GENERATOR ENGINE

Report on Steam Turbine Machinery. No. 668-B.

Received at London Office ..... 24 JUN 1952

Date of writing Report **25-1-1952** When handed in at Local Office **15-1-1952** Port of **YOKOHAMA**

No. in Reg. Book — Survey held at **YOKOSUKA, JAPAN** Date, First Survey **11TH APRIL 1951** Last Survey **26TH NOV.** 19 **51** (Number of Visits **32**)

on the **S.S. "HIKOSAN MARU"** Tons { Gross **6362.68** / Net **3637.26**

Built at **YOKOSUKA, JAPAN** By whom built **URAGA DOCK CO., LTD.** Yard No. **632** When built **11-1951**

Engines made at **YOKOSUKA, JAPAN** By whom made **URAGA DOCK CO., LTD.** Engine Nos. **10268 / 10269** When made **10-1951**

Boilers made at **MAIZURU, JAPAN** By whom made **IINO SANGYO MAIZURU WORKS** Boiler No. **B109 / B110** When made **8-1951**

TOTAL CAPACITY OF GENERATORS — Shaft Horse Power at Full Power **150 KW x 2** Owners **NAKANO KISEN CO., LTD.** Port belonging to **TOKYO**

NO. OF SET — 2

Nom. Horse Power as per Rule **40 x 2 = 80** Is Refrigerating Machinery fitted for cargo purposes **NO** Is Electric Light fitted **YES**

Trade for which Vessel is intended .....

STEAM TURBINE ENGINES, &c.—Description of Engines **IMPULSE SINGLE CYLINDER TYPE**

GENERATOR

No. of Turbines { Ahead **2** / Astern } Direct coupled, single reduction geared / double reduction geared } to MAIN GENERATOR propelling shafts. No. of primary pinions to each set of reduction gearing **1**

direct coupled to { Alternating Current Generator **3** phase **60** periods per second / Direct Current Generator } rated **150** Kilowatts **225** Volts at **1800** revolutions per minute; for supplying power for driving — Propelling Motors, Type — rated — Kilowatts — Volts at — revolutions per minute. Direct coupled, single or double reduction geared to — propelling shafts.

TURBINE BLADING.	H.P.	I.P.	L.P.	ASTERN.
Impulse Blading { No. of rows	4	—	—	—
Reaction Blading { No. of stages				
{ No. of rows in each stage				

Shaft Horse Power at each turbine { H.P. **150 KW** / I.P. / L.P. } Revolutions per minute, at full power, of each Turbine Shaft { H.P. / I.P. **8928** / L.P. } 1st reduction wheel **1800** main shaft —

Rotor Shaft diameter at journals { H.P. / I.P. **60 mm** / L.P. } Pitch Circle Diameter 1st pinion **104.66 mm** 1st reduction wheel **519.13 mm** Width of Face { reduction wheel **110 mm** / main wheel — } 2nd pinion — main wheel —

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion **135 mm & 145 mm** 1st reduction wheel **135 mm & 205 mm** / 2nd pinion — main wheel — }

Flexible Pinion Shafts, diameter { 1st — / 2nd — } Pinion Shafts, diameter at bearings { External / Internal } { 1st — **60 mm** 2nd — } diameter at bottom of pinion teeth { 1st **95.24 mm** / 2nd — }

ALTERNATOR

Wheel Shafts, diameter at bearings { 1st **80 mm** / main } diameter at wheel shroud, { 1st **450 mm** / main } Generator Shaft, diameter at bearings **78 mm** Propelling Motor Shaft, diameter at bearings —

Intermediate Shafts, diameter { as per rule — / as fitted — } Thrust Shaft, diameter at collars { as per rule — / as fitted — }

Tube Shaft, diameter { as per rule — / as fitted — } Screw Shaft, diameter { as per rule — / as fitted — } Is the { tube / screw } shaft fitted with a continuous liner { — }

Bronze Liners, thickness in way of bushes { as per rule — / as fitted — } Thickness between bushes { as per rule — / as fitted — } Is the after end of the liner made watertight in the

propeller boss — If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner —

If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive —

If two liners are fitted, is the shaft lapped or protected between the liners — Is an approved **Oil Gland** or other appliance fitted at the after end of the tube shaft — If so, state type — Length of Bearing in Stern Bush next to and supporting propeller —

Propeller, diameter — Pitch — No. of Blades — State whether Moveable — Total Developed Surface — square feet —

If Single Screw, are arrangements made so that steam can be led direct to the **L.P.** Turbine — Can the **H.P.** or **I.P.** Turbines exhaust direct to the Condenser — No. of Turbines fitted with astern wheels — **Feed Pumps** { No. and size — / How driven — }

Pumps connected to the **Main Bilge Line** { No. and size — / How driven — }

Ballast Pumps, No. and size — **Lubricating Oil Pumps,** including Spare Pump, No. and size **1 x 10 M³/H x 40 M (MAIN) / 1 x 10 M³/H x 40 M (AUX.)**

Are two independent means arranged for circulating water through the **Oil Cooler** NO. ONLY ONE **Suctions,** connected both to Main Bilge Pumps and Auxiliary

Bilge Pumps, No. and size:—In Engine and Boiler Room — In Pump Room —

In Holds, &c. —

Main Water Circulating Pump Direct Bilge Suctions, No. and size — **Independent Power Pump Direct Suctions** to the Engine Room

Bilges, No. and size — Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes —

Are the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges —

Are all **Sea Connections** fitted direct on the skin of the ship — Are they fitted with Valves or Cocks —

