

date of writing report **24.2.1959.**
Shell expansion survey held at **Gävle**
d forecastle de

Received **MONDAY 2 MAR 1959** Port **Stockholm** No. **11907**
In shops **7** 2.1.58. 24.6.58.
No. of visits **31** First date **28.2.58.** Last date **16.12.58.**
On vessel **31**

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. **90887** Name **Tween Screw Motorship "PAMIR"** Gross tons **1500**
Owners **U.S.S.R.** Managers **-** Port of Registry **Leningrad**
Hull built at **Gävle, Sweden** By **AB Gävle Varv** Yard No. **99** When **1958 12**
Main Engines made at **Hamburg** By **Maschinenfabrik Augsburg-Nürnberg** Eng. No. **405211-212** When **1958 3**
Donkey boilers made at **Sävsjö, Sweden** By **AB Vatten och Ånga** Blr. Nos. **25305** When **1957**
Machinery installed at **Gävle** By **AB Gävle Varv** When **1958-12**

Is ship to be classed for navigation in ice? **Yes** Is ship intended to carry petroleum in bulk? **No**
Is refrigerating machinery fitted? **Domestic only** **Is it for cargo purposes?** **Type of refrigerant**
Is the refrigerating machinery compartment isolated from the propelling machinery space? **Is the refrigerated cargo installation intended to be classed?**

The following particulars should be given as fully and as clearly as possible. Where the answer is "No" or "None", say so! Ticks and other signs of doubtful meaning are not to be used. Where the wording is not applicable to the installation, a black line may be inserted. If the main engines have been constructed at another port and are covered by a separate report, the particulars given in that report need not be repeated below, but the port and report number should be stated.

No. of main engines **2** No. of propellers **2** Brief description of propulsion system **2 engines direct coupled to 2 screw shafts.**

MAIN RECIPROCATING ENGINES. Licence Name and Type No. **MAN type GIOV 40/60 (with supercharging).**

No. of cylinders per engine **2** Dia. of cylinders **2100** stroke(s) **2 or 4 stroke cycle** Single or double acting **Single**
Maximum approved BHP per engine **2100** at **Hamburg rpt. No. 6441** RPM of engine and **6441** RPM of propeller.
Corresponding MIP **(For DA engines give MIP top & bottom)** Maximum cylinder pressure **Hamburg rpt. No. 6441** Machinery numeral **6441**
Are the cylinders arranged in Vee or other special formation? If so, number of crankshafts per engine **2**

TWO-STROKE ENGINES. Is the engine of composite piston type? **IF SO, HOW ARE TOP EXPLOSION CHAMBERS MADE AND TO WHAT EFFECT?**
Is the exhaust discharged through ports in the cylinder or through valves in the cylinder covers? **No. and type of mechanically driven scavenging pumps and blowers?**
Are exhaust gas driven scavenging blowers per region? **Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action?**
Is the order of scavenging blowers fitted star or driven? **No. of scavenging air coolers?** **Scavenging air pressure? **6441****

FOUR STROKE ENGINES. Is the engine supercharged? **Are the undersides of the pistons arranged as supercharge pumps?** **No. of exhaust gas driven blowers per engine?**
No. of supercharge air coolers per engine? **Supercharge air pressure?** **Can engine operate without supercharger?**

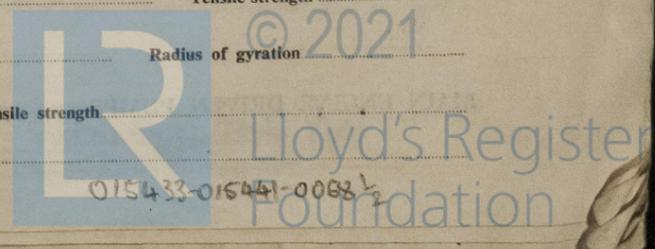
TWO & FOUR STROKE ENGINES—GENERAL. No. of valves per cylinder: Fuel **2** Inlet **2** Exhaust **2** Starting **2** Safety **2**
Material of cylinder covers? **Hamburg rpt. No. 6441** **Material of piston crowns?** **Hamburg rpt. No. 6441** **Is the engine equipped to operate on heavy fuel oil?**
Cooling medium for:—Cylinders? **Hamburg rpt. No. 6441** **Pistons?** **Hamburg rpt. No. 6441** **Fuel valves?** **Hamburg rpt. No. 6441** **Overall diameter of piston rod for double acting engines?**
Is the rod fitted with a sleeve? **Is welded construction employed for: Bedplate?** **Frames?** **Entablature?** **Is the crankcase separated from the underside of pistons?**
Is the engine of crosshead or trunk piston type? **Total internal volume of crankcase?** **No. and total area of explosion relief devices?**
Are flame guards or traps fitted to relief devices? **Is the crankcase readily accessible?** **If not, must the engine be removed for overhaul of bearings, etc.?** **Is the engine secured directly to the tank top or to a built-up seating?** **Tank top** **How is the engine started?** **Compressed air**

