

QUESTIONNAIRE

(Please write in English, in block letters)

I. QUESTIONNAIRE ON YOUR ACTIVITY

(1) Full Name:

Mr. _____
 First Middle Last

(2) Home Address:

Telephone Number: _____

(3) Year of your participation: 19 _____

(4) Name & Address of your Office

Name: _____

Address: _____

Telephone Number: _____

(5) Your present post and job assignment

Post: _____

Your job assignment:

(6) Employment record since the year of your participation

Title of Posts held	Duration of service	Name & Address of Employer	Brief description of your duties
	to present		

(7) Please draw a chart of your organization (Starting from a "division/section" as the lowest level), and indicate your section.

(8) For the participant from shipyard:

① Number of employees _____

② Main facilities of your shipyard.

③ Ship production in 1988 (gross tonnage-GT and number of ships)

		total production	gross tonnage	
			more than 3,000 GT	less than 3,000 GT
Newbuilding	GT			
	No.			
Ship repairing	GT			
	No.			

(9) For the participant from government or governmental organization:

Present and future situation of shipbuilding in your country.

		1987	1988	1989	1990
Export of ships	Dollars ※				
	GT				
	No ※				
Import of ships	Dollars ※				
	GT				
	No ※				
ship holdings	marchant boat GT				
	fishing boat GT				
	working boat GT				
	other GT				

Dollars ※: amount in US dollar No ※: number of ships

II. Questionnaire on the Group Training Course in Shipbuilding

- (1) Please Write down precisely what aspects or points of the course were beneficial to your present Job.

- (2) Have you ever applied any new technology that you got from the course in Japan to your shipyard or office?

If you have, please describe it briefly.

- (3) Do you have any proposals or idea for further improvement of the course?

① Duration of the course

② Lectures/ Practical Training at shipyard

③ Curriculum

Specify the items (or subjects) to be covered in the Training course (level and contents).

④ Other comments

(4) Is there any special field in the shipbuilding (e.g. Computer Application, Ship Inspection, Maintenance of Ship & Ship Machinery, etc.) that you would like to study further?

(5) Have you ever participated in another training course conducted in Japan or in other country?

If you have, please describe it.

① Where (country) _____

② When _____

③ Institution _____

④ Name of the course _____

⑤ Outline of the course _____

Thank you very much for your cooperation.

CONTENTS

Japan's Shipbuilding Industry _____	1
Japan's Ship Machinery Industry _____	5
Japan's Shipbuilding Policies _____	7
International Cooperation _____	9
Recent Technical Development _____	11
Building Berths and Docks _____	13
Location of Shipyards _____	15
Chronology of Japanese Shipbuilding _____	17

Fiscal year in Japan : April of the year to March of the
next year

Japan's Shipbuilding Industry

New orders

The orders received by Japanese shipbuilders during fiscal 1987 amounted to 4,391,000GT (2,471,000 CGT) indicating further decline from the previous fiscal year due to continued surplus bottoms and sluggish shipping business, centering on performance by liners and tankers, in addition to lowered competitiveness caused by the strong yen.

By type of ship, orders for cargo ships stood at 2,092,000GT (73.4% of the previous fiscal year), those for tankers at 2,273,000GT (119.6% of the previous fiscal year) and orders for other types of ships totaled 26,000GT (32.5% of the previous fiscal year). Compared with fiscal 1986, orders for general cargo ships and bulk carriers decreased while those for tankers soared attributed to increased orders for crude oil carriers, including VLCCs. Thus, orders for tankers represented 51.8% of the total.

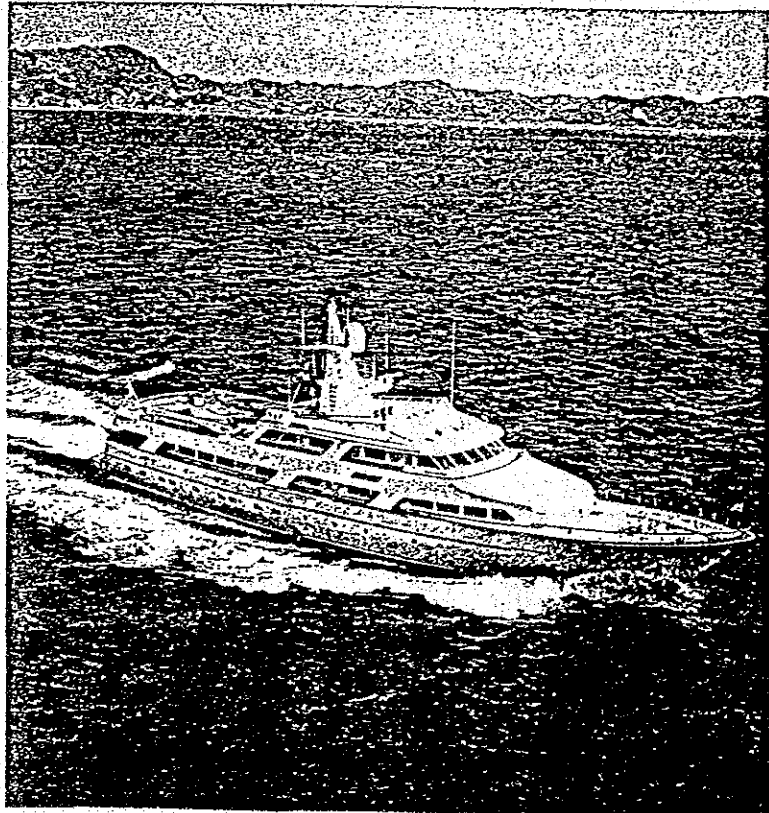
Orders for domestic vessels aggregated 528,000GT (20.1% of the previous fiscal year) showing a dras-

tic decline, while those for export vessels rose to 3,863,000GT (175.3% of the previous fiscal year), thanks to increased orders for flags of convenience by domestic shipowners.

