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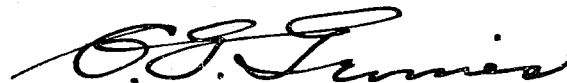
U. S. NAVAL TECHNICAL MISSION TO JAPAN
CARE OF FLEET POST OFFICE
SAN FRANCISCO, CALIFORNIA

6 February 1946

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From: Chief, Naval Technical Mission to Japan.
To : Chief of Naval Operations.
Subject: Target Report - Characteristics of Japanese Naval Vessels,
Article 10 - Landing Craft.
Reference: (a) "Intelligence Targets Japan" (DNI) of 4 Sept. 1945.

1. Subject report, covering the types and methods of construction of landing craft used by the Japanese during the late war, outlined by Targets S-01 and S-05 of Fascicle S-1 of reference (a), is submitted herewith.
2. The target was investigated and the report prepared by Comdr. N. Hancock, RCNC, assisted by Lt.(jg) G. R. Clauson, USNR, as translator and interpreter.



C. G. GRIMES
Captain, USN

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S-01-10

**CHARACTERISTICS OF JAPANESE NAVAL VESSELS
ARTICLE 10
LANDING CRAFT**

**"INTELLIGENCE TARGETS JAPAN" (DNI) OF 4 SEPT. 1945
FASCICLE S-1, TARGETS S-01 AND S-05**

FEBRUARY 1946

U.S. NAVAL TECHNICAL MISSION TO JAPAN

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SUMMARY

SHIP AND RELATED TARGETS

CHARACTERISTICS OF JAPANESE NAVAL VESSELS

Japanese landing craft consisted in the main of small motor propelled boats. The DAI HATSU type, a 14 meter boat with double bow and raised ramp, constituted about 85% of the total number. It was used for landing small tanks, guns, material or troops. With other variants of the type these boats were used for ferrying from transports anchored in deep water to beachheads. For a large scale landing they were carried in a DAI HATSU transport, similar to and probably used as an escort carrier at other times.

The Japanese Navy had special fast landing craft for sporadic raiding and supply purposes, viz. the NITO YUSOKAN, a fast tank landing craft capable of 22 knots which carried four DAI HATSU on the stern.

The Japanese Army had in addition a number of freak assault craft, which do not appear to have played any significant part in the late war, and have not therefore been covered.

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REFERENCES

Location of Target:

Navy Technical Department. TOKYO.

Navy Yard at YOKOSUKA.

Demobilization Dock at YOKOHOMA.

Demobilization Dock at URAGA Port near YOKOSUKA.

URAGA Shipbuilding Company.

Japanese Personnel Who Assisted in Gathering Documents:

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Japanese Personnel Interviewed:

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T. YOSHIDA, Technical Lieut. Comdr., IJN.

G. YAMAMOTO, Civilian Naval Architect.

H. IKUTA, Technical Lieut. IJN, YOKOSUKA Navy Yard.

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INTRODUCTION

The types and functions of landing ships and craft built and operated by the Japanese Navy have been investigated. As these were similar to those employed by the Japanese Army, they afford a fairly representative picture of the whole landing craft picture. Drawings of some of the main types operated by the Army have been obtained, but time did not permit the ascertaining of all types used, or of the precise operational function of the more obscure Army craft.

The division of responsibility between the Japanese fighting services in landing operations was unusual. The Navy provided escort craft and conducted the invasion force to the pre-elected anchorage. From then on the Army took over completely. All the landing craft and ships used for landing troops and their equipment were designed and built under Army supervision, and were wholly manned by Army personnel. The Army maintained a special design and experimental staff at the Tenth Technical Research Laboratory, MUROTSU, which, in addition to designing landing craft and ships, produced submarines for transport and minelaying, underwater forts, special assault craft and other strange vessels and devices (See NavTechJap Report, "Tenth Military Experimental Station", Index No. S-93(N)).

The naval landing craft were, in the main, improved copies of Army types and were for the specific use of a special naval landing force for purely naval purposes, the assault of enemy strong points, or the capture of a base. An appreciation of this point is essential in reading the following report.

Information in regard to naval landing craft was obtained from the designers, late of the Ship Construction (Fourth) Section of the Navy Technical Department and from the member of the GUNREIBU (Naval Staff) who dealt with operational requirements for landing craft. Drawings of the craft were obtained from the YOKOSUKA Navy Yard, from the Tenth Technical Research Laboratory and a little information about them from a member of the logistics section of the Army General Staff.

THE REPORT

Part I
LANDING CRAFT PROPER

A. DAI HATSU (See Figures 1 to 4)

Eighty-five per cent of the total number of landing craft were of this type. It was a handy steel craft 14.6m in length and 3.35m beam, propelled by a 80 hp kerosene motor at a top speed of eight knots. It weighed 10.5 tons in the light condition and could carry a load of 10 tons (a small tank, trucks, guns, or men) a distance of eighty sea-miles. The craft usually had a double bow (which was preferred to the more resistant, but stronger, prow-type bow) supporting the forward end of the tank deck, which was inclined upwards. A double-hinged ramp provided the means for landing men or vehicles on a beach. The tank deck was of wood construction and supported by flat steel plate frames, but the craft generally was of welded construction; the plating had curvature in one direction to promote rapidity of construction.

There were a number of variations from the original DAI HATSU type, but the differences were not sufficient to treat them as special types. Photographs of a typical DAI HATSU are shown in Figures 1 to 4. Drawings of a typical DAI HATSU are appended (see Enclosures (B), (C), and (D) and NavTechJap Documents No. ND50-1450 to 1452 listed in Enclosure (M)). DAI HATSU were carried as boats in capital ships and aircraft carriers.

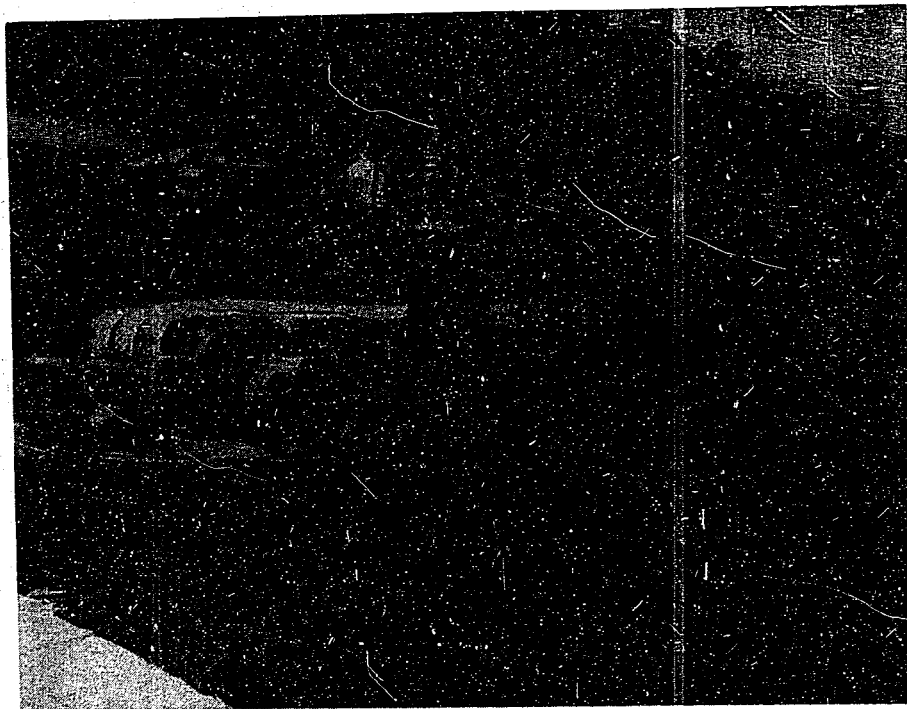


Figure 1
14 METER DAI HATSU (View From Starboard Quarter)
(Note temporary platform over forward tank deck for store-carrying)



Figure 2
14 METER DAI HATSU,
VIEW FROM BOW LOOKING AFT
(Temporary crew space
before bridge not normal)



Figure 3
VIEW OF BOW OF
14 METER DAI HATSU

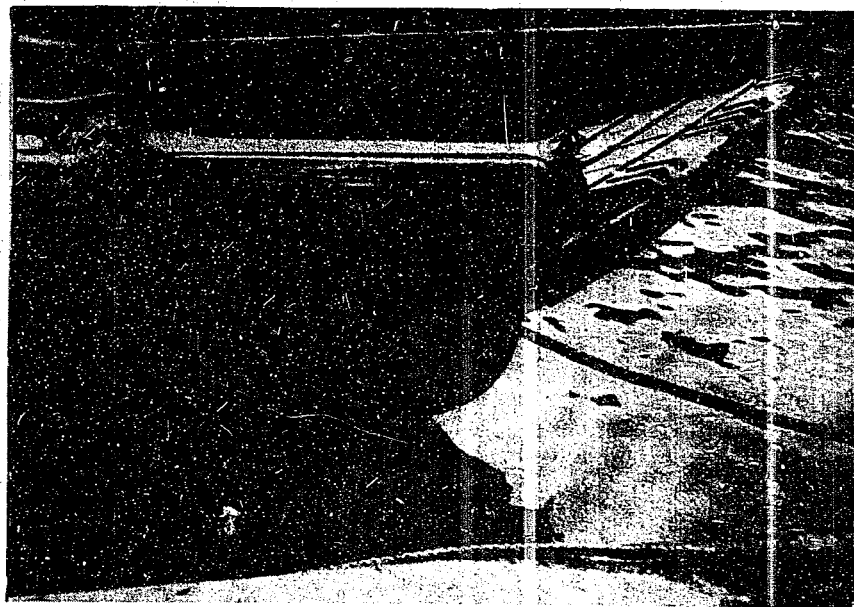


Figure 4
VIEW OF BOW OF
14 METER DAI HATSU
(Showing double hinged ramp
in stowing position
and double bow)



B. CHU HATSU (See Figures 5 to 10)

This was a small version of the DAI HATSU, 13.6m long by 2.9m beam, weighing eighty-five tons and with a carrying capacity of ten tons. The special CHU HATSU was peculiar to the Japanese Navy, which used it as a liberty and supply boat for cruisers, and as a lighter for transporting aircraft.