Can the engine be directly reversed? **If not, how is reversing obtained?**
Has the engine been tested working in the shop? **How long at full power?**

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system **Hamburg rpt. No. 6441** State barred speed range(s), if imposed
for working propeller? **For spare propeller?** **Is a governor fitted?** **Is a torsional vibration damper or detuner fitted to the shafting?**
Where positioned? **Type?** **No. of main bearings?** **Are main bearings of ball or roller type?**
Distance between inner edges of bearings in way of crank(s)? **Distance between centre lines of side cranks or eccentrics of opposed piston engines?**

Crankshaft type: Built, semi-built, solid. (State which) **Hamburg rpt. No. 6441**
Diameter of journals? **Diameter of crankpins?** **Breadth of webs at mid-throw?** **Axial thickness of webs?**
If shrunk, radial thickness around eyeholes? **Are dowel pins fitted?** **Crankshaft material?** **Journals?** **Approved?**
Webs? **Tensile strength?**

Diameter of flywheel? **Weight?** **Are balance weights fitted?** **Total weight?** **Radius of gyration?**
Diameter of flywheel shaft? **Material?** **Minimum approved tensile strength?**
Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which)



MAIN GAS TURBINES (Name and type)

Name of turbine: _____ Description of cycle: _____ BHP per set: _____ RPM: _____
 How is drive transmitted to propeller shaft? _____
 Arrangement of turbines: _____
 No. of sets: _____ Description of cycle: _____ BHP per set: _____ RPM: _____
 How is reversing effected? _____
 Total H.P. of free piston gas generators: _____ Diameter of working pistons: _____ Diameter of compressor pistons: _____ No. of double strokes: _____
 Name of manufacturer: _____ Gas delivery pressure: _____ Gas delivery temperature: _____ Have the turbines and attached equipment been tested? _____
 Is there any special feature? _____

ELECTRIC PROPULSION (Reciprocating engines or gas turbines. Electrical particulars to be reported on Form 4d.)

No. of generators: _____ KW per generator: _____ RPM: _____ Position: _____
 No. of propulsion motors: _____ SHP per motor: _____ RPM: _____ Position: _____
 How is power obtained for excitation of generators? _____ Motor: _____

REDUCTION GEARING (Reciprocating engines or gas turbines. A small line sketch should be attached showing arrangement of gearing.)

Description of shafts and their bearings: _____
 No. of shafts: _____ Description of shafts: _____
 Material of shafts: _____
 Are gears of teeth casted or forged? _____ Diameter of pinion: _____
 Material of pinion: _____
 Are gears of teeth casted or forged? _____ Diameter of pinion: _____
 Material of pinion: _____
 Are gears of teeth casted or forged? _____ Diameter of pinion: _____
 Material of pinion: _____

CLUTCHES, FLEXIBLE COUPLINGS, ETC. (If electric or other flexible connection is fitted between engine/turbine and gear, or between engine and the shafting give description and how clutches are operated.)

Can the main engine be used for purposes other than propulsion when disconnected? _____

STRAIGHT SHAFTING. Diameter of thrust shaft: 280 mm ✓ Material: S.M.-steel Minimum approved tensile strength: 50-60 kg/mm²

Shaft separate or integral with crank or wheel shaft? Separate ✓ Diameter of intermediate shaft: 210 mm ✓ Material: S.M.-steel
 Minimum approved tensile strength: 44-50 kg/mm² Diameter of screw shaft: _____ Central hole: _____ Is screw shaft fitted with a continuous liner? No

Is the main shaft fitted with a continuous liner in way of stern tube? _____

Bearing: _____ Material of screw shaft: S.M.-steel Minimum approved tensile strength: 44-60

Is an approved oil gland fitted? Yes ✓ If so, state type: Gedervall ✓ Length of bearing next to and supporting propeller: 1000 mm

Material of bearing: White metal ✓ In multiple screw vessels is the liner between stern tube and A bracket continuous? Yes ✓ If not, is the exposed length of shafting between liners readily visible in dry dock? -

PROPELLER. Diameter of propellers: 2500 mm ✓ Pitch: Variable ✓ Built up or solid: - Total developed surface: -

No. of blades: 3 Blade thickness at top of root fillet: - Blade material: Stainless steel ✓ Moment of inertia of dry propeller: 2720 kgm²

If propeller is of special design, state type: KAMEWA ✓ Is propeller of reversible pitch type? Yes ✓ If so, is it of approved design? Yes ✓

State method of control: Hydraulic ✓ Material of spare propeller blades: steel ✓ Moment of inertia: -

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine: None Can they be declutched? -

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) 2 main:- 56 m³/h; electric motor, port

starboard in E.R. fwd.; Kiel cert. 2204 and 2205. - 1 aux.:- 11.4 m³/h; diesel motor; starb. side fwd.; Cpn cert. dated 2.7.57.

