pt. 4c

e of writing report 4.4.59 Received London ..... Port Helsingfors No. 6992

vey held at Vasa No. of visits 58 First date 11.7.58 Last date 28.1.59

# FIRST ENTRY REPORT ON ~~AUXILIARY~~ Main INTERNAL COMBUSTION ENGINES

me of Ship Icebreaker "Moskva" Owners (Or Consignees) USSR

Contract No. if name unknown).

p Built at Helsingfors by ~~Sandvikens Skeppsdocka~~ Wärtsilä-koncernen Ab, when ..... Yard No. 365

xiliary Engines ~~XXXXXXXXX~~ made at Vasa by ~~Wasa Mekaniska Verkstad~~ Wärtsilä-koncernen Ab, when 1959 Eng. Nos. 179

tal No. of sets and description (including type name) 9MH51/55

**TERNAL COMBUSTION RECIPROCATING ENGINES.** *No. of cylinders per engine* 9 *Dia. of cylinders* 510 mm *Stroke* 550 mm *or 4 stroke cycle* 2 *Maximum approved BHP* 3250 *at* 330 *RPM* *Corresponding MIP* 5,3 *Maximum pressure* 65 kg/cm$^2$ *tel* diesel oil *Are cylinders arranged in Vee or other special formation?* normal *If so, No. of ankshafts per engine* - *Is engine of opposed piston type?* no *No. and type of mechanically driven scavenge pumps or blowers r engine* nine piston pumps *No. of exhaust gas driven blowers or superchargers per engine* none *Is welded construction ed for: Bedplate?* - *Entablature?* - *Total internal volume of crankcase (if 20 cu. ft. or over)* 8,5 m$^3$ *No. and total area of rankcase explosion relief devices* 9x250cm$^2$=2250cm$^2$ *Are flame guards or traps fitted?* no *Cooling medium for: Cylinders* Fresh water *Pistons* Lubr.oil *No. of attached pumps: F.W. cooling* none *S.W. cooling* none *Lubricating oil* none *How is engine started?* by compr.air

**HAFTING.** *Is a damper or detuner fitted?* yes *No. of main bearings* 11 *Are bearings of ball or roller type?* no *Distance between ner edges of bearings in way of cranks* 570 mm (548) *Crankshaft* ~~XXXXXXXXX~~ solid. *Material of crankshaft* SM steel *Approved inimum tensile strength* 50 kg/mm$^2$ *Dia. of pins* 310 mm *Journals* 310 mm *Breadth of webs at mid throw* 450 mm *Axial hickness* 163 mm *If shrunk, radial thickness around eyeholes* - *Dia. of flywheel* 1330 mm *Weight* 432 kg *Are balance veights fitted?* yes *Total weight* 45,8kg+25,5kg *Rad. of gyration* 273mm+490mm *Dia. of flywheel shaft* 310 mm(included in crankshaft) *Has each engine been tested in shop?* yes *How long at full power?* 8 hours *Was it tested with driven machinery attached?* yes *Was the overning tested and found satisfactory?* yes *Date of approval of torsional vibration characteristics (for engines of 150 BHP and over)* 15/23.4.57 *Date of approval of shafting* 6.10.55 (9.11.55) *Identification marks on shafting* LLOYDS KLN. 793 AS 10.7.58 base 3190 LLOYDS KLN. 829 AS 10.7.58 *Particulars of driven machinery* Siemens D.C.Generator, GM 434/808, 2150 KW, 600 V, 3600 A.

*Port and No. of Certificate for Starting Air Receivers* not yet delivered.

**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* .....

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

Wärtsilä-koncernen A/B
WASA MEK. VERKSTAD

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

*Manufacturer*

*Is this machinery duplicate of a previous case?* yes *If so, which?* Report No. 6958.

**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.*

This Diesel Engine has been constructed under Special Survey in accordance with the Rules, approved plans and Secretary's letters. Quality of materials and workmanship found good.

*Survey Fee* Fmk. 267.000:-
*Expenses* " 8.370:-
*Date when a/c rendered* 23.2.59

A. Weber. *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* icebreaker "MOSKVA" *at* Helsingfors *in a proper manner and found satisfactory when tested on the (date)* 11.5.60 *under full working conditions.*

*Engineer Surveyor to Lloyd's Register*

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