DISCLASSED SECTION No J.20 329

# LLOYD'S REGISTER OF SHIPPING.

## (CLASSIFICATION SOCIETY RECOGNISED BY THE JAPANESE GOVERNMENT)

## SURVEY FOR FREEBOARD.

| Ship's Name | Port of Registry | Official No. | No. in R.B. | Gross Tonnage | Tonnage under Fbd. Deck = V | Date of Launch | Date when Built | Report Number |
|---|---|---|---|---|---|---|---|---|
| KOAN MARU | Nishinomiya. | | | about 3170 | 2740.74 | 18th. February 1924 | 1924 | 22 |

| Owners | Builders | Yard No. |
|---|---|---|
| Hiroumi Shoji Kaisha | Osaka Iron Works | 1057 |

Port of Survey: Kobe

Date of Survey: While building

Name of Surveyor: H.J.Cox & L.H.F.Young

| Type of vessel | Particulars of Classification | Position of Freeboard Deck |
|---|---|---|
| Poop,Bridge,&Fo'cle Full Scantling | ✠ 100 Al | Upper deck |

### PRINCIPAL DIMENSIONS.

Length between perpendiculars 305.0 ft.
Length on Load Line 305.0 ft.
Length for Freeboard = L 305.0 ft.

Breadth Moulded = $B_o$ 43.75 ft.
Thickness of Side plating in ins. x 3/12* .52x3/12 +.13 ft.
*(2/12 if plating is joggled)
Breadth for Freeboard = B 43.88 ft.

Depth Moulded to Fbd. deck = $D_o$ 27.25 ft.
Round of Beam 10 3/4" + .90 ft.
28.15
Depth from base line to top of inner bottom plating or ordinary floors - 3.20 ft.
Depth for Tonnage Coef. (Art. 39) = D 24.95 ft.

### CORRECTION TO TONNAGE (Art. 39)

Ceiling under hatches only.
drop at margin 7.44
Horizontal bilge ceiling(see below).

Tonnage between top of ceiling on double bottom or ordinary floors as fitted and standard level of top of ceiling (v) = -71 tons.

### DEPTH OF DOUBLE BOTTOM (Art. 39)

Depth of Actual Double Bottom (including plating) or Ordinary Floors 38.44 ins.
Depth of Standard Double Bottom (including plating) or Ordinary Floors 38.44 ins.
Difference 0
x 1/12 = 0 = d.

### SHEER (Arts. 39 and 60—63)

| Ordinate | Height of Sheer in inches. | S.M. | Products |
|---|---|---|---|
| 1 | 50 | 1 | 50.00 |
| 2 | 20 3/8 | 4 | 81.50 |
| 3 | 5 1/4 | 2 | 10.50 |
| 4 | 0 | 4 | 0 |
| 5 | 10 1/4 | 2 | 20.50 |
| 6 | 41 | 4 | 164.00 |
| 7 | 96 | 1 | 96.00 |

Sum of Products = 422.50

Mean Height of Sheer = $S = \frac{\text{Sum of Products}}{18}$ = 23.47 ins.
Standard Mean Height = $S_o = \frac{1}{3}(L/10 + 10)$ = 13.50 ins.
Difference 9.97 x 1/12 = .83 ft. = $d_1$
Correction (Arts. 60-63) = $\frac{3}{4}(1-e)(S_o - S)$ = ¾x.712x9.97 = 5.32 ins.

### FRAMING (Art. 39)

| Between Frames | Length in ft. | Depth of Frame in ins. | Thickness of Sparring in inches | Total depth in inches | Products ft. x inches |
|---|---|---|---|---|---|
| After perp | | | | | |
| | Mean Depth = | 7.75 inches | | | |
| to Fdrd perp | | | | | |

Sum of Products =

$\frac{\text{Sum of Products}}{\text{Length of Ship}}$ = Actual Mean Depth of framing 7.75 ins.
Standard " " " " 7.50 ins.
Difference .25 x 2/12 = .04 = 2b

### COEFFICIENT OF FINENESS (Art. 39 or 43)

$$\frac{100\,(V \pm v)}{L\,(B-2b)\,(D+d+d_1)} + n \quad \text{or} \quad \frac{35 \times \Delta}{L \times B_o \times d_o} + 0{\cdot}04$$

$$= \frac{100(2740.74-71)}{305(43.88-.04)(24.95+0+.83)} + 0 = .77 \qquad = \frac{\quad}{\quad} + 0{\cdot}04 =$$

SEE PLANS

Sketch showing arrangement and height of double bottom or ordinary floors and of superstructures (unless complete plans are submitted).