Figure 5
13.6 METER CHU HATSU
(Broadside view)



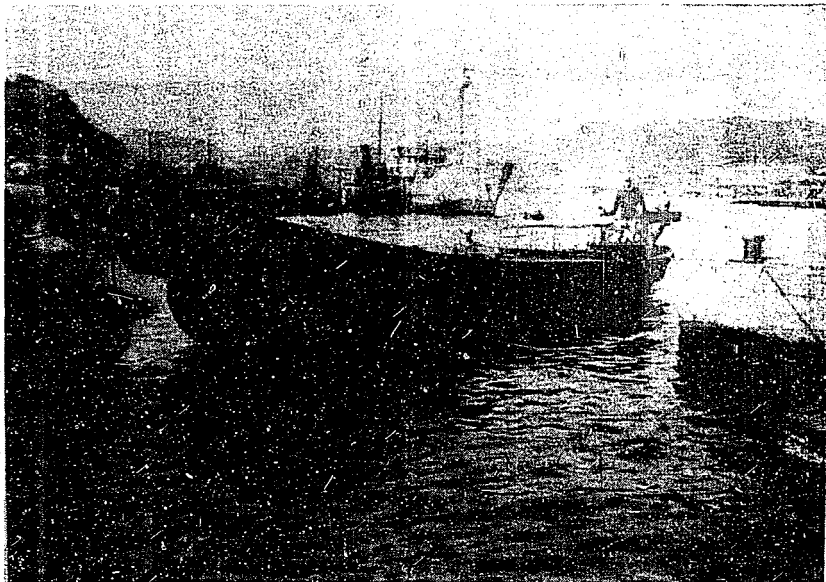


Figure 6
13.6 METER CHU HATSU
(View from port bow)



Figure 7
13.6 METER CHU HATSU
(View from port quarter,
showing steering position)



Figure 8
13.6 METER CHU HATSU
(View of bow)

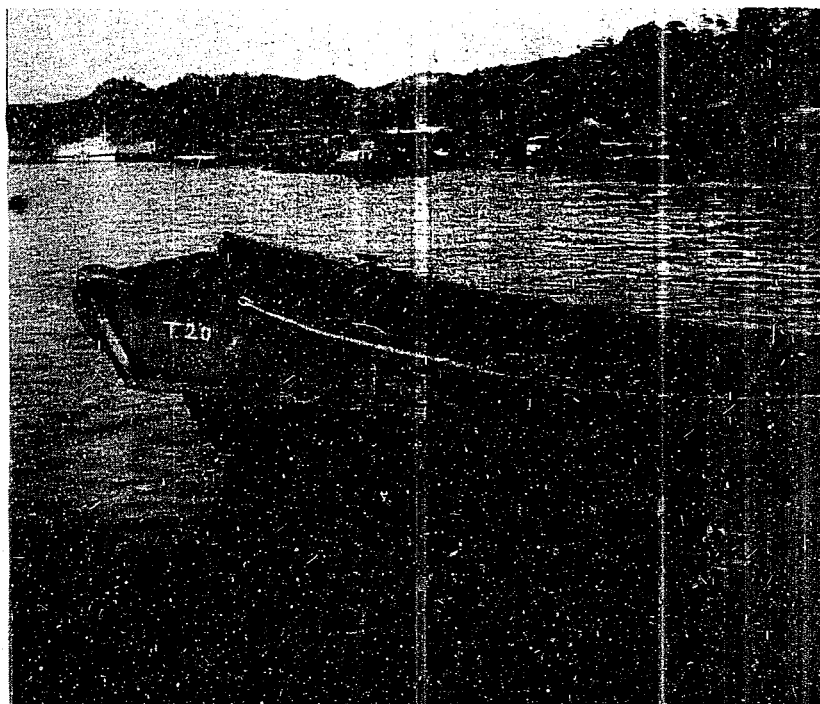


Figure 9
13.6 METER CHU HATSU
(View of bow showing
ramp stowing position)



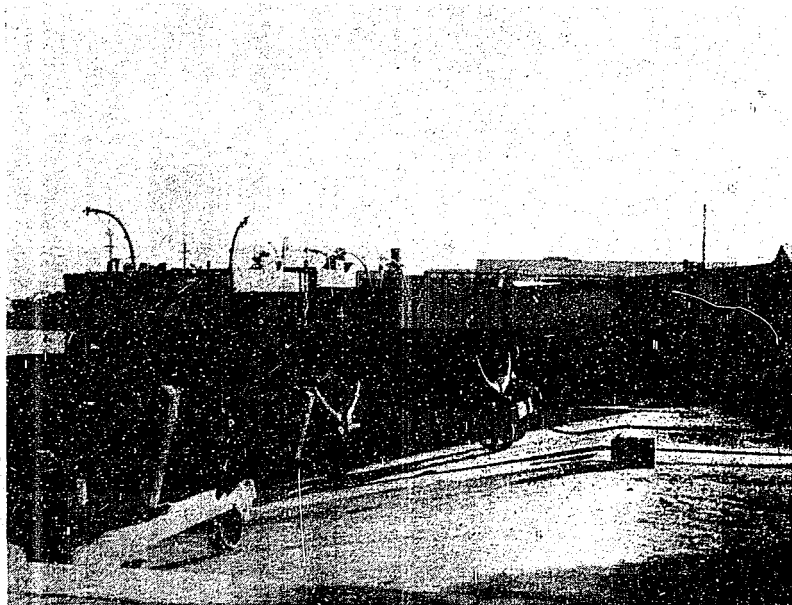


Figure 10
13.6 METER CHU HATSU
(View of engine room)
(Note 10mm Ducol steel bulkhead)



C. MOKU HATSU (See Figures 11 to 15)

This was a wooden substitute for the steel DAI HATSU, built because of the steel shortage. It was 15m long by 3.6m beam, weighed eight tons and had a cargo carrying capacity of ten tons. It was built of plywood on oak frames and floors, the sides being of one thickness (10mm, five ply) and the bottom two thicknesses of the same material. Due to its inability to stand up to tropical conditions and structural weaknesses which became evident in a seaway it proved a poor substitute. The MOKU HATSU, therefore, was relegated to supply duties in calm waters. Approximate sketches of the general layout and midship are shown in Enclosures (E) and (F).

Figure 11
15 METER MOKU HATSU
(Broadside view)

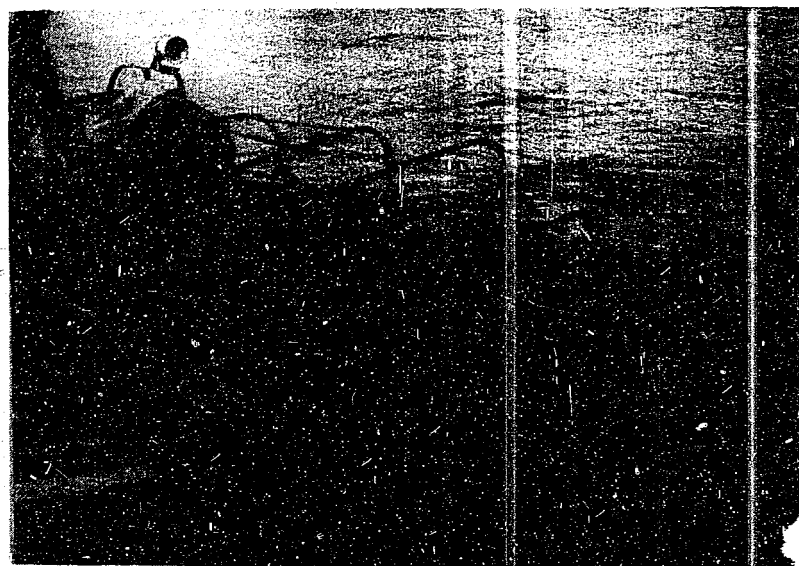


Figure 12
15 METER MOKU HATSU
(View showing bow)

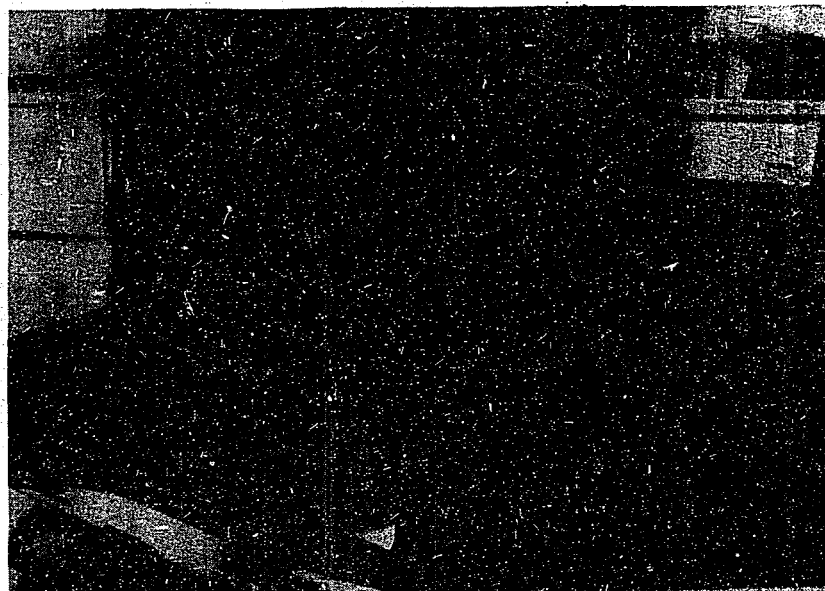
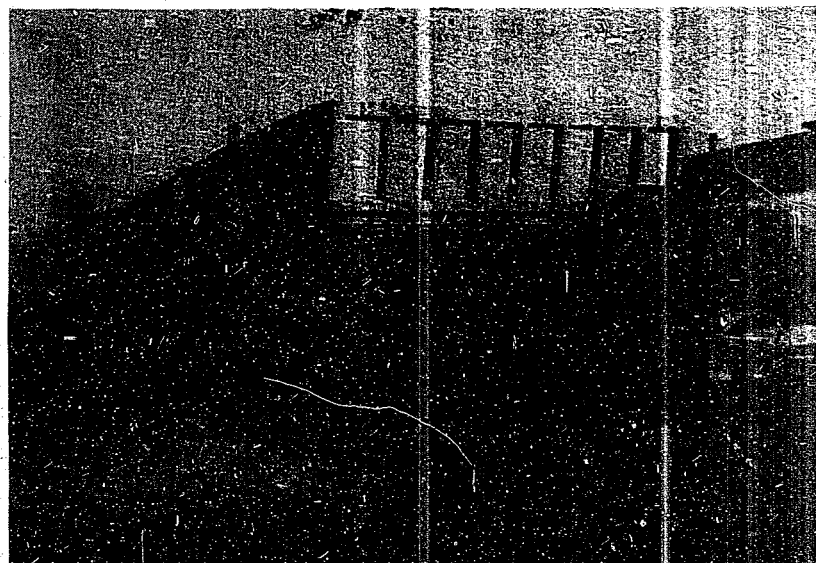


Figure 13
15 METER MOKU HATSU
(View of stern showing
twin rudders and propellers)



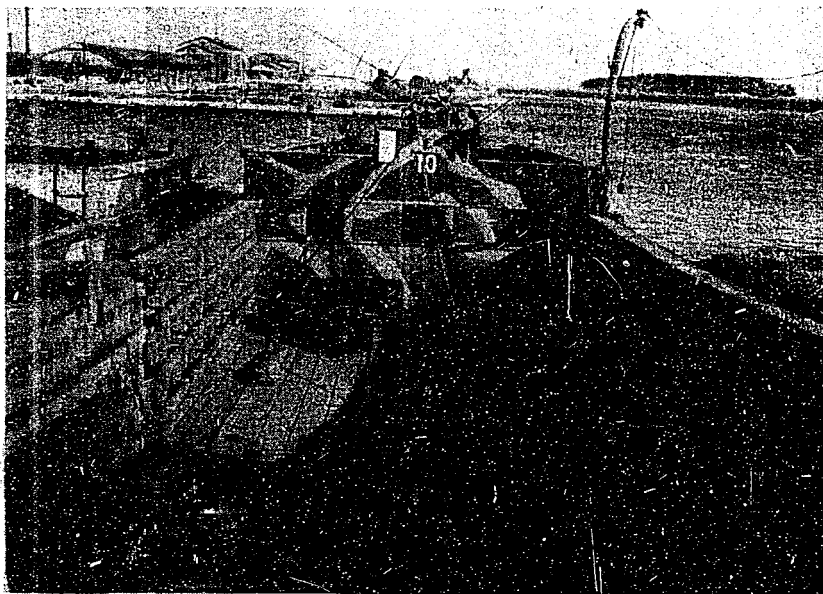


Figure 14
15 METER MOKU HATSU
(View looking aft)



Figure 15
15 METER MOKU HATSU
(View from aft)



D. SHO HATSU (See Figure 16)

This was a small craft for landing personnel and stores. It was built of steel and had a single bow with no landing ramp. Its dimensions were 10.6m long by 2.44m beam by 0.6m draft and, weighing 4.4 tons, it had a carrying capacity of four tons. It attained a speed of seven knots with a kerosene motor which developed 60 bhp.