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 3 main:- 1000 litres each; port, centre and starboard side fwd.; Hamburg cert. No. 58/744. - 1 aux.:- 125 litres in aux. E.R.; Augsburg cert. No. 8673 - 1 aux. 55 litres in E.R., port aft.; Augsburg cert. No. 58/314.

How are receivers first charged? By one diesel driven emergency compressor ✓ Maximum working pressure of starting air system: 30 kg/cm² Are the safety devices in accordance with the Rules? Yes ✓ Has the starting of the main engines been tested and found satisfactory? Yes ✓

COOLERS. No. of main engine fresh water coolers: 2 No. of main engine lubricating oil coolers: 2 ✓

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure: None

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) On each engine: two lubricating and one oil fuel pump.

Service for which each pump is connected to be marked thus X

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	SUCTION										DELIVERY					
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed Tanks	Prop. Hydr. Syst.	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lab. Oil	Piston Cooling	Prop. Hydr. Syst.
All electrically driven.																
Bilge pump, s.s., 80 t/h	X	X	X			X										
Ballast pump, s.s., 100 t/h	X	X	X	X		X						X				
San. & fire pump, s.s.						X							X			
Emerg. fire pump, steer. room						X							X			
Transfer pump, p.s.				X												
" " " (for aux. eng)				X												
2 lub. oil stand by pumps, p.s.								X						X		
3 cool. w. pumps (s&f.w.), p.c.s.					X	X				X	X					
1 stand by c.w. pump (s.w.) for 3 aux. eng. p.s.						X					X					
2 stand by c.w. pumps (s&f.w.) for 2 aux. eng. p.s.					X	X				X	X					
2 stand by oil pumps for prop system, p & s.									X							X
Boiler feed pump, s.s. (steam driven)								X	X							
Stand by feed pump, s.s.								X	X							

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room. No. 1 hold:- 2 x 2". - Provision store:- 1 x 2 1/2" & 1 x 2". -

Compressor room:- 2 x 3". - Pump store:- 2 x 2". - No. 2 hold:- 2 x 2 1/2".

No. and size connected to main bilge line in main engine room 3 x 3" & 2 x 2". Cofferdams:- 1 x 3" & 1 x 3". In tunnel 2x2" & 1x2 1/2".

In aux. engine room 2 x 3" Size and position of direct bilge suction in machinery spaces Fwd. 1 x 4".

Aft: 1x5". - Aux. eng. room:- 1 x 4". Size and position of emergency bilge suction in machinery spaces See dir. suct.

Compressor room:- 1 x 4". Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? None Do the piping arrangements comply with the Rules including special requirements for ships carrying petroleum in bulk, cargo oil or classed for navigation in ice? Yes

STEAM & OIL ENGINE AUXILIARIES

Position of each	Type	Made by	Port and No. of Rpt. of C.A.	Driven Machinery (For electric generators, state output)
Port side in E.R.	4 SCSA Diesel	MAN, AG	Augsburg No. 1062 ✓	One 100 KVA 3-phase alternator
Starb. side in E.R.	4 SCSA Diesel	MAN, AG	Augsburg No. 1062 ✓	One 100 KVA 3-phase alternator
Port side in Aux. eng. room	4 SCSA Diesel	MAN, AG	Augsburg No. 1068 ✓	One 200 KVA 3-phase alternator
Centre in Aux. E.R.	4 SCSA Diesel	MAN, AG	Augsburg No. 1068 ✓	One 200 KVA 3-phase alternator
Starb. side in Aux. E.R.	4 SCSA Diesel	MAN, AG	Augsburg No. 1068 ✓	One 200 KVA 3-phase alternator

Is electric current used for essential services at sea? Yes ✓ If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea: One Generator, 200 KVA. ✓ Is an electric generator driven by Main Engine? No. ✓

STEAM INSTALLATION. No. of donkey boilers burning oil fuel: 1 ✓ W.P. 85 lbs/sq. in. Type: Single ended multitubular "UNIVEX".