According to the statistical data released by Lloyd's Register of Shipping, new orders received by the shipbuilders in the world during 1987 reached 13,768,000GT, a rise of 8.7% over the previous year. Of the total, orders won by Japanese shipbuilders stood at 4,771,000GT (a 34.7% share), indicating a decrease of 13.5%.

Those by Western European countries went up by 54.3% to 2,573,000 GT (an 18.7% share). The Republic of Korea won orders for 4,160,000 GT vessels, up 36.1% (a 30.2% share). New orders for Japan went down below the previous year's level, while those for Western European countries and the Republic of Korea advanced.

In the first half of 1988, the world's shipbuilders received new orders totaling 5,692,000 GT, and Japanese shipbuilders took 2,318,000 GT orders.



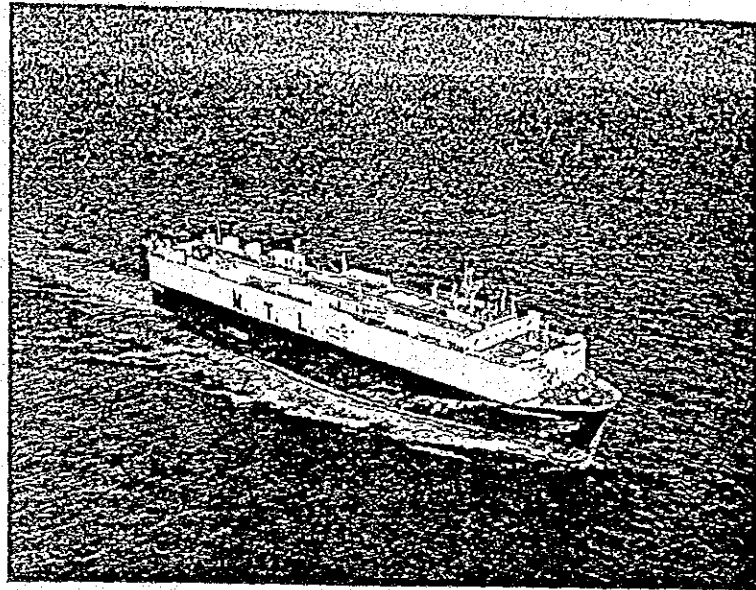
Deluxe motor yacht built by Hitachi Zosen Corp.

Newbuildings

The newbuilding work volume in fiscal 1987 dropped sharply, reflecting a decline in the orders during the previous fiscal year. Keels were laid for 115 vessels or 3,582,000GT (67.4% of the previous fiscal year), and vessels completed during the year under review totaled 132 vessels or 4,367,000GT (54.6% of the previous fiscal year), showing a 50% decrease compared with the previous fiscal year.

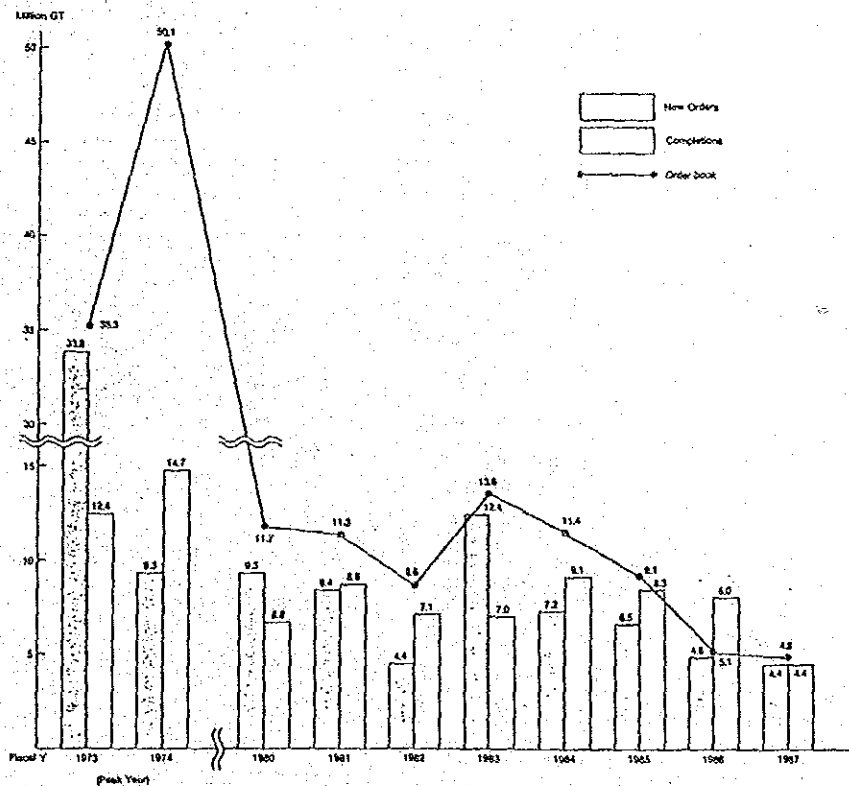
Order book

As of the end of March 1988, the order book for newbuildings stood at 119 vessels, amounting to 4,773,000GT or 93.1% of the previous year. Domestic ships totaled 20 or 899,000GT and export vessels, 99 or 3,874,000GT.