It was carried by destroyers and smaller vessels as a liberty boat. A general arrangement drawing of a SHO HATSU is shown on NavTechJap Document No. ND50-1453. (See Enclosure (M)).

Figure 16
GENERAL VIEW OF
10.6 METER SHO HATSU



E. TOKU DAI HATSU (See Enclosure (G))

This was a large version of the 14m DAI HATSU. It was 17.6m long by 3.75m beam by 0.90m draft and was built of welded steel along lines similar to the DAI HATSU, and was powered with a 150 hp diesel engine, with which it attained a speed of 9 knots. It was built for the special purpose of carrying a medium sized tank, but could carry two 8-ton tanks; the normal DAI HATSU carried only one of the same type.

The types of craft described above were common to both Navy and Army, although each had its own versions of each type, and were used to land tanks, transport personnel and stores from transports and naval vessels. The Japanese Army's method of carrying out a landing was to choose a position in which there was virtually no opposition, or to soften up the position by air attack before attempting the landing.

A typical force to land 20,000 men consisted of 40 transports of 3,000 to 6,000 tons, a special DAI HATSU carrier of from 6,000 to 10,000 tons (known as TOKUSHU YUSOKAN), four to six minesweepers and an escort consisting of one cruiser and 12 destroyers. The Senior Naval Officer was in charge of the force until the anchorage was reached. From there on the Army Commander took charge and the force contained in the transports was ferried to the shore by means of the DAI HATSU. No special types of craft were used for support purposes at such landings.

PART II
SPECIAL NAVAL CRAFT

A. YUSOKAN (See Figures 17 to 21)

The special naval landing craft known as YUSOKAN were intended for small concentrated strikes on enemy strong points. The first type built, (later known as the NITO, or Second Class YUSOKAN), was a fast, tank landing craft of about 1,000 tons displacement. This displacement was decided on by the GUNREIBU (Naval Staff) on the advice of the Navy Technical Department as being the best compromise between a ship large enough to be a seaworthy and one small enough to present an indifferent target for air attack.

The Staff also required a speed of 15 knots, since it was argued that 150 miles was the effective radius of action of single seater fighters (which were regarded as the greatest air menace) and that, on the average, ten hours of darkness could be relied on in the tropical or semitropical waters in which the attacks were intended. Therefore, the craft had to be able to steam a distance greater than 150 miles during the hours of darkness; radar was apparently disregarded. A range of 2,000 miles at 14 knots was asked for.

These vessels have some superficial resemblances to the Allied LCT's, but it will be seen from the above that their operational use, and hence their design, was different. The high speed asked for necessitated a fairly fine form, and a large portion of the most useful storage space was used by the machinery necessary to achieve 16 knots. The craft were also intended to carry a small landing force and large crew spaces had to be provided.

The problem of providing machinery suitable to achieve 16 knots presented considerable difficulties, because time did not permit designing of a machinery unit. Consideration was first given to the use of engines of the Type A standard merchant ship, but it was clear that the preliminary design with this type of machinery would not achieve the desired speed, so a modification was made using 2100 hp turbine machinery on one shaft. This ship was excessive and the craft actually achieved 17 knots on trial. Approximately 40 of this type were built and were originally designated as SB(T).

Since the completion of these craft was not up to expectation, due to poor delivery of the turbines (designed in June 1943, the first craft was delivered in June 1944), another modification was developed using the same hull and three 400 bhp diesels on three shafts (a fair supply of these engines was available); the reduction of top speed below the Staff requirement was accepted. About 10 of these craft, which attained less than 14 knots on trial, were built.

The NITO YUSOKAN hull was on the usual landing craft lines i.e. straight line sections, vertical sides and with longitudinal bulkheads forming tanks at the sides. A certain amount of welded prefabrication was carried out, but the prefabricated sections were riveted together.

The layout, method of construction, method of stowing and handling tanks and accommodating personnel are clear from Figures 17 to 21 and from drawings and particular books for these ships (Enclosures (H) and (I) and Documents ND50-1454 to 1458 listed in Enclosure (M)). Two hundred men and five large, seven medium or nine small tanks could be carried. Some of the tanks were stowed on deck, to which they were raised from the tank deck in the hold by means of a section of the top deck which hinged down to form a ramp. The remainder were stowed in the tank hold, forward of the machinery spaces. Landing was accomplished by means of the usual type of LCT ramp, which had the disadvantage that the center line wire for hoisting had to be disengaged to permit vehicles to be moved off the ship. Armament consisted of one eight cm AA gun and twelve 25mm machine guns.

Figure 17
NITO YUSOKAN
(View of bow
showing ramp down)

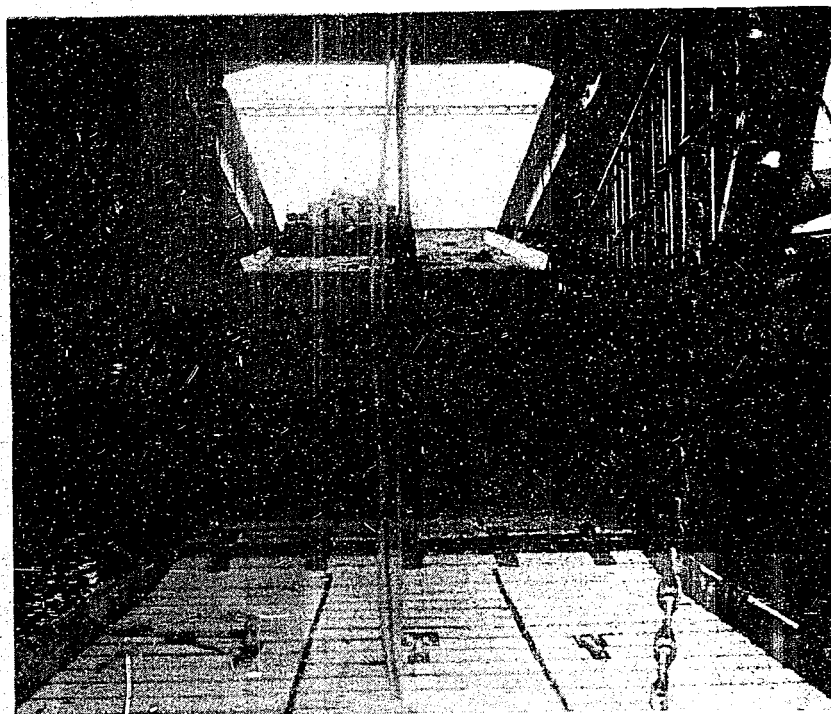


Figure 18
NITO YUSOKAN
(View from ramp looking aft
along tank deck)
(Note auxiliary ramp
in upper deck)



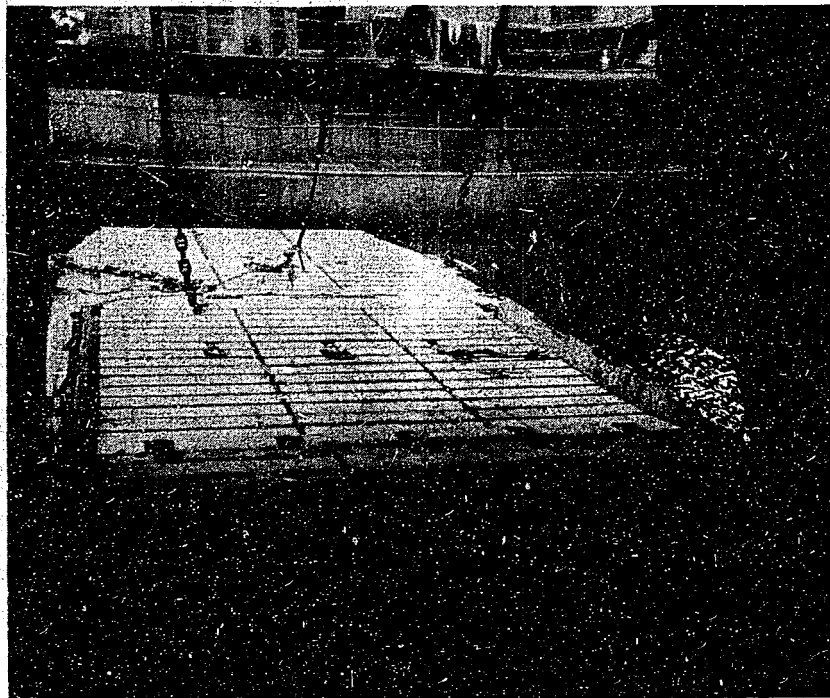


Figure 19
NITO YUSOKAN
(View of landing ramp
from tank deck)



Figure 20
NITO YUSOKAN
(View of auxiliary ramp
looking forward,
with ramp partially down)