Position: In a separate compartment on starboard side in auxiliary engine room. ✓

Is a superheater fitted? No ✓ Are these boilers also heated by exhaust gas? No ✓ No. of donkey boilers heated by exhaust gas only? No ✓ W.P. -

Type: - Position: - Can the exhaust heated boilers deliver steam directly to the steam range or do they operate only as economisers in conjunction with oil fired boilers? - Port and No. of report on donkey boiler: Gothenburg No. 24096

Is steam essential for operation of the ship at sea? No ✓ Are any steam pipes over 3 ins. bore? No ✓ If so, what is their material? - For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? Yes ✓ No. of oil burning pressure units: 2 ✓ No. of steam condensers: None ✓ No. of Evaporators: 1 ✓

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars). Maker:- A/S Svendborg Skibsværft; 1 hydraulic pump type 13 driven by one 15 HP el. motor (Thrige) with double pipes to steering engine. Spare gear:- 1 hand operated pump on bridge. ✓

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes ✓ Brief description of arrangements: As per Rules and U.S.S.R. requirements.

Has the spare gear required by the Rules been supplied? Yes ✓ Has all the machinery been tried under full working conditions and found satisfactory? Yes ✓ Date and duration of full power sea trials of main engines: 13.11.58., 5 hours. ✓ Does this machinery installation contain any features of a novel or experimental nature? (Give particulars) No. ✓

The foregoing description of the main engine and installation (strike out words not applicable)

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Aktiebolaget Gävle Vard's Register
 Konstruktionskontroll
 Foundation
 Builder

GENERAL REMARKS

State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and recommendations for classification, including any special notation to be assigned. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

The machinery of this vessel has been installed under Special Survey in accordance with the Rules approved plans and Secretary's letters, and tested under working conditions on trial trip and found satisfactory.

The workmanship and materials are good.

The machinery of this vessel is eligible, in our opinion, to be classed in the Register Book with the record of +LMC 12.58 and OG, and with the notation "Strengthened for Navigation in ice", the engines not to be operated continuously between 80 and 100 r.p.m.

J. Mayer
Engineer Surveyor to Lloyd's Register of Shipping

PARTICULARS OF IDENTIFICATION MARKS ((Including Port of origin) of important Forgings and Castings. (Copies of certificates should be forwarded with report.)

RODS

CRANKSHAFT OR ROTOR SHAFT Hamburg report No. 6441.

FLYWHEEL SHAFT Hamburg report No. 6441.

THRUST SHAFT { Port LLOYDS DSF JL. 761 5.8.57. HAM 3.10.57. Hka.
Starb. LLOYDS DSF JL. 761 A 12.8.57. HAM 3.10.57. Hka.

GEARING { Port { LLOYDS SKM No. 874 KE 28.2.58. DTM J.L. 14.9.57.
LLOYDS GOT No. 808 BJK 7.3.58.

{ Starb. { LLOYDS SKM No. 873 KE 28.2.58 DTM J.L. 11.9.57.
LLOYDS GOT. No. 824 BJK 7.3.58.

INTERMEDIATE SHAFTS { Port LLOYDS DTM No. 835 BJK 7.3.58. Got. cert. No. 23892
SCREW AND TUBE SHAFTS { Starb. LLOYDS DTM No. 833 BJK 7.3.58. Got. cert. No. 23891

PROPELLERS Please see Got. cert. No. 24254 attached hereto.

OTHER IMPORTANT ITEMS OK-couplings between screw- and intermediate shafts:-

Port. LLOYDS SKM No. 8752 S.W. 23.9.57.

Starb. LLOYDS SKM No. 8751 S.W. 23.9.57.

Is the installation a duplicate of a previous case? No H.S.O. state name of vessel

Date of approval of plans for crankshaft Nos. 7547/48 See Eng. certs. Straight shafting 18.4.1957. Gearing

Separate oil fuel tanks 20.1. & 1.3.1958 Pumping arrangements 19.10.57. Oil fuel arrangements 19.10.57.

Separate oil pumping arrangements Air receivers No. 58/744 Donkey boilers See Got.rpt.No.24

Dates of examination of principal parts:- port 16.4.58. port 8.8.58. Fitting of stern tube stbd. 10.4.58. Fitting of propeller stb. 9.8.58. Completion of sea connections 16.4.58. Alignment of crankshaft in main bearings 2.7.58.

Engine checks & bolts 1.7.58. Alignment of gearing Alignment of straight shafting 2.7.58. Testing of pumping arrangements 2.10.

Oil fuel lines 5.11.58. Donkey boiler supports 16.4.58. Steering machinery 13.11.58. Windlass 5.11.58.

Date of Committee Special Survey Fee IMA Kr. 2.790:--

Decision See Apts. 1.

Expenses Kr. 1,966:--

Date when A/C rendered 24.2.1959.