"Marine Reliance," a 35,750 GT PCC constructed by Sumitomo Heavy Industries, Ltd.

Fig. 1 Japan's Newbuildings



Repairing and remodeling

In fiscal 1987, ship repairing and conversion undertakings amounted to 146,800 million yen in showing a decrease of some 10% from the previous fiscal year. Compared with fiscal 1981, the peak year, the total is less than one half.

Adversely affected by the appreciation of the yen, orders placed by foreign flags in the previous fiscal year declined so sharply that they came to amount for a little over 20% of the total repairing and remodeling orders and this fiscal year saw the same trend.

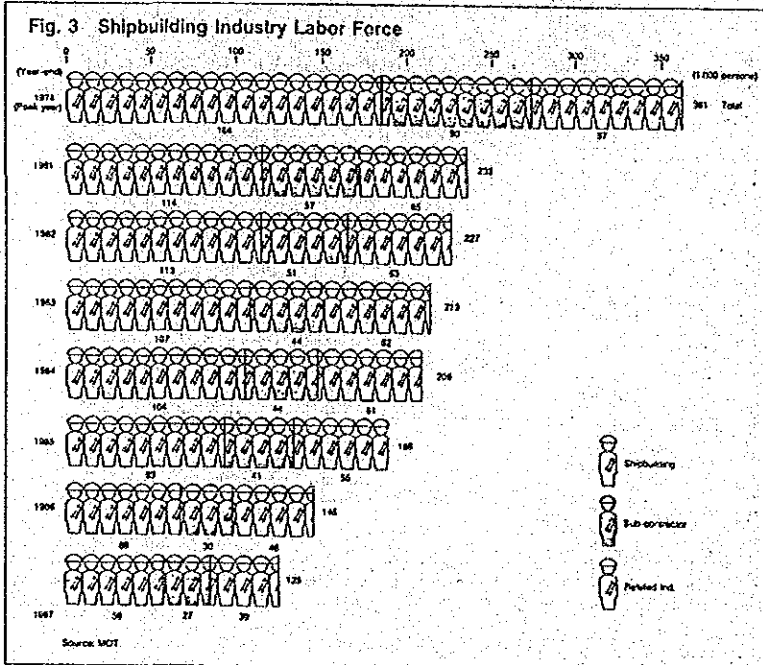
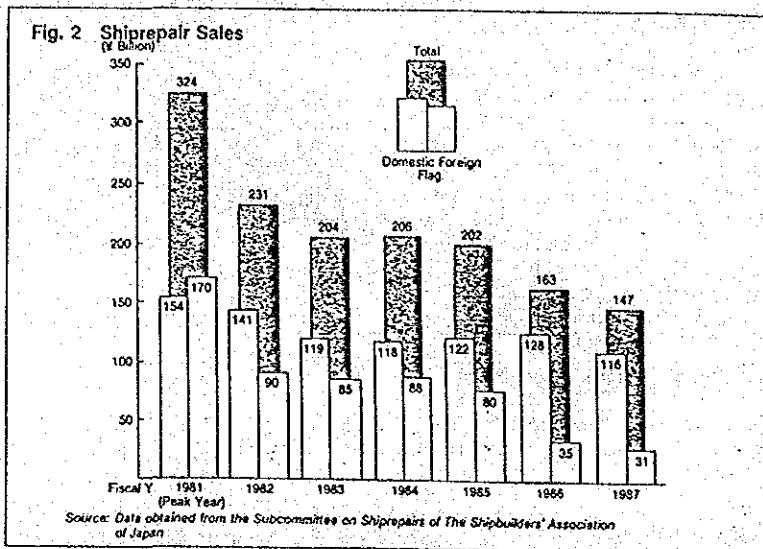
The decreased orders were attributed to the following facts: large-sized vessels, such as VLCCs, went to Southeast Asian countries for repairing and remodeling, avoiding Japanese companies and shipping companies endeavored to cut expenses for ship maintenance so that their total operation costs can be reduced.

Among domestic flags, orders from the public sector have been increasing recently and in fiscal 1987, they accounted for 43%.

Labor situation

The number of workers engaged in Japanese shipbuilding (including those subcontractors) and related works peaked at the end of 1974, totaling 361,000. The first production facility disposal plan carried out jointly by major shipbuilders in this country in fiscal 1979 forced a number of workers to leave their building docks and slipways.

During the past few years, the number of workers has steadily de-



CGT (Compensated Gross Tonnage):
CGT is calculated by multiplying the gross tonnage of a ship by a coefficient, which is determined according to the type and size into which the particular ship is classified. It is used as an indicator of the volume of work that goes into the building of a given ship.

creased because of declined work volume caused by the rapid hike of the yen's appreciation, in addition to a stagnant demand for newbuildings.

Moreover, the second joint facility disposal plan was executed in fiscal 1987. As a result, the number of workers reduced to 125,000 at the end of 1987, almost one-third of the peak time.

Business situation

Total sales for fiscal 1987 registered by the 18 member companies of The Shipbuilders' Association of Japan (SAJ) amounted to over 5,000,000million yen, a decrease of about 10% from the previous fiscal year.