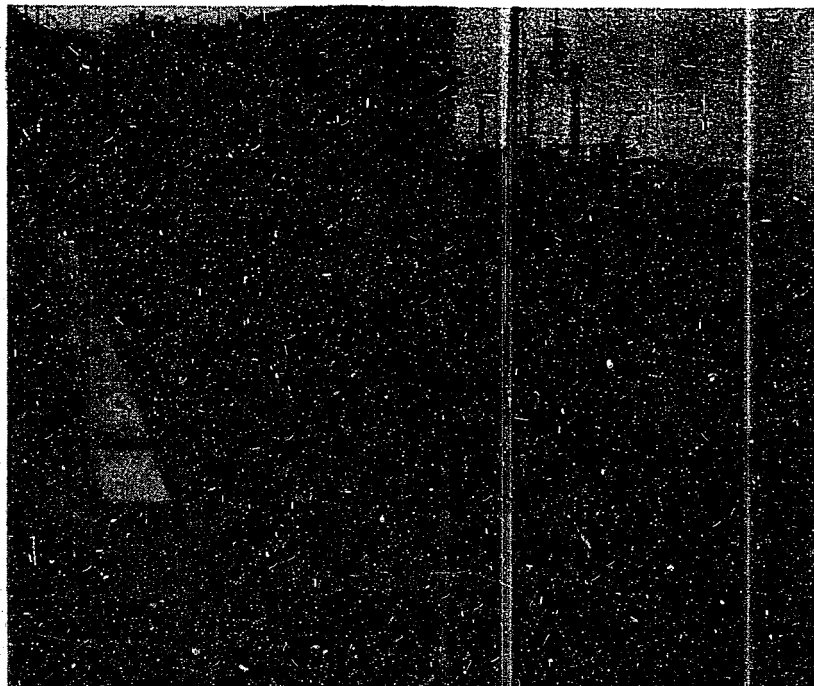


Figure 21
NITO YUSOKAN
(View of upper deck
looking forward,
from amidships)



ITO YUSOKAN, or First Class YUSOKAN, were built to fulfill a similar function. The sequence of ideas seemed to have been as follows: Speed of at least 20 knots was essential to travel a sufficient distance during the night to make a successful raid or supply a distant strong point. Such high speed and a range of 3500 miles at 18 knots prohibited the use of a ramp bow on a reasonably sized craft, so an ordinary shipshape bow was specified. Four DAI HATSU were to be carried on the stern and launched from there for ferrying tanks, men or provisions to the beach. It was also specified that the craft should be able to carry 200 tons of cargo (guns, ammunition, provisions and/or men) and be armed with a 12cm AA gun and five triple 25mm machine guns. The first proposal of the Navy Technical Department was to modify a MATSU class destroyer, using the machinery for shaft only, and to utilize space in the forward portion of the machinery space as a cargo hold. It was also proposed to slope the quarter deck to the waterline aft to permit launching the DAI HATSU. This proposal was turned down as being inefficient and not suited to rapid construction.

A new design, of 300 tons greater displacement than the originally proposed modification MATSU, was therefore prepared; the extra weight was necessary because the rapidly constructed hull was heavier. Provision was made for 100 tons more cargo than originally specified. The result was the ITO YUSOKAN.

For general arrangement drawings, see Enclosure (J) and for reference, NavTechJap Documents No. ND50-1459 to 1461. Weights were disposed approximately as follows:

Hull	25 tons
Hull fittings	95 tons
Crew and effects	77 tons
Fuel	420 tons
RFW	15 tons
Armament	115 tons
Cargo	310 tons
Equipment	65 tons
Machinery	228 tons

This was a total of 1950 tons in the deep condition. A speed of nearly 23 knots was attainable with machinery developing 10,000 shp (torpedo boat boilers and MATSU class turbine were to be used).

The craft bore a strong superficial resemblance to an escort destroyer (see Figure 22), except that the quarter deck was fitted with rails for the carriage and launching of DAI HATSU and sloped down to the waterline at the after end (see Figures 23 and 24). Two cargo holds were provided between the machinery spaces and the forward end, which was laid out along destroyer lines. Floodable ballast tanks were provided at the after end to produce a large stern trim for launching DAI HATSU. In practice the vessel's main function was the supply of isolated strong points with gasoline, food and ammunition. For example, they were used at Iwo Jima and the Philippines, and are said to have proved most successful. About 20 of these craft were built.



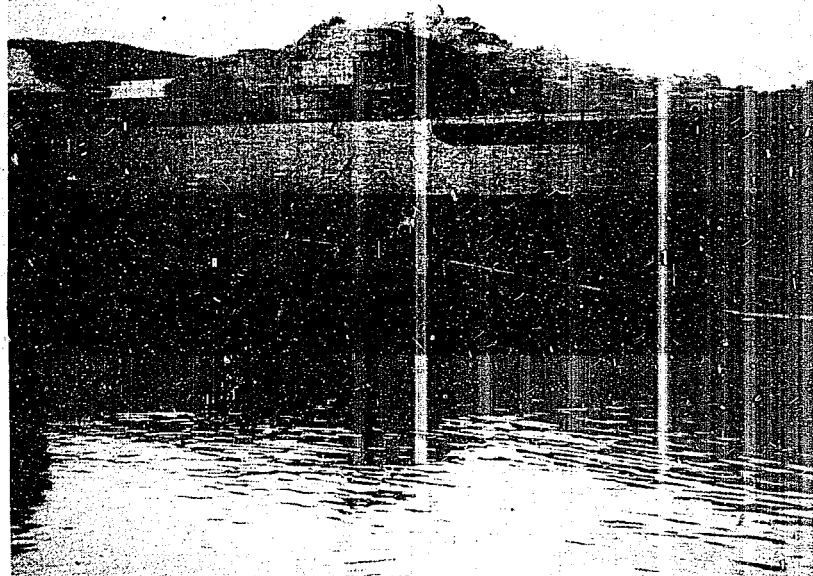
Figure 22
ITO YUSOKAN
(General view
from starboard bow)



Figure 23
ITO YUSOKAN
(View of after end
showing inclined stern
and DAI HATSU stowage)



Figure 24
 ITO YUSOKAN
 (View of after end
 from port side)



Part III CRAFT USED BY THE JAPANESE ARMY

In addition to the craft described in Part I of this report, the Japanese Army used transports, which were normal merchant ships with the internal subdivision somewhat modified to carry troops, ammunition, guns etc. required for a landing operation, and a few specially designed DAI HATSU carriers which bore a superficial resemblance to escort aircraft carriers. The equivalent of the flight deck and hangar, in the latter, appear to have been closely stowed with DAI HATSU for an actual landing operation. It is not impossible that these craft were used as escort carriers when not actually employed for major landing operations.

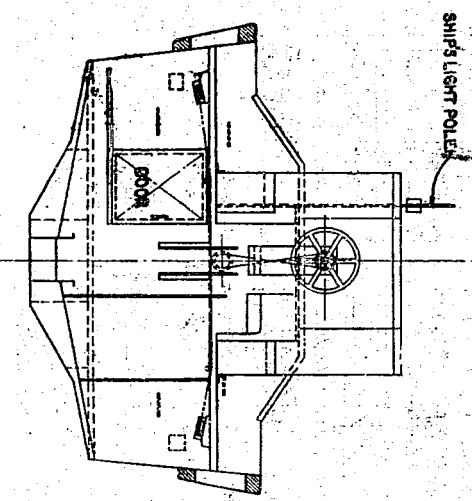
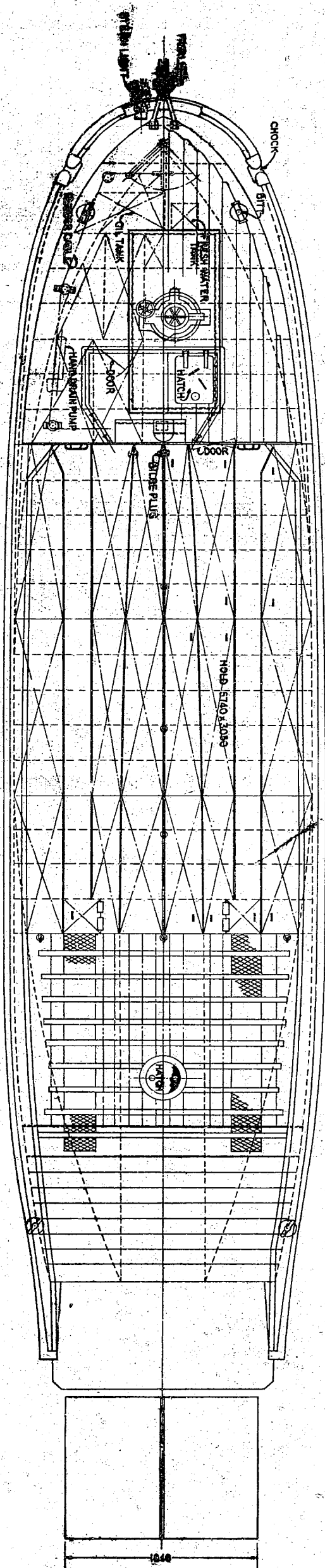
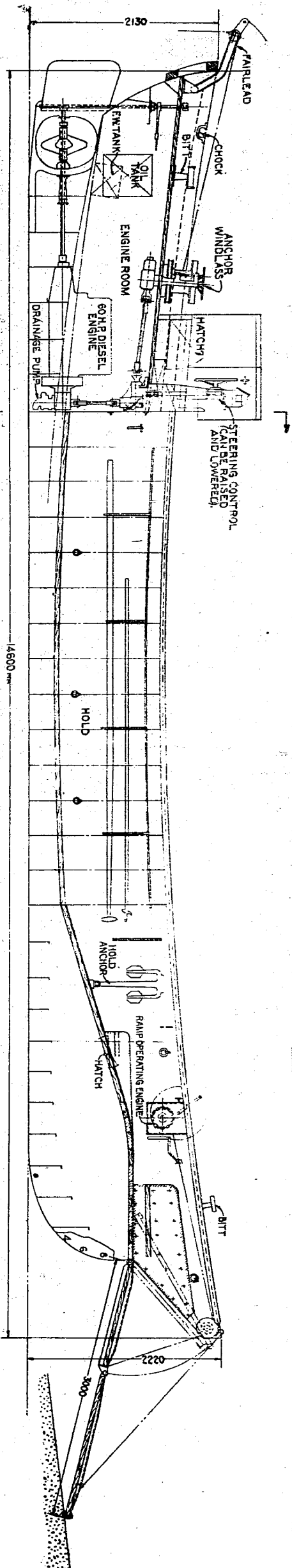
Drawings of such a craft constructed at the Kawasaki Company of KOBE are shown in Enclosure (K) and NavTechJap Documents No. ND50-1464 to 1464 (see Enclosure (M)).

Drawings of a high speed wooden supply craft are appended as Enclosure (L). These craft were 33m long by 5.4m beam and were decked in. These craft appear to have been used for the supply of island garrisons rather than in normal landing operations. Document ND50-1465 (see Enclosure (M)) shows the method of construction.

