Rpt. 4c

Date of writing report 14th Marhc 1962 Received London ..... Port YOKOHAMA No. 4191

Survey held at Yokohama No. of visits 72 First date 30-6-'61 Last date 26-1-'62

FIRST ENTRY REPORT ON AUXILIARY INTERNAL COMBUSTION ENGINES

Name of Ship m.v. "LENKORAN" *Owners* Vsesojuznoje Exportno-Importnoje Objedinenije "sudoimport" Moscow, U.S.S.R.
(Or Contract No. if name unknown). *(Or Consignees)*
Ship Built at Aioi, Japan *by* Ishikawajima-Harima Heavy Industries, Ltd. Aioi Works. *when* ..... *Yard No.* 592
Auxiliary Engines ~~or Gas Turbines~~ made at Yokohama, Japan *by* Mitsubishi Nippon Heavy Ind., Ltd *when* 1962-1 *Eng. Nos.* D133306,7,8
Total No. of sets and description (including type name) 3 set. Yokohama M.A.N. G5VAL type trunk piston, direct injection, Supercharged.

INTERNAL COMBUSTION RECIPROCATING ENGINES. *No. of cylinders per engine* 5 *Dia. of cylinders* 235 mm *Stroke* 330 mm *2 or 4 stroke cycle* 4 *Maximum approved BHP* 420(metric) 600 *RPM* *Corresponding MIP* 10.9 kg/cm² *Maximum pressure* 68 kg/cm² *Fuel* diesel oil *Are cylinders arranged in Vee or other special formation?* no *If so, No. of crankshafts per engine* – *Is engine of opposed piston type?* no *No. and type of mechanically driven scavenge pumps or blowers per engine* None *No. of exhaust gas driven ~~blowers or~~ superchargers per engine* one *Is welded construction used for: Bedplate?* no *Entablature?* no *Total internal volume of crankcase (if 20 cu. ft. or over)* 1.12 m³ *No. and total area of crankcase explosion relief devices* 2 & 173 cm² *Are flame guards or traps fitted?* no *Cooling medium for: Cylinders* fresh water *Pistons* – *No. of attached pumps: F.W. cooling* one *S.W. cooling* – *Lubricating oil* one *How is engine started?* compresed air.

SHAFTING. *Is a damper or detuner fitted?* (Yes) no [illegible] 9/10/62 *No. of main bearings* 6 *Are bearings of ball or roller type?* no *Distance between inner edges of bearings in way of cranks* 284 mm *Crankshaft: ~~Built, semi-built~~/solid.* *Material of crankshaft* electric furnace steel *Approved minimum tensile strength* 53 kg/mm² *Dia. of pins* 155 mm *Journals* 155 mm *Breadth of webs at mid throw* 273 mm *Axial thickness* 80 mm *If shrunk, radial thickness around eyeholes* – *Dia. of flywheel* 1,200 mm *Weight* 1310 kg *Are balance weights fitted?* no *Total weight* – *Rad. of gyration* – *Dia. of flywheel shaft* – 5/12 I
Has each engine been tested in shop? yes *How long at full power?* 4 Hr. *Was it tested with driven machinery attached?* yes *Was the governing tested and found satisfactory?* yes *Date of approval of torsional vibration characteristics (for engines of 150 BHP and over)* 1-8-1961 21/7/61.
Date of approval of shafting 27-4-1961 *Identification marks on shafting* LLOYD'S KOB MB-CK767 MK 15-6-61 JW. 9-10-61 YKA; LLOYD'S KOB MB-CK792 KK 26-7-61 JW. 9-10-61 YKA; LLOYD'S KOB MB-CK803 KT 29-8-61 JW. 16-10-61 YKA
Particulars of driven machinery
No.1 & 2 --- 350 K.V.A generator and air compressor.
No.3 --- 350 K.V.A generator.
Port and No. of Certificate for Starting Air Receivers

AUXILIARY GAS TURBINES. *BHP per set* ..... *At* ..... *RPM of output shaft. Open or closed cycle?* .....
Arrangement of turbines. *HP drives* ..... *at* ..... *RPM* *HP gas inlet temp.* ..... *pressure* .....
(A small diagram should be attached showing gas cycle) *IP* ,, ... *at* ..... ,, *IP* ,, ,, ,, ... ,, ...
LP ,, ... *at* ..... ,, *LP* ,, ,, ,, ... ,, ...
No. of air compressors per set ..... *Centrifugal or axial flow type?* ..... *Material of turbine blades* .....
Material of compressor blades ..... *No. of air coolers per set* ..... *No. of heat exchangers per set* ..... *How are turbines started?* ..... *Are the turbines operated in conjunction with free piston gas generators?* .....
Total No. of free piston gas generators ..... *Dia. of working pistons* ..... *Dia. of compressor pistons* ..... *No. of double strokes per minute at full power* ..... *Gas delivery pressure* ..... *Gas delivery temperature* .....
Have the turbines and attached equipment been tested in shop? ..... *How long at full power?* ..... *Were they tested with driven machinery attached?* ..... *Particulars of gearing* .....
Date of approval of plans ..... *Identification marks* ..... *Particulars of driven machinery* .....

ELECTRIC GENERATORS. *Port and No. of Certificate for generators of 100 Kw. and over* Yokohama M7863
For generators under 100 Kw., has Makers' Certificate been obtained? – *Are Certificates attached?* Yes

The foregoing description is correct and the particulars are as approved for torsional vibration characteristics (strike out words not applicable)

T. Kondwaoka
YOKOHAMA SHIPYARD & ENGINE WORKS, MITSUBISHI NIPPON HEAVY INDUSTRIES, LTD. *Manufacturer*

Is this machinery duplicate of a previous case? Yes *If so, which?* Yokohama Rpt. No. 4168

GENERAL REMARKS. *State if the machinery has been constructed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.*

The machinery has been constracted under Special Survey in accordance with the Rules, approved plans & Secretary's letters.

The quality of workmanship and materials have been found satisfactory and the machinery examined under fall power working conditions during shop tirals and found satisfactory.

It is submitted that on being satisfactory installation in a classed ship the machinery is eligible to be classed with the Society and to have the notation ✠ LMC(with date)

Survey Fee ¥177000
Expenses .....
Date when a/c rendered APR. 5. 1962

J. Winn. H. Terashima
J.Winn, H. Terashima *Engineer Surveyor to Lloyd's Register*

Declaration to be signed by Surveyor at fitting-out Port:— The above described machinery has been fitted on board the M.T. "LENKORAN" *at* Aioi, Japan *in a proper manner and found satisfactory when tested on the (date)* 16-4-1962 *under full working conditions.*

Jacobs. H. Murayama
Engineer Surveyor to Lloyd's Register

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