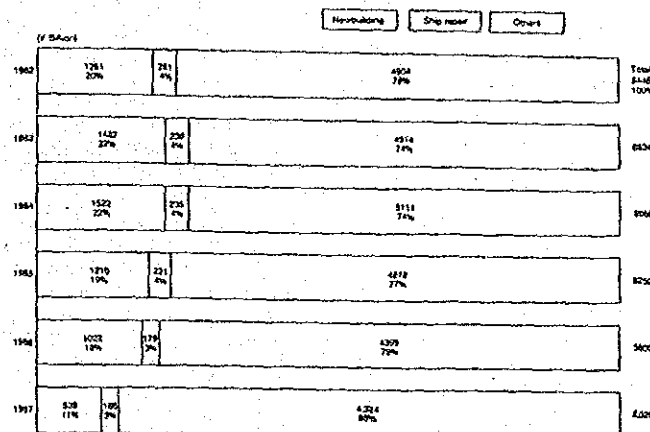
By sector, newbuildings totaled 539,000million yen (down 47.3%), shiprepairing and remodeling 165,700 million yen (down 7.3%) and others including aircraft and industrial plants, 4,323,900million yen (down 1.7%).

In fiscal 1987, newbuildings accounted for 10.7% of the total sales. The ratio of the ship division, combining the newbuilding plus repairing and remodeling sections, stood at 14.0% of the total in terms of sales amount while their sales by the seven leading shipbuilding companies represented 9.2% of their aggregate sales. The same figure for

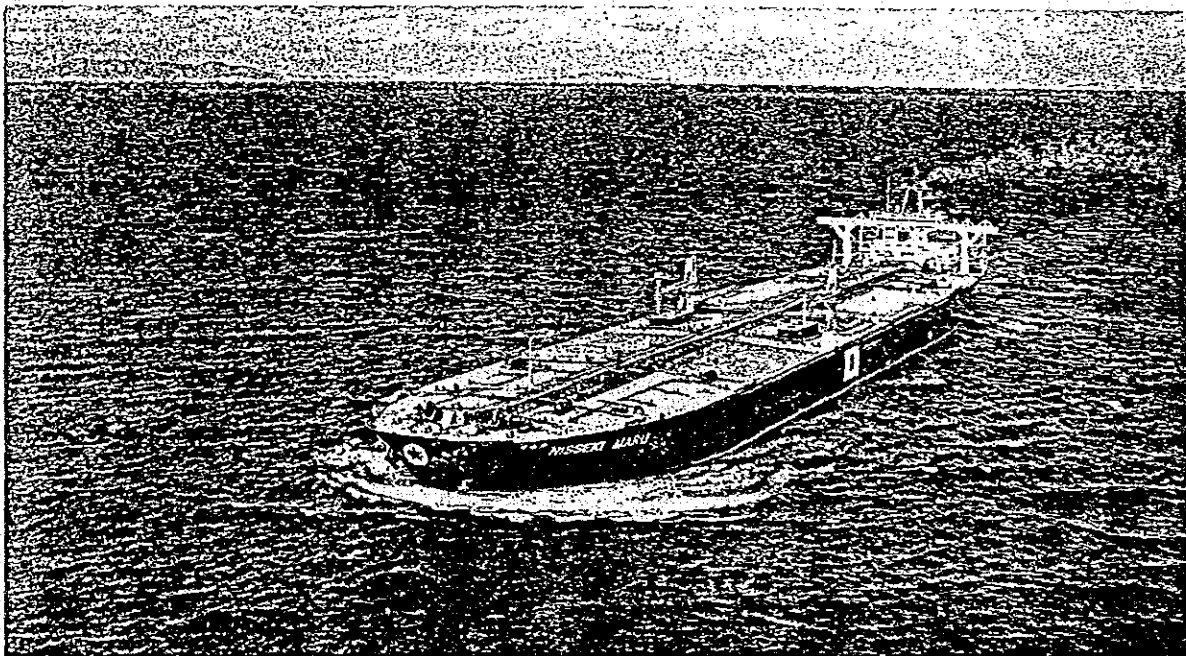
11 medium-sized shipbuilders was 81.2%. These figures show that the nonshipbuilding business has become the mainstay of the seven principal shipbuilders as integrated heavy industrial firms while the 11 medium-sized shipbuilders still depend on shipbuilding for the most part.

In addition to stagnant demand for newbuildings, lowered ship contract prices which are far from recovery and other unfavorable factors have deteriorated performances of Japanese shipbuilding companies. Early improvement in earning capability of these companies is urgently required.

Fig. 4 Sales by Division



Note: 1. Source: SAJ data for fiscal 1981 to 1984 refer to 21 shipyards and for fiscal 1985 to 1986 refer to 23 shipyards and for fiscal 1987 refer to 18 shipyards.
 2. All the above data on this chart include repair work of the machines, they are being referred from those included in Fig. 2.
 3. The chart include money prime movers, cranes, machinery, rolling stock and accessories, etc.



"Nisseki Maru," a 258,094 DWT tanker, built by Mitsubishi Heavy Industries, Ltd.

Japan's Ship Machinery Industry

Production

The output of industrial products for marine use in 1987 amounted to 647,900million yen, showing a sharp decrease of 16% from the previous year, owing to decline in newbuilding work and continued low levels of product prices.

By product, the output of internal combustion engines that accounts for more than 30% of the total production, stood at 203,700million yen, a sizable drop of 17% from the previous year. The output of all the other products also declined: marine turbines totaled 12,100million yen in production, down 14%; marine boilers 3,800million yen, down 41%; marine auxiliary machinery 68,100 million yen, down 12%; mooring and cargo-handling machinery 37,000million yen, down 36%; shaftings and propellers 32,000million yen, down 5%; navigation instruments 69,000 million yen, down 15%; fittings 86,400million yen, down 24% and parts and accessories 116,000million yen, down 11%.