SEE PLANS

3" Ceiling under hatches only
Drop at margin 7.44" = 37.2 tons
Horizontal bilge ceiling = 33.8 tons

Sketch of deck erections showing openings in end bulkheads and position and arrangement of closing appliances. Hatchways, and Engine and Boiler openings also to be shown. Extent and thickness of wood deck or composition to be shown in red ink, and extent and thickness of ceiling (and battens) on tank top to be given.

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## WOOD DECK (Arts. 5 and 6)

| | Mean Length in ft. | Thickness in ins. | Products |
|---|---|---|---|
| Forecastle | 33.45 | | 424.24 |
| Bridge | 85.00 | 3.5-.42=3.08 | |
| Poop or R.Q.D. | 19.29 | | |
| Open Deck, ford. | | | |
| „ „ aft. | | | |

Total length = $l$ = 137.74 Sum of Products = 424.24

$\frac{\text{Sum of Products}}{l}$ = t = ins. ; $\frac{\text{Sum of Products}}{L}$ = $t_1$ = 1.39 ins.

## CORRECTION FOR DEPTH & CORRECTION FOR FREEBOARD.

If no sheathing fitted amidships = $t_1$ = ±* 1.39 ins. (Arts. 6 and 57 p. 1)

If sheathing is fitted amidships = $(t - t_1)$ = ∓* ins. (Arts. 6 and 57 p. 2)

* Note:- Use the upper sign in correction for depth and the lower sign in correction for freeboard.

## DEPTH TO USE IN FREEBOARD TABLE.

Depth moulded 27 ft. 3 ins.

Thickness of Stringer Plate .42 „

Thickness of Wood Deck Amidships 0 „

27 3.42 „

Correction for partial wood deck ± 1.39 „

Depth to use in Freeboard Tables 27 ft 4.81 ins. = $D_1$ = 27.40 ft.

## SUPERSTRUCTURES.

HEIGHT (Arts. 46—48)

Standard Height = (0.018 L + 1.2) ft. = 6.69 ft.

| | Complete Superstructure | Forecastle | Bridge | Poop or R.Q.D. |
|---|---|---|---|---|
| Actual / Standard | | 7.25 / 6.69 = 1.00 | 7.0 / 6.69 = 1.00 | 7.0 / 6.69 = 1.00 |

CLOSING APPLIANCES (Arts. 50 and 54)

| | Forecastle | Bridge: Forward End. | Bridge: After End. | Poop or Raised Quarter Deck |
|---|---|---|---|---|
| Means of Closing openings in bulkhead | Hinged Steel Doors | Hinged W.T.Steel Doors | Hinged Steel Doors | Hinged W.T.Steel Doors |
| Corresponding Class | 1 | 1 | 1 | 1 |

EFFECTIVE LENGTH (Arts. 55 and 56)

| | Mean Length | Coef. Art. 56 | Height Coef. | Products. |
|---|---|---|---|---|
| Forecastle closed part | 33.45 | 1 | 1 | 33.45 |
| „ open part | | | | |
| Bridge closed part | 82.00 | 1 | 1 | 82.00 |
| „ open part ford. | | | | |
| „ „ „ aft. | 3.00 | .75 | 1 | 2.25 |
| Poop closed part | 19.29 | 1 | 1 | 19.29 |
| „ open part | | | | |

Total Effective Length = 136.99

$\frac{\text{Total Effective Length}}{\text{Length of Vessel}}$ = r = .449=45

Corresponding Coef. in Table (Art. 49) = e = .288

Reduction for Complete Superstructure 38.72 ins.

Product 11.15 ins.

Correction for Superstructures 11.15 ins.

EFFECTIVE LENGTH (Shelter Deck Vessels Arts. 87—92)

$l + \frac{e}{2}(1 - p)(L - l)$ = ft.

