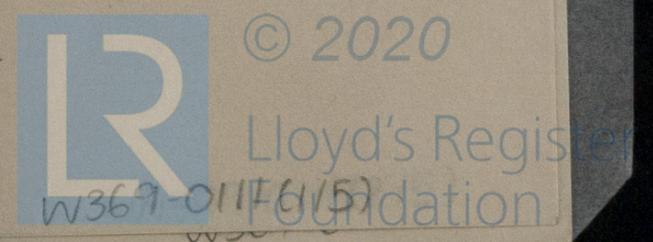
GENERATOR 416260/2.

SERIAL NO. TURBINE R.1862. GENERATOR 416260/2/03.

TURBINE TESTS - Certified by (Signed) Ewd. H. Blade.
Designing Engineer.

REPORT APPROVED (Signed) Fred. H. Clough.
Asst. Chief Engineer.

DATE 6th July, 1936.



METROPOLITAN-VICKERS ELECTRICAL CO. LTD.
REPORT NO. R.1862

REPORT OF OFFICIAL TEST
OF
TURBINE & REDUCTION GEARS
AT HUGBY - SEASIDE

FOR: MESSRS. BARCLAY CURLE & CO. LTD. FOR THE ELLERMAN LINES LTD.
SHIP MACHINE

RATING: 100 KW. AT 6500/800 RPM. 110 VOLTS.

TYPE OF TURBINE: H.P.-I.M. 3 STAGE HIGH PRESSURE HOLES
SHAFT

TYPE OF GENERATOR: COMPOUND WOUND WITH INTERPOLES. D.R.P.-PROOF.

TYPE OF GEARS: DOUBLE HELICAL SINGLE REDUCTION GEARS.

SHOP ORDER NO.: TURBINE R.1862A. GEAR R.1862B.

GENERATOR R.1862C.
SERIAL NO. TURBINE R.1862. GENERATOR R.1862D.

TURBINE TESTS - Certified by
..... (Signed) Fred H. Blode
Designing Engineer.

REPORT APPROVED
..... (Signed) Fred H. Blode
Asst. Chief Engineer.

DATE 6th July, 1936.

REPORT OF OFFICIAL TEST OF A 100 KW.
GEARED TURBO GENERATOR
FOR MESSRS. BARCLAY CURLE AND CO. LTD. FOR THE ELLERMAN LINES LIMITED.

TURBINE NO. R.1862.

The official test of this machine was run on the 22nd June 1936 in the presence of Mr. Ward and Mr. Cairns of the Ellerman Line, Mr. Laing of Lloyds, Mr. Walker of B.O.T. and Mr. Leivesley of Metropolitan-Vickers Electrical Co. Ltd.

The test was commenced at 6 am with a load of 100 Kw. on the generator, this load being maintained until 12 noon. During this load run a steam consumption test was taken for one hour.

On completion of the above, governing and overspeed tests were made, followed by a two hours' run at 125 Kw load.

During the afternoon a short run was carried out with a load of 70 Kw. on the generator, the turbine exhausting against atmospheric back pressure. The load was then increased to 150 Kw. and maintained for one and a half minutes.

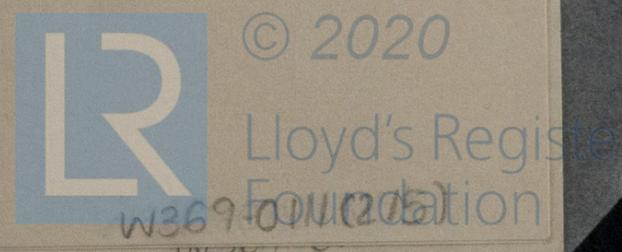
Before the commencement of the steam consumption test the set was run until the conditions were steady and then simultaneous readings, at intervals of three minutes were taken of steam pressure, temperature and pressure at exhaust, weight of condensed steam and output of the generator.

The figures have been analysed and tabulated in Table No.2.

Correction curve No. TEC.3026.A is bound in with the report, this having been used for correcting the test figures when operating to vacuum, to the guaranteed conditions.

Table No.1 gives general details of the set.

Table No.3 gives particulars of governing trials and overspeed tests.



REPORT OF OFFICIAL TEST OF A 100 KW
STEAM TURBO GENERATOR
FOR MESSRS. BARCLAY CURRIE AND CO. LTD. FOR THE KILMER LINES LIMITED.

TURBINE NO. R.1862

The official test of this machine was run on the 22nd June 1926 in the presence of Mr. Ward and Mr. Cairns of the Kilmer Line, Mr. Loring of Messrs. Barclay Currie & Co. Ltd. and Mr. Leavelle of Metropolitan-Vickers Electrical Co. Ltd.

The test was commenced at 8 am with a load of 100 KW on the generator, this load being maintained until 12 noon. During this load run a steam consumption test was taken for one hour.

On completion of the above, governing and over-speed tests were made, followed by a two hours' run at 125 KW load.

During the afternoon a short run was carried out with a load of 70 KW on the generator, the turbine exhausting against atmospheric back pressure. The load was then increased to 150 KW and maintained for one and a half minutes.

Before the commencement of the steam consumption test the set was run until the conditions were steady and then simultaneous readings, at intervals of three minutes were taken of steam pressure, temperature and pressure at exhaust, weight of condensed steam and output of the generator.

The figures have been analysed and tabulated in Table No. 2.