Export and Import

Exports of industrial products for marine use in 1987 aggregated 292,900million yen, a decline of 20% from the previous year. Of the total, indirect exports (products installed

in export ships) showed a drastic fall of 40%, amounting to 120,000million yen, reflecting decrease in export ships built in Japan.

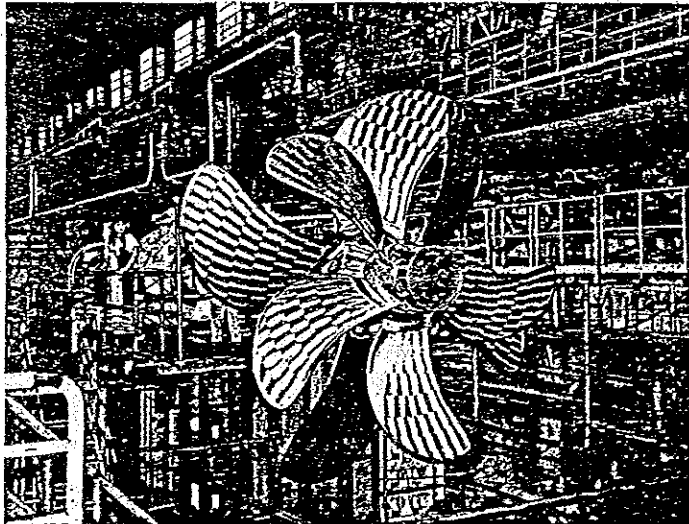
Exports, excluding the indirect exports, however, increased by 4% over the preceding year to 172,900 million yen. As a result, such direct exports represented 27% of the total output in 1987.

A large portion of the direct exports is accounted for by marine outboard engines (57,400million yen; accounting for 33% of the total exports), navigation instruments (30,900 million yen; 18%), diesel engines (27,300million yen; 16%), parts and accessories (26,100 million yen; 15%) and marine auxiliary machinery, including pumps (10,700million yen; 6%). The total export amount of these products contributed 88% to the overall direct exports.

By destination, 32% of exports were for Asia, 30% for North America and 25% for Europe. These regions accounted for 87% of Japan's exports of ship machinery.

Imports of ship machinery to Japan in 1987 amounted to 13,200 million yen, a decrease of 35% from the preceding year. By countries, 30% of the imported machines came from the United States, 14% from the Sweden, 11% from the West Germany, 9% from the France and 8% from the United Kingdom.

Contra-rotating propeller manufactured by Ishikawajima-Harima Heavy Industries Co., Ltd.



Contra-rotating propeller installed on the car carrier "Toyofuji 5" built by Mitsubishi Heavy Industries, Ltd.

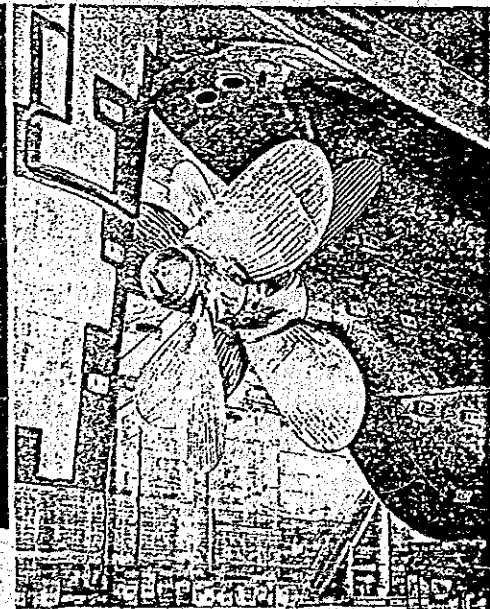


Fig. 5 Ship Machinery

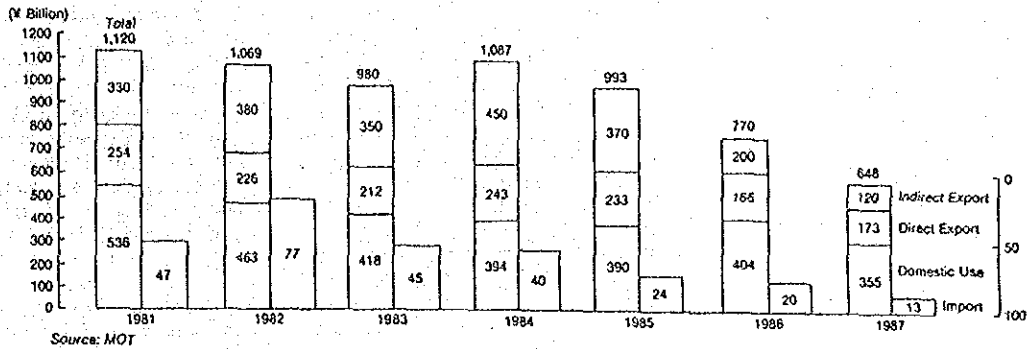


Fig. 6 Ship Machinery (Production)

