

Rpt. 4c

Date of writing report 12th December, 1964

Received London

Port Kobe

No. FE-13735

Survey held at Amagasaki, Japan.

No. of visits 6

First date 28th July '64. Last date 27th Nov., 1964.

FIRST ENTRY REPORT ON AUXILIARY INTERNAL COMBUSTION ENGINES

Name of Ship (Or Contract No. if name unknown) Owners (Or Consignees) Ship Built at Hakodate, Japan. by Hakodate Dockyard Co., Ltd. when Yard No. 356 Auxiliary Engines of Gas Turbines made at Amagasaki, Japan. by Yanmar Diesel Engine Co., Ltd. when Nov., '64 Eng. Nos. 4F5122BM Total No. of sets and description (including type name) 1 - "YANMAR" 5MAL 4 S.C.S.A. Oil Engine.

INTERNAL COMBUSTION RECIPROCATING ENGINES. No. of cylinders per engine 5 Dia. of cylinders 200mm Stroke 240mm 2 or 4 stroke cycle 4 Maximum approved BHP 205 at 1000 RPM Corresponding MIP 5.96kg/cm2 Maximum pressure 60kg/cm2 Fuel Heavy 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 None Is welded construction used for: Bedplate? Yes Entablature? No Total internal volume of crankcase (if 20 cu. ft. or over) 0.58 m3 (20.49 ft3) No. and total area of crankcase explosion relief devices 3 x 49cm2 Are flame guards or traps fitted? Yes Cooling medium for: Cylinders Fresh water Pistons None No. of attached pumps: F.W. cooling 1 S.W. cooling None Lubricating oil 1 How is engine started? By compressed air.

SHAFTING. Is a damper or detuner fitted? No No. of main bearings 6 Are bearings of ball or roller type? No Distance between inner edges of bearings in way of cranks 237mm Crankshaft: Built, semi-built, solid. Material of crankshaft Forged Steel Approved minimum tensile strength 55 kg/cm2 Dia. of pins 138mm Journals 150mm Breadth of webs at mid throw 210mm Axial thickness 62mm If shrunk, radial thickness around eyeholes 141.3mm Dia. of flywheel 820mm Weight 440kg Are balance weights fitted? Yes Total weight 2x10.05kg Rad. of gyration 140.7mm Dia. of flywheel shaft - Has each engine been tested in shop? Yes How long at full power? 2 hours 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) 19th August, 1964 Date of approval of shafting 7th July '64 Identification marks on shafting No. KT-CK-677. S.Y 1-9-64 LR

Particulars of driven machinery Generator A.C. 150 Kva 400 volts 216.5 Amps, 3 phase, Shinko Electric Co., Ltd., Toba.

Port and No. of Certificate for Starting Air Receivers Kob. No. AR-106003 No. AR-3612, YH 1-8-64 LR

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 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 Kob. No. ACG2099, MI 6-11-64 LR

For generators under 100 Kw., has Makers' Certificate been obtained? Are Certificates attached?

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

Signature of Manager of Kanzaki Works, Manufacturer Yanmar Diesel Engine Co., Ltd.

Is this machinery duplicate of a previous case? 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 machine has been constructed under Special Survey in accordance with the Rules, approved plans and Secretary's letters. The workmanship and material are good.

The machine has been tried under working conditions at the Shop in the presence of undersigned with satisfactory results. It is accordingly recommended that the machine is suitable for installation aboard the contemplated ship to be classed with the Society, provided they be installed and tested as required by the Rules and to the surveyors entire satisfaction.

Survey Fee 38,450.-

Expenses 3,000.-

Date when a/c rendered DEC 12 1964

Signature of Engineer Surveyor to Lloyd's Register M. Koi

Declaration to be signed by Surveyor at fitting-out Port: The above described machinery has been fitted on board the "AMUR" at Hakodate in a proper manner and found satisfactory when tested on the (date) 27-4-65 under full working conditions.

Signature of H. Terashima, Engineer Surveyor to Lloyd's Register

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