Correction curve No. 1006 A is shown in this report, this having been used for converting the test figures when operating to vacuum, to the guaranteed conditions.

Table No. 1 gives general details of the set.

Table No. 3 gives particulars of governing trials and over-speed tests.

TABLE NO. 1.

TURBINE NO. R.1862

TURBO GENERATOR

NORMAL OUTPUT 100 KW.
SPEED 6500/800 RPM

TURBINE

TYPE H3C.14 3 STAGE HIGH PRESSURE HORIZONTAL CURTIS
TYPE OF BLADING IMPULSE
NUMBER OF ROTATING ROWS PER STAGE } 2 ROWS PER STAGE

SPECIFIED STEAM PRESSURE 150 LBS PER SQ. INCH GAUGE
SPECIFIED STEAM QUALITY DRY STEAM
SPECIFIED VACUUM INCHES OF MERCURY 28"

REDUCTION GEARS

TYPE DOUBLE HELICAL SINGLE REDUCTION GEARS.

GENERATOR

TYPE COMPOUND WOUND WITH INTERPOLES. DRIP-PROOF.

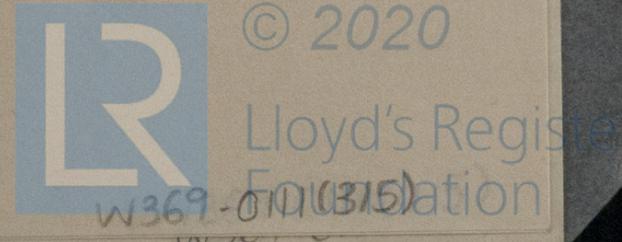


TABLE NO. 2.

TURBINE NO. R.1862

TEST NO.	1
DATE	22nd June, 1936.
DURATION	10.27 to 11.27 AM.
OUTPUT OF GENERATOR	100 KW.
SPEED	6500/800 RPM.
<u>STEAM CONDITIONS</u>	
PRESSURE AT TURBINE LBS/SQ. IN. G.	146.7
TEMPERATURE AT TURBINE °F.	394.2
SUPERHEAT °F.	30.0
<u>EXHAUST</u>	
VACUUM AT EXHAUST "HG. BAROMETER = 30"	26.84
<u>STEAM CONSUMPTION</u>	
TOTAL WATER WEIGHED PER HR.	2834 LBS.
WATER USED PER KW.HR.	28.34 LBS.
<u>CORRECTIONS</u>	
PRESSURE	$\frac{1}{1.0035}$
SUPERHEAT	$\frac{1}{0.980}$
VACUUM	$\frac{1}{1.0725}$
TOTAL	0.9480
STEAM CONSUMPTION LBS PER KW.HOUR CORRECTED TO 150 LBS/ SQ. IN. G. DRY STEAM 28" VAC. }	26.86 LBS.

<u>TURBO GENERATOR</u>	
NORMAL OUTPUT	100 KW.
SPEED	6500/800 RPM.
<u>TURBINE</u>	
TYPE	HORIZONTAL
TYPE OF SLIDING	IMPERIAL
NUMBER OF ROTATING ROWS PER STAGE	5 ROWS PER STAGE
SPECIFIED STEAM PRESSURE	150 LBS PER SQ. INCH GAUGE
SPECIFIED STEAM QUALITY	DRY STEAM
SPECIFIED VACUUM INCHES OF MERCURY	28"
<u>REDUCTION GEAR</u>	
TYPE	DOUBLE HELICAL SINGLE REDUCTION GEAR.
<u>GENERATOR</u>	
TYPE	COMPOUND WOUND WITH INTERPOLAR DRIP-PROOF.

TABLE NO. 3.

REPORT NO. 17, 2077.

TURBINE NO. R.1862.

REPORT OF OFFICIAL TEST
GOVERNING.

The following governing readings were obtained with a load of 100 Kw. thrown off and on the generator.

Load on generator	governing steady at	6500 Rpm.
" off	momentary speed	6800 "
" off	steady	6630 "
" on	momentary	6480 "
" on	steady	6500 "

The maximum momentary speed variation is therefore 4.62% and the steady speed variation 2%.

The emergency governor tripped at 7550 Rpm but was subsequently modified and then tripped at 7150 Rpm.

The set was run at 15% overspeed i.e. 7475 rpm for 5 minutes.

DESIGNED BY: (Signed) H. Platt, Designing Engineer.

REPORT APPROVED: (Signed) Fred. B. Clough, Asst. Chief Engineer.

DATE - 5th JULY, 1936.

TABLE NO. 3.
TURBINE NO. R.1862

TEST NO.	1
DATE	5th July 1936
DURATION	10.07 to 11.25 AM.
CURRENT OF GENERATOR	100 KW.
WIND	500/800 RPM.
STEAM CONDITIONS	
PRESSURE AT TURBINE	100.7
TEMPERATURE AT TURBINE	304.8
EXHAUST	30.0
VACUUM AT EXHAUST	28.84
STEAM CONSUMPTION	
TOTAL WATER WEIGHED PER HR.	58.34 LBS.
WATER USED PER KW.HR.	58.34 LBS.
COEFFICIENT	
PRESSURE	1.0035
TEMPERATURE	0.980
VACUUM	1.075
TOTAL	0.940

STEAM CONSUMPTION PER KW.HR. CORRECTED TO 100 LBS. DRY STEAM @ 28" VAC.



W369-011(5/5)