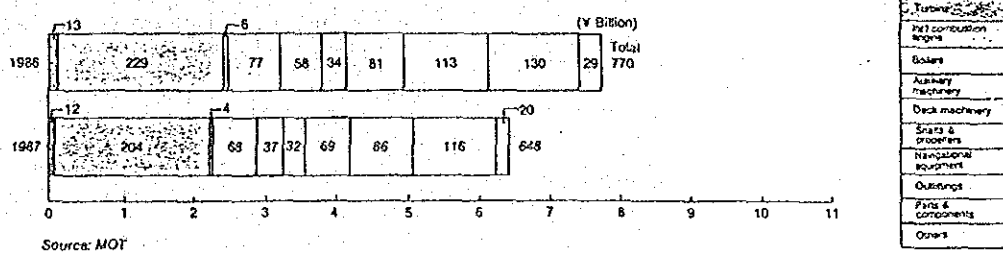
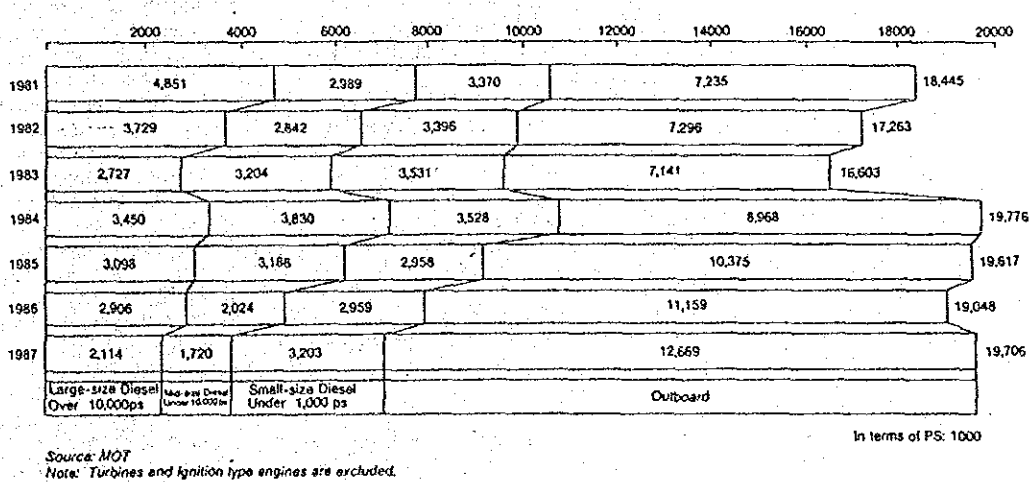


Fig. 7 Marine Diesel Engines (Production)



Japan's Shipbuilding Policies

Measures for structural reforms

Japan has spearheaded shipbuilders' rationalization and structural reform programs to resuscitate the ailing shipbuilding industry by reducing the shipbuilding capacity in accordance with the legislative measures adopted in fiscal 1979. The measures intended to cope with the sharply declining demand for newbuildings following the first oil crisis and to scale down production.

Despite such measures and subsequent efforts of shipbuilders, Japan's shipbuilding industry was in an unprecedented recession caused by the recent steep appreciation of the yen and also to stagnant movements of surface cargoes attributed to structural changes of the transportation business and prolonged sluggishness in shipping business resulted from surplus of bottoms.

Under these circumstances, the Ministry of Transport (MOT) enforced the Temporary Measures Law Concerning Operation Stabilization of Designated Shipbuilding Enterprises in April 1987 and has been promoting cut in production facilities, reorganizing the nation's shipbuilding industry and fully recognizing structural reforms are essential for the industry to achieve robust growth from a long- and medium term viewpoint.

As a result, 24% of the shipbuilding facilities, each of which is capable of building a ship of more than 5,000GT, were disposed of thereby reducing the nation's total shipbuilding capacity from 6,030,000GT to

4,600,000GT and at the same time, 21 business groups were concentrated into eight.

In line with these facility disposal and subsequent reform of business, the Japanese government purchased some of the shipbuilding facilities and lands through the Designated Shipbuilding Enterprises Stabilization Association based on support measures, as it did previously, while handling additional support measures in finance and taxation. These included providing debt guarantees so that the shipbuilders can borrow more money to release securities on their facilities.

Moreover, to make the structural measures carried out in fiscal 1987 more effective, discussions were held at the meetings of the Shipping and Shipbuilding Rationalization Council (SSRC) to review the demand forecast for newbuildings by the year 2000 and about shipbuilding policies at the same time. The conclusion arrived at the SSRC is as follows:

1. Following up of the structural reform measures

Demand for newbuildings will continue to be sluggish for a while and to meet such a situation, business tie-ups should be promoted and strengthened between shipbuilders while at the same time, it is necessary to promote international cooperation, to intensify measures for reduction of surplus vessels and to take appropriate measures for supply and demand of ships.

2. Revitalizing measures

Measures aim at stimulating technical developments required for the next-generation vessels as well as necessary to automate production with information-intensified processing control systems. Moreover, the shipbuilding industry should evolve its new business activities in construction of offshore floating facilities.

3. Measures for ship machinery industry

Production systems and capacities should be optimized by integrating machinery production or specializing business activities by dividing horizontally the production structure of the ship machinery industry. Furthermore, collaboration between manufacturers should be encour-

Item:	Before:	After:	Differences:
No. of companies:	44	26	-18
No. of order-taking channels:	21	8	-13
No. of shipyards:	59	39	-20
No. of docks or berths:	73	47	-26
Capacity (cgt):	6,027,046	4,604,409	-1,422,637
Disposal rate (%):	—	23.6	—

Note: The above figures refer only to designated shipbuilding enterprises.

aged by receiving orders and purchasing materials jointly; such business activities will bring about a merit of large scale.

Especially in manufacture of large diesel engines, production should be concentrated, eventually aiming at optimizing production setups and capacities.

Adjustment of operations

In fiscal 1987, the antirecession cartel was organized under the Antimonopoly Act to impose a check on excessive competition accrued from lowered operational rate and to seek a smooth shipbuilding switch at low

operational levels. In fiscal 1988, controlled operations are continuously conducted as exemplified in the antirecession cartel in fiscal 1988 that stood at 2,400,000CGT on the launching basis as compared with 3,000,000CGT in the previous fiscal year.