ENCLOSURE (A)

SUMMARY OF DATA ON LANDING CRAFT USED BY JAPANESE NAVY

Type	Length (m)	Beam (m)	Depth (m)	Loaded Draft (m)	Light Displacement (tons)	Loaded Displacement (tons)	Carrying Capacity (tons)	Speed (kts)	Power	Type of Engines
DAI HATSU	14.6	3.35	1.52	.74	10.5	20.5	10	8	80	Kerosene
CHU HATSU	13.6	2.90	1.50	.70	8.5	18.5	10	8	60	Kerosene
MOKU HATSU	15.0	3.60	1.65	.55	8.0	18.0	10	7	2x60	Gasoline Truck Engine
SHO HATSU	10.6	2.44	1.30	.60	4.4	8.4	4	7	60	Kerosene
TOKU DAI HATSU	17.6	3.75	1.75	.90	20.0	36.0	16	9	150	Diesel



DIMENSIONS (mm)

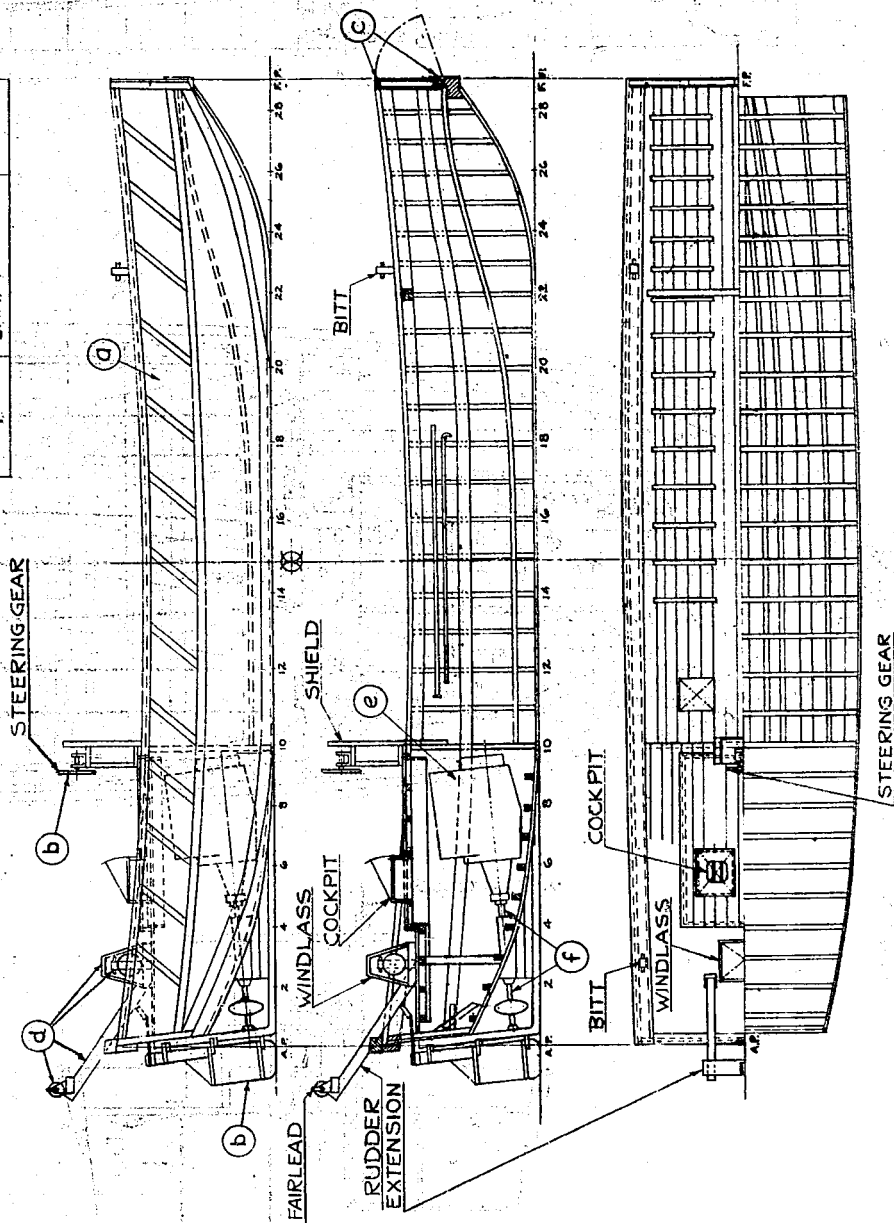
GROSS LENGTH	14600
LENGTH	13700
BEAM	3350
DRAFT	1520

14 METER DAI HATSU, ARMY TYPE
General Arrangement

ENCLOSURE (C)

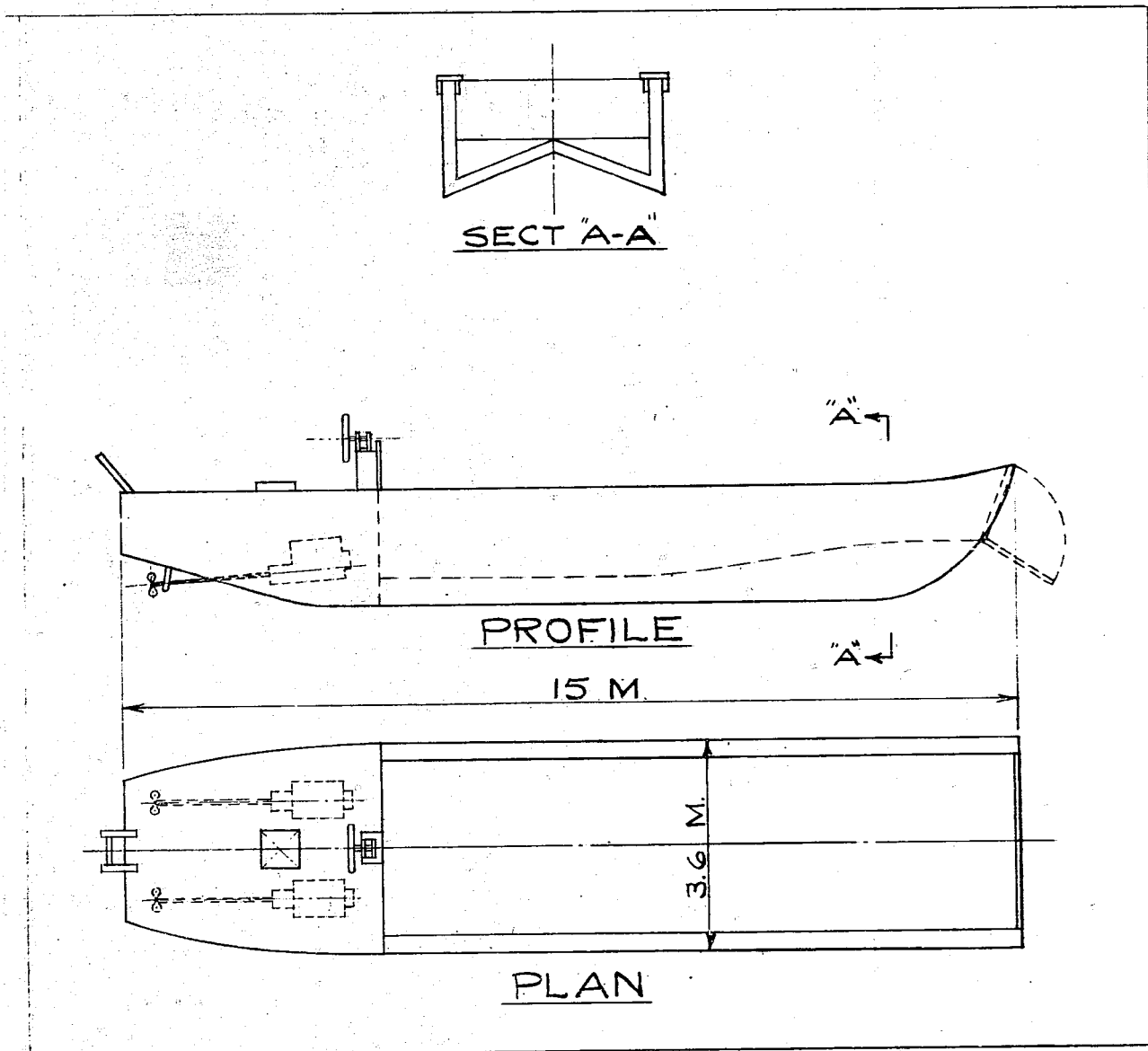
COMPONENTS	NOMENCLATURE	NP of Units
a	HULL	1
b	STEERING GEAR	1
c	RAMP GEAR	1
d	MOORING GEAR	1
e	MAIN ENGINE	1
f	SHAFT	1

DIMENSIONS
 TOTAL LENGTH = 12,800 M
 BEAM = 2,900
 DRAFT = 1,600

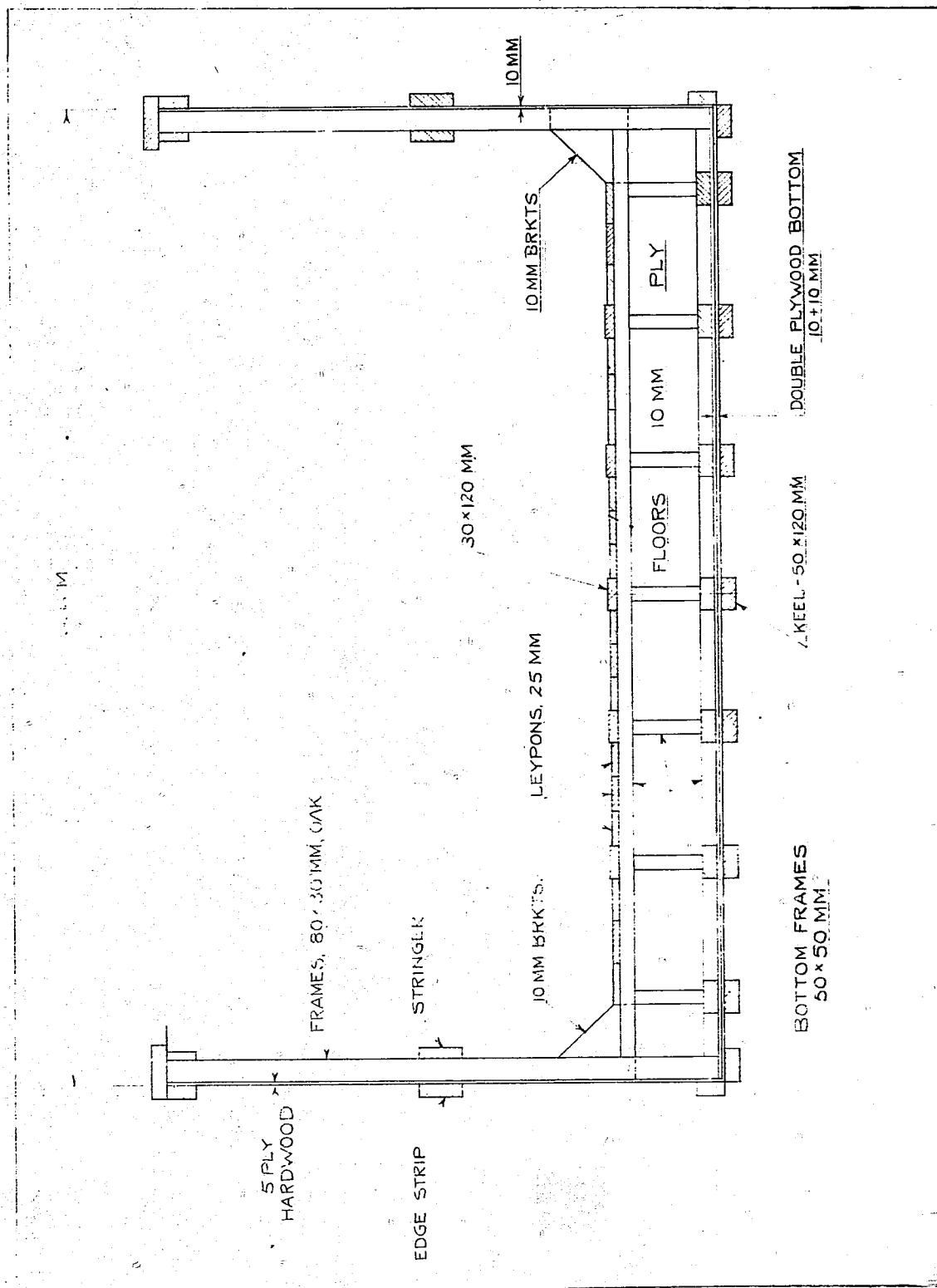


12.7 METER WOODEN DAI HATSU
 General Arrangement

ENCLOSURE (E)