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates — Are the Overboard Discharges above or below the deep water line — Are they each fitted with a Discharge Valve always accessible on the plating of the vessel — Are the Blow Off Cocks fitted with a spigot and brass covering plate — What pipes pass through the bunkers — How are they protected —

What pipes pass through the deep tanks — **JAPAN** — Have they been tested as per rule —

Are all Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times —

Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another — Is the Shaft Tunnel watertight — Is it fitted with a watertight door — worked from —

BOILERS, &c.—(Letter for record) Total Heating Surface of Boilers **441 m² x 2 = 882 m²**

Is Forced Draft fitted **YES** No. and Description of Boilers **2-3 DRUM TYPE WATER TUBE BOILER** Working Pressure **20 KG/cm²**

Is a Report on Main Boilers now forwarded? **YES**

008773-008777-0043

Is { a Donkey } { an Auxiliary } Boiler fitted? _____ - _____ If so, is a report now forwarded? _____ - _____

Is the donkey boiler intended to be used for domestic purposes only _____ - _____

Plans. Are approved plans forwarded herewith for Shafting _5-5-51_ Main Boilers _25-5-51_ Auxiliary Boilers ___-___ Donkey Boilers ___-___
(If not, state date of approval)

Superheaters _29-6-51 (KOBE)_ General Pumping Arrangements _23-9-51_ Oil Fuel Burning Arrangements _11-9-51_

Geared turbines { situated aft. } Have torsional vibration characteristics of system been approved _NO_ Date of approval _____ - _____

SPARE GEAR.

Has the spare gear required by the Rules been supplied _YES_

State the principal additional spare gear supplied _1- COMPLETE BEARING BUSH FOR EACH BEARING._
1- IMPELLER SHAFT FOR COOLING PUMP. _1- IMPELLER FOR COOLING PUMP._
1- BALL BEARING FOR GOVERNOR. _1- CAM SHAFT BEARING_

The foregoing is a correct description, _____ Manufacturer.

Dates of Survey while building
During progress of work in shops -- { _1951:- APRIL 11, 24. MAY. 7, 22. 31. JUNE. 8. 16. JULY. 3. 6. 23. 24. 28. AUG. 7. 11. 15. 21. 25. 27. 31. SEPT. 17_
OCT. 1. 3. 5, 8. 10. 12. 15. 19. 30. 31.
During erection on board vessel --- _1951:- NOV. 19, 21._
Total No. of visits _32_

Dates of Examination of principal parts—Casings _5-10-51_ Rotors _17-9-51_ Blading _31-10-51_ Gearing _10-9-51_

Wheel shaft _10-9-51_ Thrust shaft ___-___ Intermediate shafts ___-___ Tube shaft ___-___ Screw shaft ___-___

Propeller ___-___ Stern tube ___-___ Engine and boiler seatings _17-9-51_ Engine holding down bolts _1-10-51_

Completion of fitting sea connections ___-___ Completion of pumping arrangements _5-10-51_ Boilers fixed _3-10-51_ Engines tried under steam _30-10-51_

Main boiler safety valves adjusted _16-11-51_ Thickness of adjusting washers _6 mm_

Rotor shaft, Material and tensile strength _OPEN HEARTH STEEL_ _37.46 -37.57 T/□"_ Identification Mark _Y 2460-A_
_36.16 -37.46 T/□"_ _Y 2460-B_

Flexible Pinion Shaft, Material and tensile strength _____ Identification Mark _____

Pinion shaft, Material and tensile strength _NICKEL STEEL_ _45.93 T/□"_ _47.88 T/□"_ Identification Mark _Y 2900-A_
_Y 2900-B_

	C.NO	C	Si	Mn	P	S	Ni	Cr	Cu
; Chemical analysis	1704	0.32	0.23	0.59	0.018	0.015	3.98	0.06	0.22

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment ___-___

1st Reduction Wheel Shaft, Material and tensile strength _O.H. STEEL_ _35.95 T/□"_, _37.00 T/□"_ Identification Mark _Y 2898-A_
_Y 2898-B_

Wheel shaft, Material ___-___ Identification Mark _____ Thrust shaft, Material _____ Identification Mark ___-___

Intermediate shafts, Material ___-___ Identification Marks _____ Tube shaft, Material ___-___ Identification Marks ___-___

Screw shaft, Material ___-___ Identification Marks _____ Steam Pipes, Material ___-___ Test pressure ___-___

Date of test _31-10-51_ Is an installation fitted for burning oil fuel _YES_

Is the flash point of the oil to be used over 150°F _YES_ Have the requirements of the Rules for the use of oil as fuel been complied with _YES_

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo _NO_ If so, have the requirements of the Rules been complied with _____

If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with ___-___

Is this machinery a duplicate of a previous case _NO_ If so, state name of vessel ___-___

General Remarks. (State quality of workmanship, opinions as to class, &c.)

These Generator Sets have been constructed under the supervision of the Society's Surveyors in accordance with the Rules and approved plans. The quality of workmanship and material has been found satisfactory.

These Generator Sets have been examined under full working conditions in the shop and found satisfactory.

These machinery has been satisfactorily installed in the vessel in accordance with Rules, tested under working condition and found satisfactory.

It is submitted that the machinery of this vessel is eligible to be classed with this Society with the notation of ✠ LMC 11.51

The amount of Entry Fee ... £ _40,000.-_ When applied for.
19
Special ... ... £ :
Donkey Boiler Fee ... £ : When received.
19
Travelling Expenses (if any) £ **FRI. 18 JUL 1952**

Committee's Minute

Assigned _See F.E. ensley rpt._

_____ Engineer Surveyor to Lloyd's Register of Shipping.