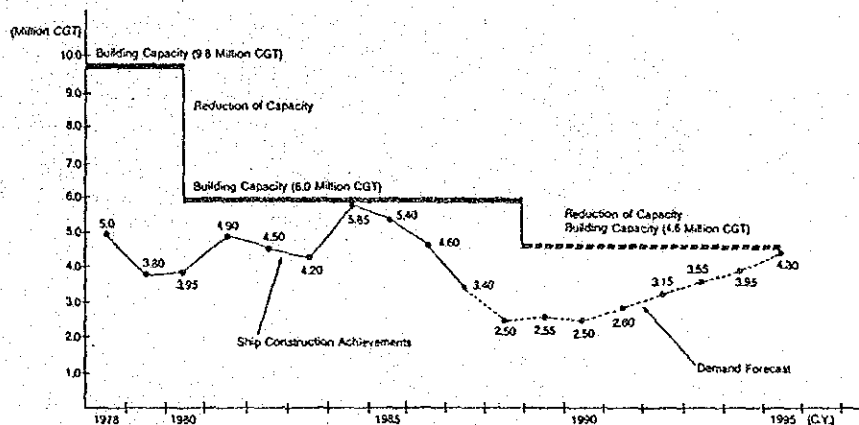
Measures for creating demand

To make up for the current shortage of work volume, MOT has encouraged replacement of ships owned by the public sector and promoted shipbuilding under economic cooperation. As one of the policies to expand domestic demand, MOT also endeavored to cre-

ate demand for offshore structures and oceanic recreation facilities by taking advantages of the shipbuilders' facilities and technologies as well as the noninterest loan system to the third sector.

The government also implemented the subsidy system for scrapping ships in 1987 to provide shipbuilders with work and to help reduce surplus of vessels. This system has so far been successful since by the end of July 1988, about 4,500,000GT of ships had been scrapped under the foregoing system on the basis of applications received for the subsidy.

Fig. 8 New Ship Completion and Forecast



Note: 1. Building capacity is based on shipyards capable of constructing ships of over 5,000 GT.
2. Ship construction achievement and demand forecast are based on ships of over 2,500 GT.

Employment policy

The Special Measures Law for the Stabilization of Employment of Workers Related to Specific Depressed Industries had been promulgated in July 1983 whereby employment adjustment subsidies are paid to employers for the education and training of the jobless who quit their employment and for closing their plants while those who had to leave their jobs mandatorily get extended payments under the unemployment insurance legislation. After completion of the insurance payments, the jobless can receive spe-

cial allowance in the course of finding new job. The Special Employment Development Subsidy is paid to those entrepreneurs who reemploy such unemployed persons.

Measures for medium and small shipbuilders

The government has exerted its efforts to modernize management and technologies of medium and small shipbuilding companies by designating them under the Modernization Promotion Law for Medium and Small Enterprises.

On top of that, since 1986, these

shipbuilders had been persuaded to switch their business field efficiently under the Temporary Measures Law Concerning Switch of Business of Specified Medium and Small Enterprises to enable them to cope with the change in domestic economy caused by the sharp rise of the yen and other factors associated with it.

In 1986, the Temporary Measures Law Concerning Small and Medium-Sized Enterprises in Specially Designated Areas specified shipbuilding sites to help in the sound development of the local economy.

International Cooperation

Japan fully recognizes international cooperation is indispensable for the steady development of the world shipbuilding industry and therefore, it has intensified efforts to better mutual understandings with other foreign countries through OECD and at other international conferences sponsored by the governmental and private organizations.

OECD WP6

The OECD WP6 is the site to hold discussions on shipbuilding problems in an effort to maintain fair competition and to harmonize policy of each country on the governmental basis. Recent subjects discussed at the WP6 included revising ship export credit together with granting subsidy to shipbuilding industry and structural adjustment under the current worldwide recessions.

OECD members are required to take appropriate action to restore normal market conditions such as gradually decreasing subsidies and restraining shipbuilding capacity. Shipbuilding facilities which were disposed of by Japan are included in this category. Moreover, the Japanese government is not inclined to provide subsidies to shipbuilders

and is seeking a gradual decrease of such subsidies now being paid by some member countries.