(* See Art. 90)

## CORRECTION FOR PROPORTIONS L/D (Art. 58)

When $D_1$ is less than 35 ft. = $\frac{D_1 + 16}{300}(1 - e/2)(L - 12\,D_1)$

„ „ „ greater than 35 ft. = $0.17\,(1 - e/2)(L - 12\,D_1)$

[Note e = 1.0 if more than 6/10 covered] = -2.95 ins.

## CORRECTION FOR ROUND OF BEAM (Art. 59) 7" tumble home

Standard Round of Beam = $\frac{\text{Length of Beam in ins.}}{50}$ = $\frac{511}{50}$ =10.22 ins.

Correction = ¼ (Standard Round of Beam—Actual Round of Beam)

= ¼(10.22 -10.75) = -.13 ins.

## CORRECTION FOR FREEING PORTS

(in vessels less than 15 ft. Depth Art. 64)

Length of bulwark in feet each side ft.

Area of Freeing ports each side sq. ft.

Area of Freeing ports required by Table sq. ft.

Correction 1.2 (r – 0.5) $D_1$ = + ins.

## CORRECTION FOR ACCESS TO CREW'S QUARTERS (Arts. 65—67)

Are Crew berthed in Bridge House or Forecastle ?

Height and breadth of gangway

Correction = .012 (80 – $l$) $D_1$ or 1.2 (r – 0.5) $D_1$

= + ins.

## SUMMARY.

Freeboard by Tables 72.34 ins.

| | ins. + | ins. - |
|---|---|---|
| Correction for Sheer | | 5.32 |
| „ „ Partial Wood Deck | | 1.39 |
| „ „ Superstructures | | 11.15 |
| „ „ Proportions L/D | | 2.95 |
| „ „ Round of Beam | | .13 |
| „ „ Freeing Ports | | |
| „ „ Access to Crew's Quarters | | |
| Totals | | 20.94 |
| Net Correction | | 20.94 |
| Geometric Freeboard | | 51.40 ins. |
| Corresponding Geometric Draught (mld.) | | 23.00 ft. |
| Moulded Draught limited by {form / transverse strength / longitudinal strength / position of side scuttles} to | | 23.00 ft. |
| Corresponding Freeboard (Summer) | | 51.4 ins. |

Winter Freeboard (Art. 22) = ¼ ($D_1$ – 10) + r/45 x (59 – $D_1$)

= ¼(17.4)+.45/45x31.6 = + 4.67 ins.

Tropical Freeboard (Art. 24) do. do. = - 4.67 ins.

Winter North Atlantic Fbd. (Art. 23) Vessels 330 ft. and below.

Ratio of effective length of superstructures to length of vessel

Additional Freeboard + 6.67 ins.

Fresh Water Freeboard (Art. 27)

¼" per foot of Summer Draught = = - 5.~~27~~ 75 ins.

## FREEBOARD TO BE ASSIGNED.

Vertical distance from upper edge of horizontal line indicating the freeboard deck to the centre of the disc. (Summer Line) 51.4 ins.

Fresh Water Load Line above centre of disc. 5.8 ins.

Tropical Load Line above „ „ „ 4.7 ins.

Winter Load Line below „ „ „ 4.7 ins.

Winter N.A. Load Line below „ „ „ 6.7 ins.

Vertical distance from the point of intersection of the extended line of the upper surface of Stl.Str. of the Upper deck at mid length of the vessel with the outside of shell plating to the upper edge of the horizontal line indicating the freeboard deck 0.00 ins.

Are the Engine and Boiler openings covered by a Bridge, Poop, Raised Quarter Deck or enclosed by a strong steel deck house ? yes

If openings are not so protected give thickness of plating and scantlings and spacing of stiffeners of Casings -

Are suitable means provided for closing all openings in them in bad weather ? yes

State the vertical distance from base line at top of keel to lower edge of lowest side scuttle -

State if there are any cargo ports or scuppers through sides of vessel below upper deck no

State any special features in the construction of the vessel Longitudinal framing - Full Scantlings, Old Rules

Sister vessels

Fee. Yen ; Depth of Keel ins. ; Draught (btm. keel) ft. ins.