15 METER WOODEN MOKU HATSU
General Arrangement



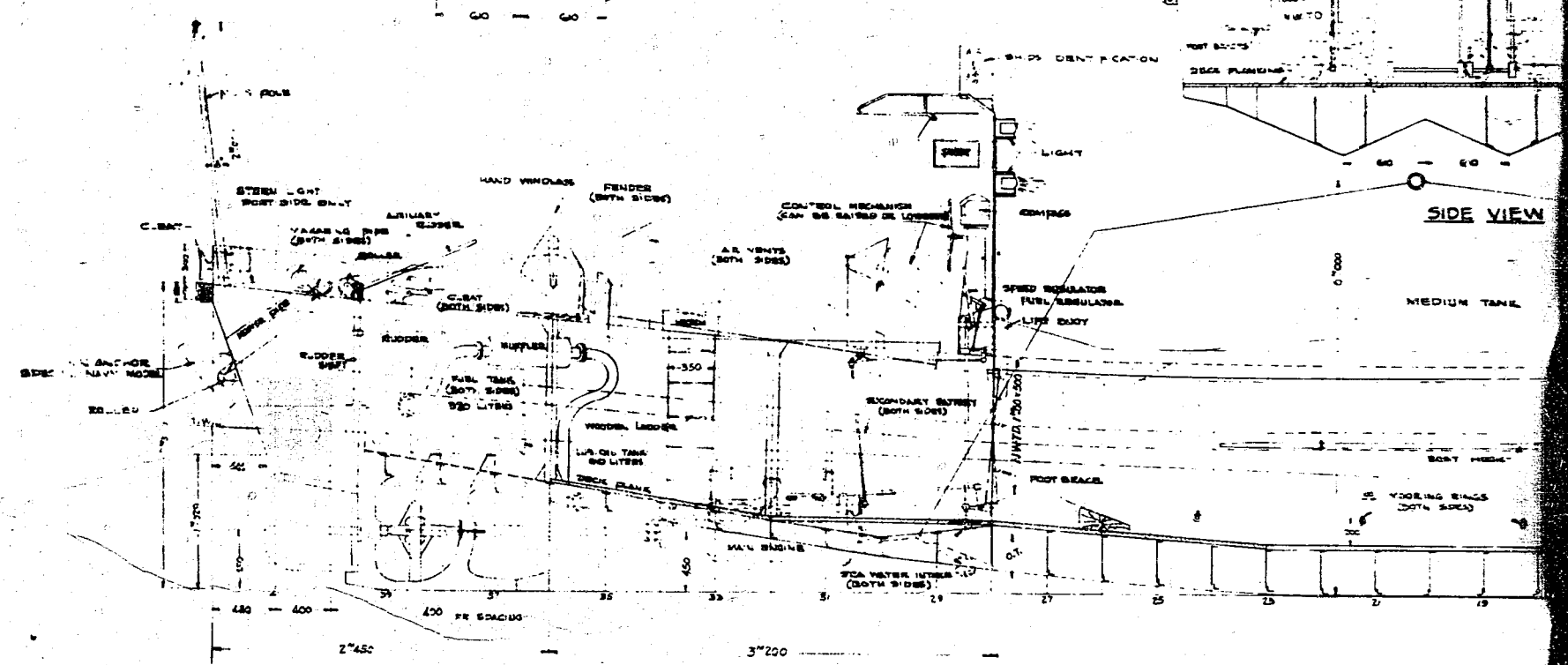
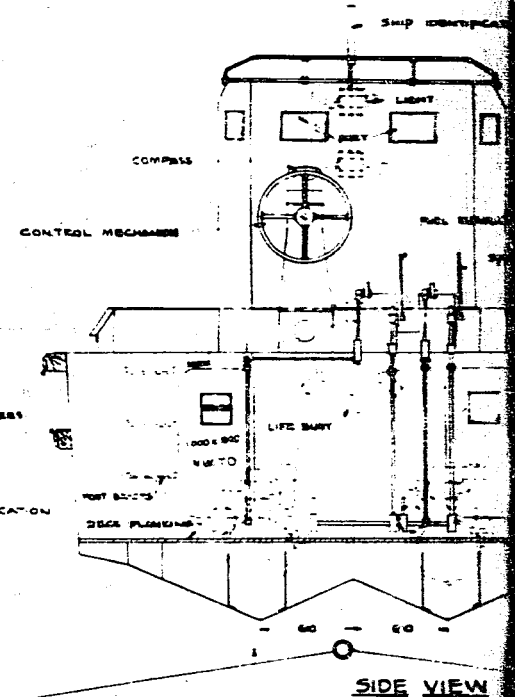
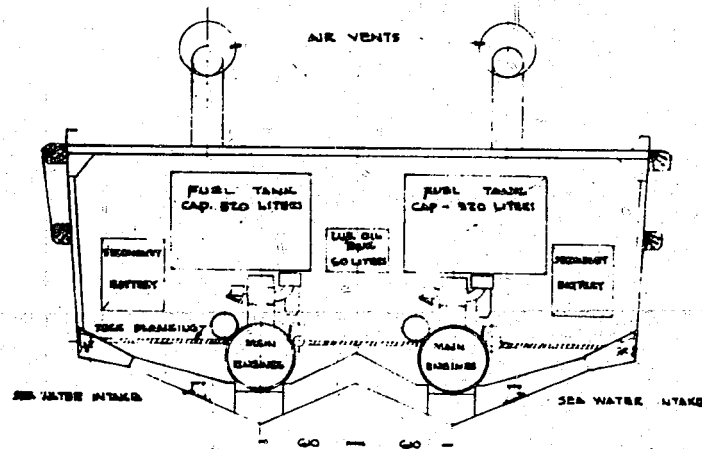
15 METER MOKU HATSU
Midship Section

RESTRICTED

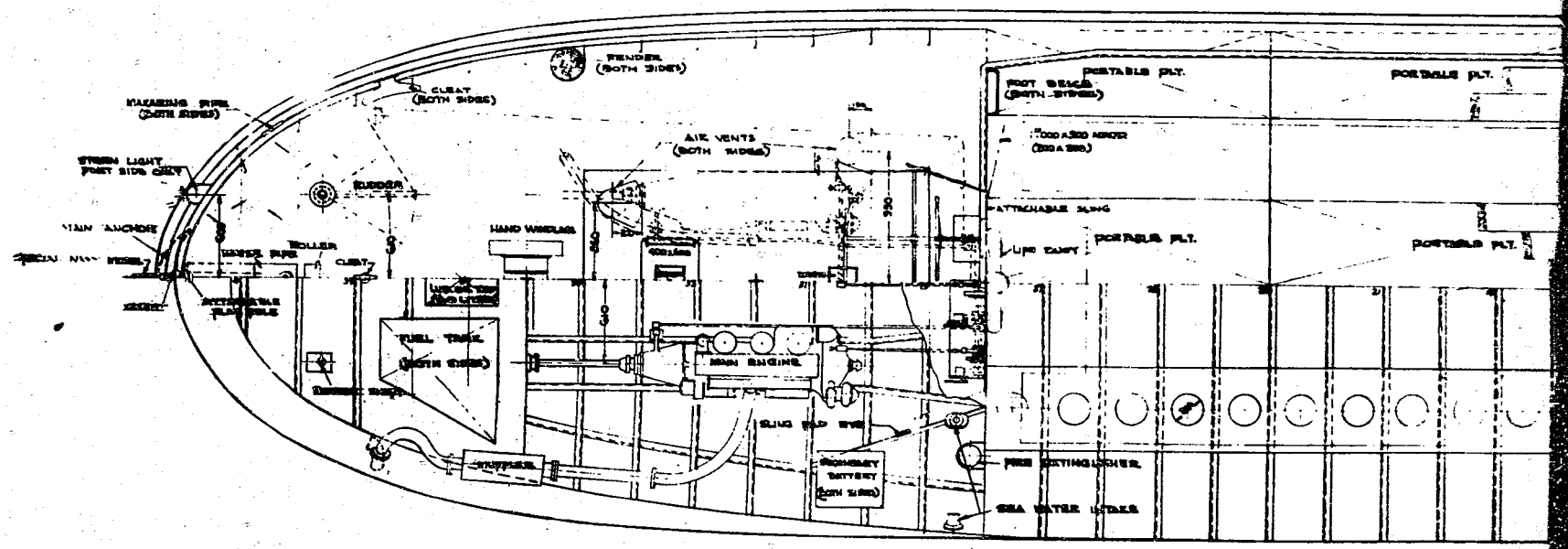
ENCLOSURE (G)

