

25 DEC 1963

Rpt. 4c

Date of writing report 15-5-63 Received London Port YOKOHAMA No. 4724  
Survey held at Yokohama, Japan No. of visits 67 First date 24-11-1962 Last Date 12-4-1963

# FIRST ENTRY REPORT ON AUXILIARY INTERNAL COMBUSTION ENGINES

Name of Ship (Or Contract No. if name unknown). Owners (Or Consignees)  
Ship Built at Hiroshima, Japan by Mitsubishi Shipbuilding & Engineering Co. Ltd., Hiroshima Works, when Yard No. 5161  
Auxiliary Engines or Gas Turbines made at Yokohama, Japan by Mitsubishi Nippon Heavy Industries Ltd., Yokohama S.Y. & Engine Works when 1963-3 Eng. Nos. 355, 356  
Total No. of sets and description (including type name) 3 sets, Yokohama M.A.N. G5V AL, type trunk piston, direct injection, supercharged.

INTERNAL COMBUSTION RECIPROCATING ENGINES. No. of cylinders per engine 5 Dia. of cylinders 235 mm Stroke 320 mm  
2 or 4 stroke cycle 4 Maximum approved BHP 475 metric at 600 RPM Corresponding MIP 12.2 kg/cm<sup>2</sup> Maximum pressure 68 kg/cm<sup>2</sup>  
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 - 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 M<sup>3</sup> No. and total area of crankcase explosion relief devices 2 & 173 cm<sup>2</sup> 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? Compressed air

SHAFTING. Is a damper or detuner fitted? No No. of main bearing 6 Are bearing 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 56 kg/mm<sup>2</sup> Dia. of pins 155 mm Journals 155 mm reduced to 149mm dia. in way of output coupling. Breadth of webs at mid throw 273 mm Axial thickness 80 mm If shrunk, radial thickness around eyeholes - Dia. of flywheel 1250 mm Weight 1510 kg Are balance weights fitted? No Total weight - Rad. of gyration - Dia. of flywheel shaft -  
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) 13-3-1963  
Date of approval of shafting 27-4-1961 Identification marks on shafting 354/LLOYD'S KOB 355/LLOYD'S KOB 356/LLOYD'S KOB  
Particulars of driven machinery NO. MB-CK944 NO. MB-CK945 NO. Y-19504  
SH 12-10-62 SH 12-10-62 MS 13-11-62  
RT 14-12-62YKA RT 19-12-62YKA RT 11-1-63YKA  
Each one 350 K.V.A. Generator

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 Nagasaki M-10501  
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)  
YOKOHAMA SHIPYARD & ENGINE WORKS,  
MITSUBISHI NIPPON HEAVY INDUSTRIES, LTD. Manufacturer M. Sakuma

Is this machinery duplicate of a previous case? No If so, which? -

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 constructed under Special Survey in accordance with the Rules, approved plans and Secretary's letters. The quality of materials and workmanship has been found satisfactory, and the machinery examined under full power working conditions during shop trials and found satisfactory.  
It is submitted that on being satisfactorily installed and tested on board in accordance with Rule requirements, the machinery is eligible to be classed with this Society and to have the notation + LMC(with date).

Survey Fee ¥ 211000- Expenses  
Date when a/c rendered MAY 23 1963 R. Taneda 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.V. "LIKHO SLAV" at Hiroshima in a proper manner and found satisfactory when tested on the (date) 7th Sept. 1963 under full working conditions.

Engineer Surveyor to Lloyd's Register  
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