## DETAILS OF CONSTRUCTION OF WEATHER DECK HATCHWAYS.

| | No. 1 | No. 2 | No. 3 | No. 4 | No. 5 | No. 6 |
|---|---|---|---|---|---|---|
| Length and Breadth | 24' x16' | 24' x 16' | 24' x 16' | 27' x 16' | | |
| Height above deck and thickness of side and end coaming | | All 30" x .44 | | | | |
| Shifting Beams {Number and Material / Scantlings} | | 4 Steel in each Hatch. | ⊤ ⊥ | 3½ x 3 x .42 / 14" x .34 | | |
| *Fore and Afters {Number and Material / Scantlings} | | | None | | | |
| Thickness of hatches | | | all 2½ | | | |
| Remarks | | | | | | |

* When the fore and afters are of wood the depth should be stated from the underside of hatches.

## LONGITUDINAL MODULUS.

Height of Assumed Axis above base = Section at

| Below Assumed Axis. Item | Scantlings | Area | Lever | Moment | Mt. of Inertia | Above Assumed Axis. Item | Scantlings | Area | Lever | Moment | Mt. of Inertia |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Flat Keel | | | | | | Top Deck Str. | | | | | |
| „ „ | | | | | | „ „ „ | | | | | |
| Centre Girder | | | | | | „ „ Plating | | | | | |
| C.G. btm. ang. | | | | | | „ „ „ | | | | | |
| C.G. top angles | | | | | | „ „ „ | | | | | |
| T.T. Cr. Strake | | FULL | SCANTLING | | | „ „ Str.Ang. | VESSEL | | | | |
| T.T. plating | | | | OLD | RULES | 2nd Deck Str. | | | | | |
| „ „ | | LONGITUDINAL | | | | „ „ Plating | FRAMING | | | | |
| „ „ | | | | | | „ „ „ | | | | | |
| „ „ | | | | | | „ „ „ | | | | | |
| „ „ | | | | | | „ „ Str.Ang. | | | | | |
| Margin Plate | | | | | | 3rd Deck Str. | | | | | |
| „ „ | | | | | | „ „ Plating | | | | | |
| „ Angle | | | | | | „ „ „ | | | | | |
| Shell Strake A | | | | | | „ „ „ | | | | | |
| „ „ B | | | | | | „ „ Str.Ang. | | | | | |
| „ „ C | | | | | | Sheerstrake | | | | | |
| „ „ D | | | | | | Strake below | | | | | |
| „ „ E | | | | | | Shell Strake | | | | | |
| „ „ F | | | | | | „ „ | | | | | |
| „ „ G | | | | | | „ „ | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Totals below assumed axis | | | | | | Totals above assumed axis | | | | | |
| „ above assumed axis | | | | | | | | | | | |
| Sum or Difference | | | | | | | | | | | |

Moment of Inertia about assumed axis 2

Neutral Axis above/below assumed axis ($x$) =

Correction = (Total Area x $x^2$ x 2) = -

Moment of Inertia about Neutral Axis

Distance from Neutral Axis to top of Strength deck beam at side / Keel = ft.

MODULUS OF SECTION =

**DRAUGHT PERMITTED BY LONGITUDINAL STRENGTH** (Arts. 81-86) = $\frac{\text{Actual Modulus}}{f.\ B_o}$ =

## TRANSVERSE MODULUS.

Minimum Side Plating (Art. 77) $\frac{0.105 \times \quad + 17}{100}$ = ; Standard Frame Spacing (Art. 78) = .025 X + 17 =

Actual Side Plating = ; Actual Frame Spacing =

If actual frame spacing exceeds the standard $\sqrt{\left(\frac{\text{Actual frame spacing}}{\text{Standard frame spacing}}\right)}$ t =

Moulded Geometric Draught (d) = H = $f_1$ =

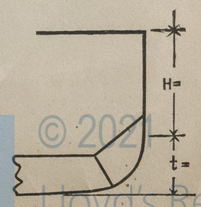
t = K = $f_2$ =

d – t = $f_1 + f_2$ =

Standard $I/y = \frac{s\,(d - t)\,(f_1 + f_2)}{1000}$ =

Frame in ship = at spacing, I/y =

**DRAUGHT PERMITTED BY TRANSVERSE STRENGTH** = $\frac{I/y \times 1000}{s\,(f_1 + f_2)}$ + t =

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