CROSS SECTION - FR. 30
LOOKING AFT

CROSS SECTION - FR. 29
LOOKING FORWARD

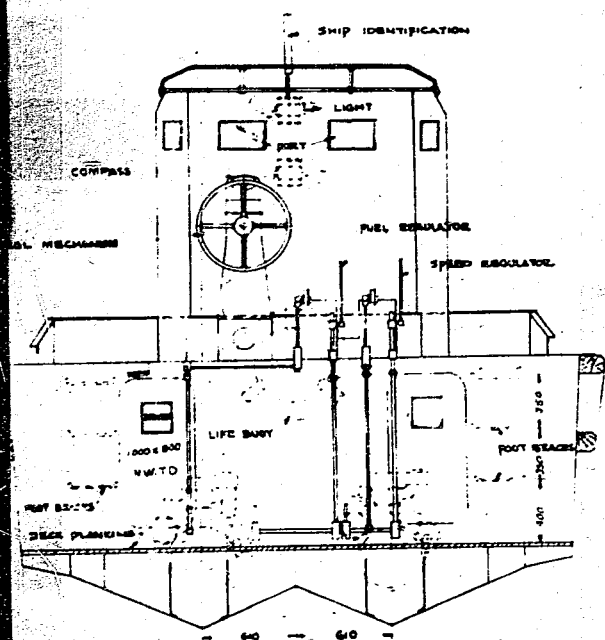


PLAN VIEW



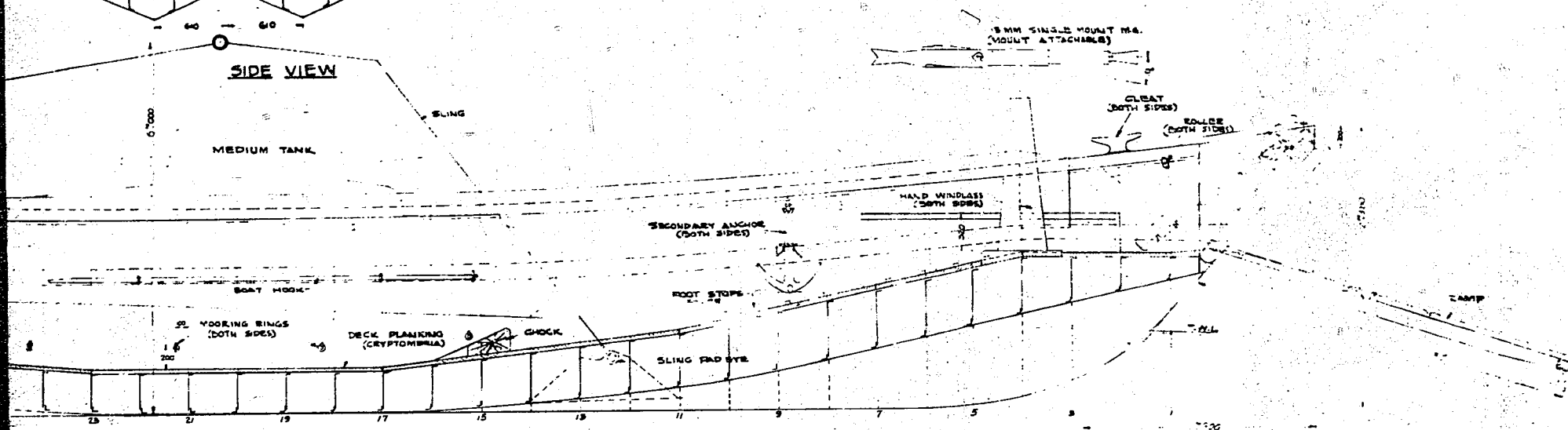
17 METER TOKU DAI HATS
General Arrangement

ENCLOSURE (G)

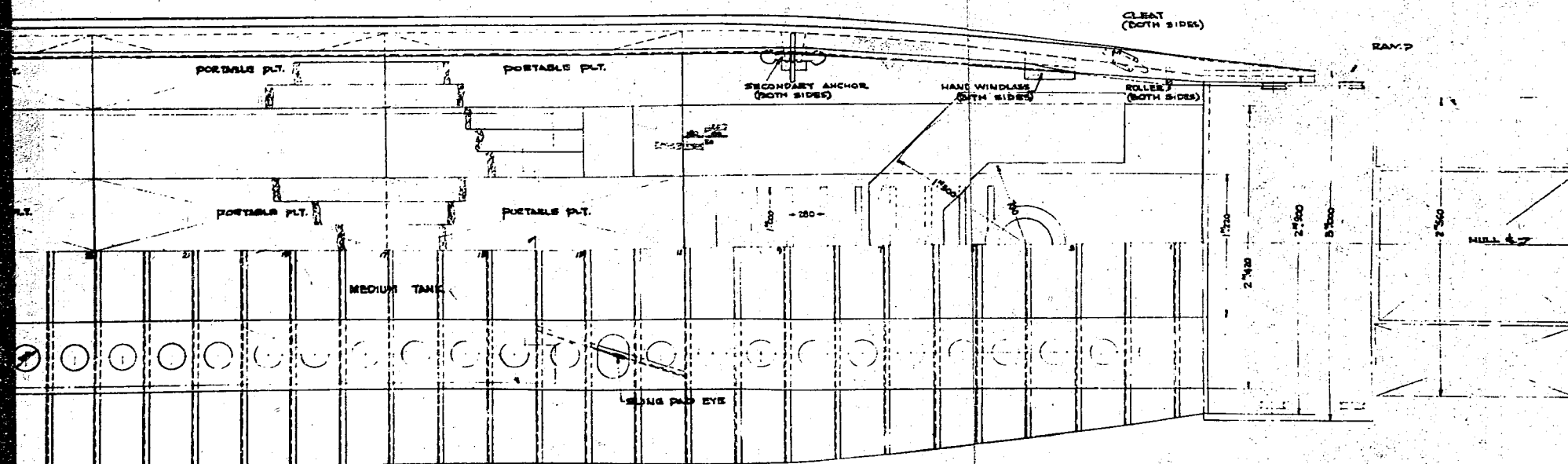
CROSS SECTION - FR. 20
LOOKING FORWARD

SIDE VIEW

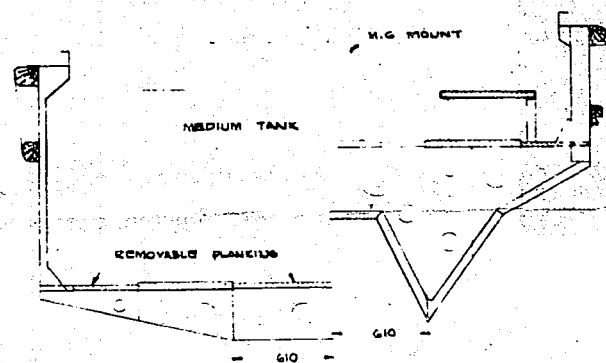
MEDIUM TANK



PLAN VIEW

17 ME'ER TOKU DAI HATSU
General Arrangement

CROSS SECTION AT 4



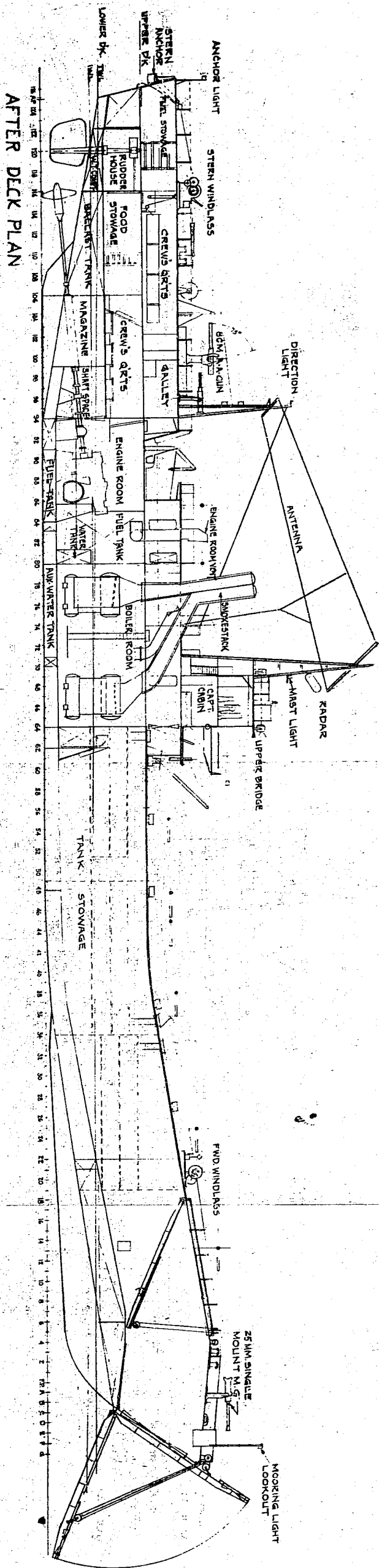
CROSS SECTION - FR. 4

SPECIFICATIONS

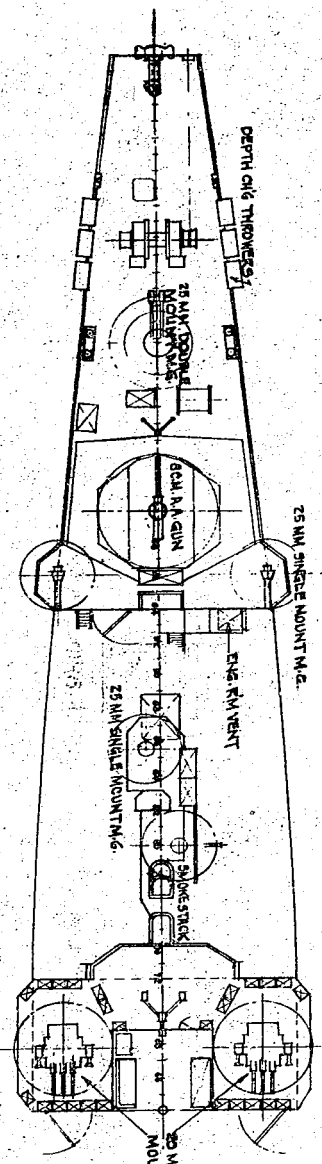
TOTAL LENGTH-----17500
BEAM-----3700
DRAFT-----1275

DIFFERENCE BETWEEN MODELS A AND B

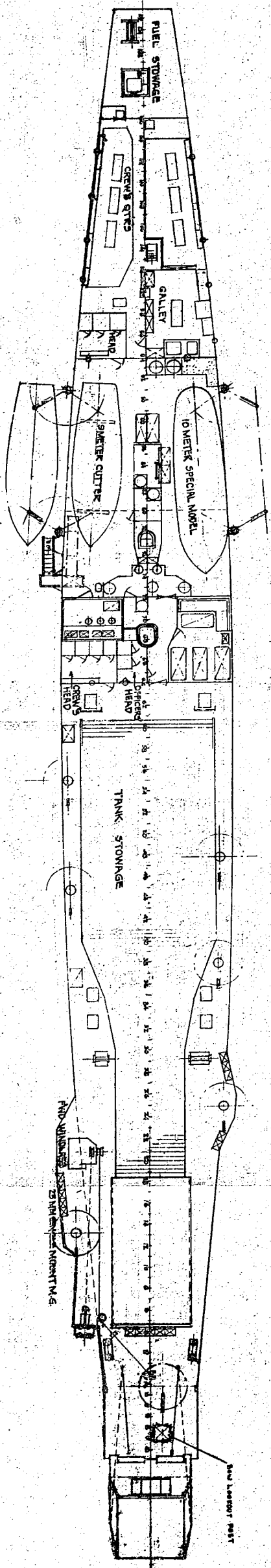
1. ENGINE ROOM GEAR - MODEL A IS THE SAME AS THE ARMY MODEL, BUT THE SIZE OF ENGINE ROOM IS THE SAME AS THAT OF THE NAVY MODEL.
2. FUEL TANKS - MODEL A IS THE SAME AS ARMY MODEL EXCEPT MODEL B IS 2400 LITERS.
3. MAIN ENGINE - MODEL A, ARMY MODEL, HAS A 50 H.P. INTERNAL COMBUSTION ENGINE. MODEL B, JAPANESE MODEL B, HAS A 100 H.P. INTERNAL COMBUSTION ENGINE.
4. RUDDER - MODEL A - SAME AS ARMY MODEL
5. STEERING MECHANISM - MODEL B - NAVY MODEL
6. PROPELLER - MODEL B - NAVY MODEL
7. STEERING GEAR - "SCREEN" DUE TO AUTOMATIC CONTROL EQUIPMENT.



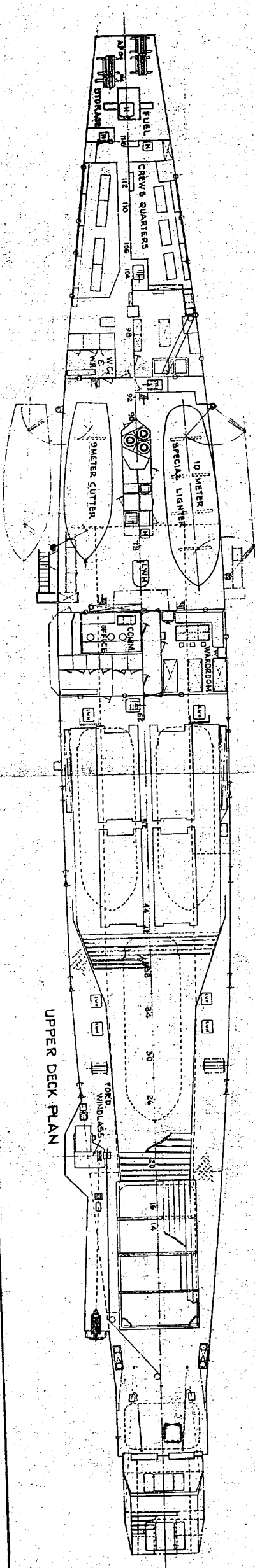
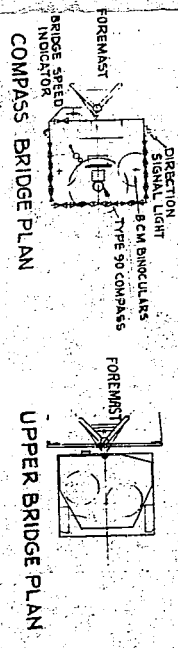
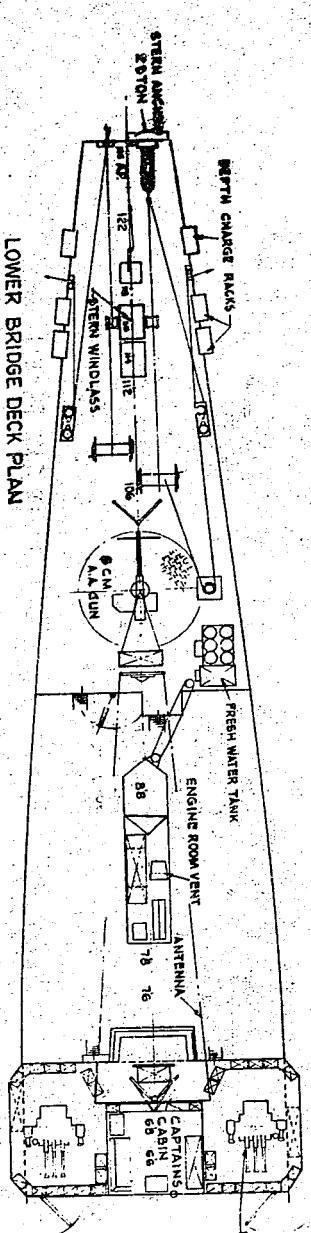
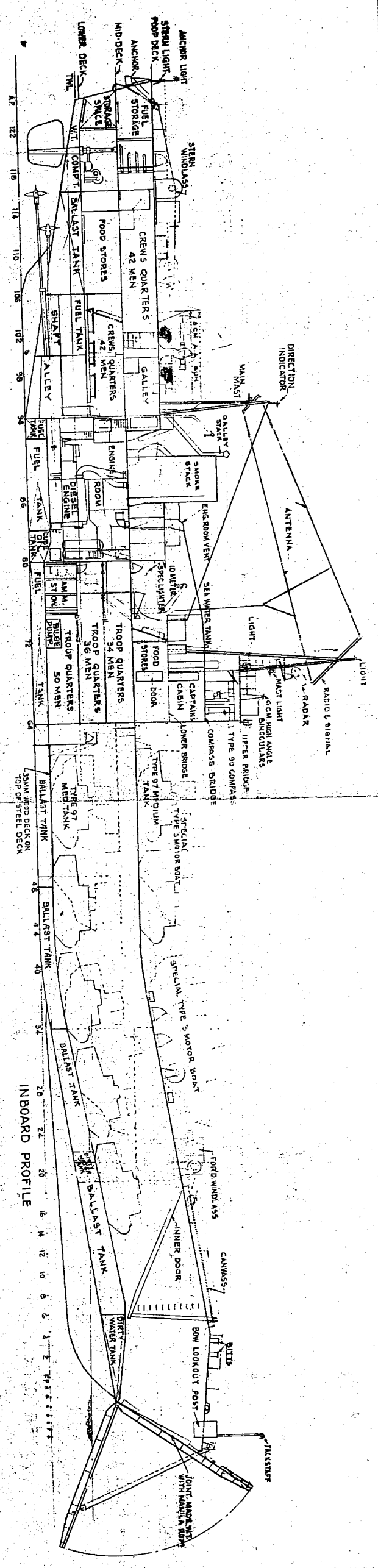
AFTER DECK PLAN



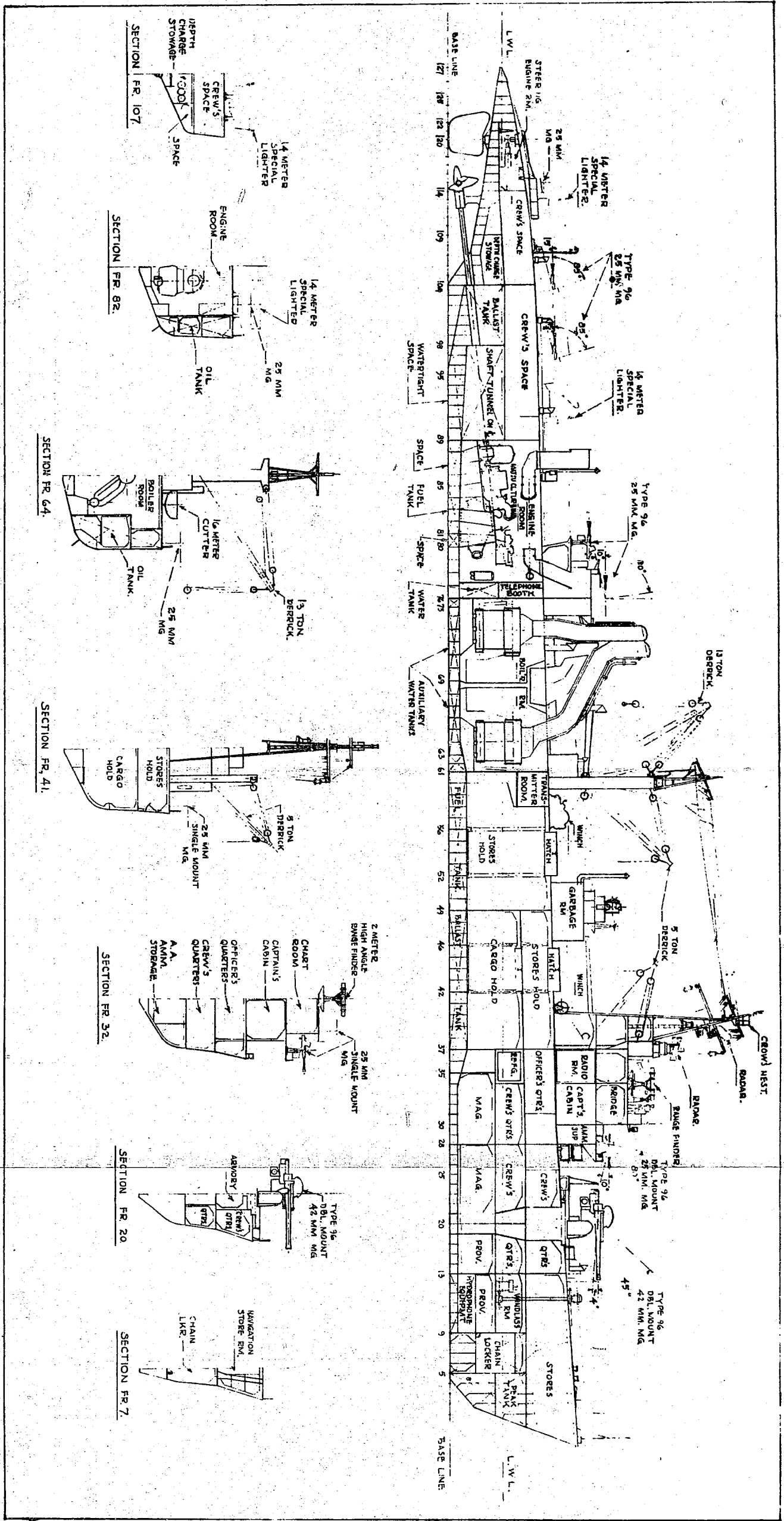
UPPER DECK PLAN



NITO YISO KAN (TURBINE)
General Arrangement



NITO YUSO KAN (DIESEL TYPE)
General Arrangement



ITO YUSO KAN
General Arrangement

ENCLOSURE (M)

LIST OF DOCUMENTS FORWARDED TO
BUREAU OF SHIPS, NAVY DEPARTMENT, WASHINGTON, D. C.

<u>NavTechJap Document No.</u>	<u>Title</u>	<u>Atis No.</u>
ND50-1450	14m Naval DAI HATSU General Arrangement.	4458
ND50-1451	14m Naval DAI HATSU, Spiral Propeller.	4459
ND50-1452	14m Naval DAI HATSU, Normal Propeller.	4460
ND50-1453	10m SHO HATSU, General Arrangement.	4461
ND50-1454	NITO YUSOKAN (Turbine), Leading Particulars.	4462
ND50-1455	NITO YUSOKAN (Turbine), Deck Plans and Sections.	4463
ND50-1456	NITO YUSOKAN (Turbine), Structural Sections.	4464
ND50-1457	NITO YUSOKAN (Diesel), Leading Particulars.	4465
ND50-1458	NITO YUSOKAN (Diesel), Deck Plans and Sections.	4466
ND50-1459	ITO YUSOKAN, Leading Particulars Book.	4467
ND50-1460	ITO YUSOKAN, Deck Plans.	4468
ND50-1461	ITO YUSOKAN, Structural Sections.	4469
ND50-1462	KUMANO MARU (DAI HATSU Carrier), Leading Particulars	4470
ND50-1463	KUMANO MARU (DAI HATSU Carrier), Deck Plans.	4471
ND50-1464	KUMANO MARU (DAI HATSU Carrier), Midship Section.	4472
ND50-1465	High Speed Supply Craft, Structural Sections.	4473