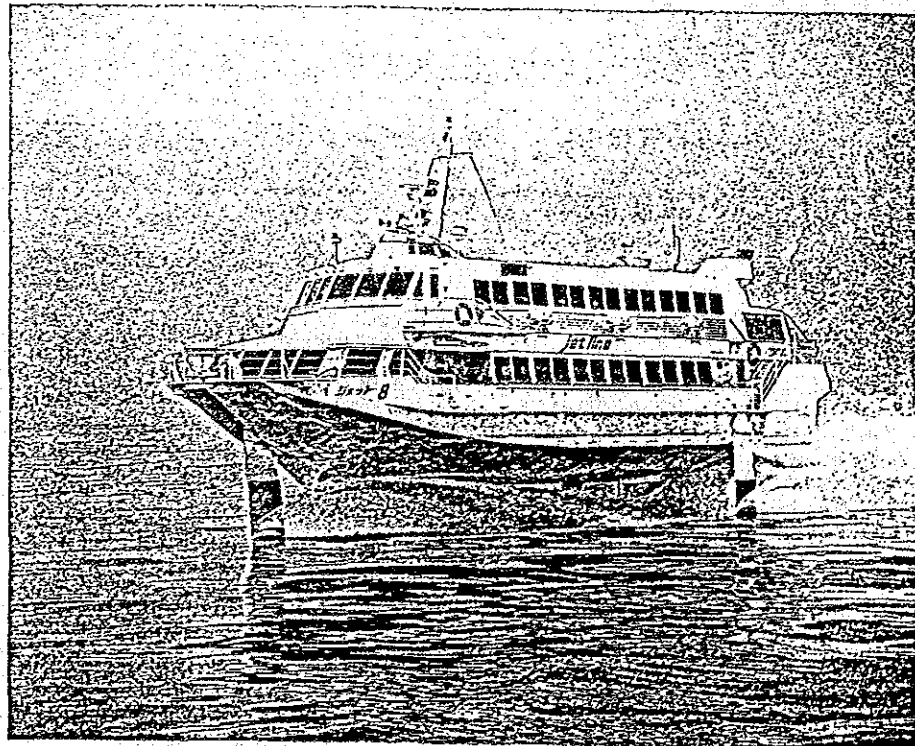
Discussions with Republic of Korea

The governments of Japan and the Republic of Korea (ROK) have held meetings on seven occasions either in Tokyo or in Seoul since 1984 whereby the Japanese representatives outlined the measures to reduce facilities and to limit shipbuilding capacity under the aegis of the antirecession cartel which has been sanctioned by the Japanese government.

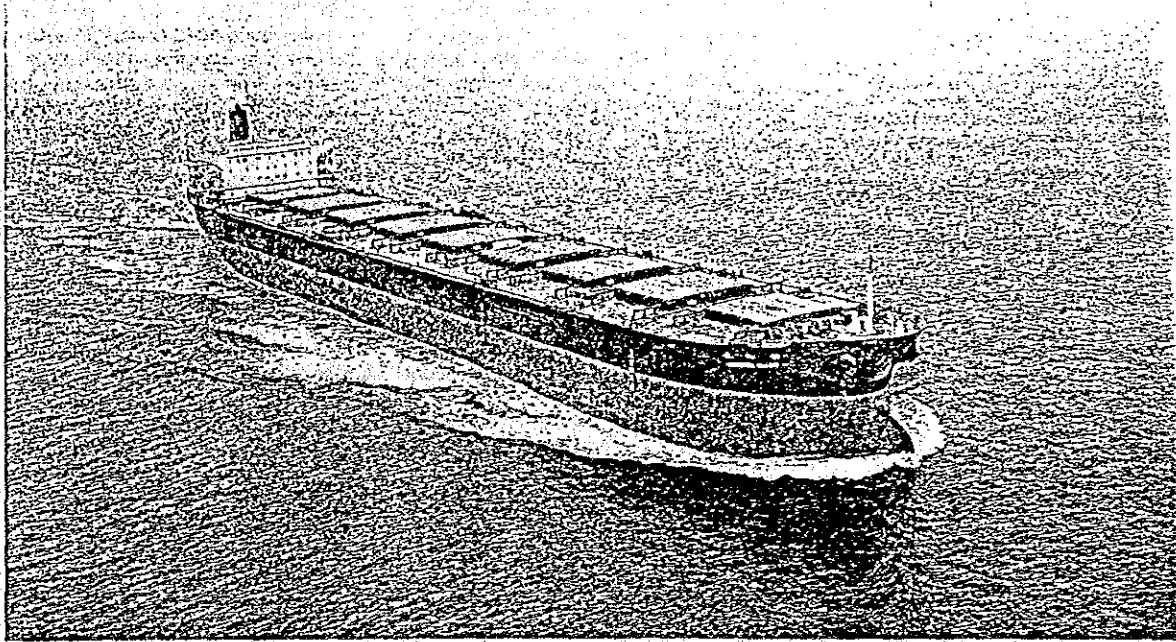
Subsequently, Japan approached ROK to take proper measures in curbing its shipbuilding capacity eventually leading to sound recovery of the world's shipbuilding industry since its shipbuilding industry has attained the important position in this field attributed mainly to their low shipbuilding quotations.

Discussions with EC

Varied discussions on shipbuilding problems have been held between Japan and EC from April 1988 at the request of the EC committee



"Jetfoil Jet 8" from Kawasaki Heavy Industries, Ltd.



The 156,326 DWT ore/bulk carrier "Shinwa Maru" from Mitsui Engineering & Shipbuilding Co., Ltd.

and both parties have reaffirmed their respective views on shipbuilding policies. Simply put it, they favored joint efforts to improve the shipbuilding situation as well as demand for newbuildings in discussions participating in by leading shipbuilding countries including ROK.

International cooperation in Asia/Pacific region

The Asia/Pacific Shipbuilding Conference has conducted free, candid talks with the shipbuilding experts rounded up from the various foreign countries in Asia and the Pacific areas to cooperate developing their shipbuilding industry. The conferences have met 12 times following the initial meeting held in 1973 in ROK, Philippines, Indonesia and Japan.

Economic and technological cooperation

Japan, as one of the advanced shipbuilding countries in the world, has been approached to extend economic and technical assistance to the shipping and shipbuilding industries of the developing countries with

the cooperation of the Japan International Cooperation Agency and the Overseas Economic Cooperation Fund.

The foregoing cooperation in the field of shipbuilding is summarized as follows:

- (i) Receiving trainees in a group or groups or individual studies covering shipbuilding technologies and business administration.
- (ii) Dispatching specialists to developing countries' governments and shipyards.
- (iii) Conducting feasibility studies on subjects concerning shipping and shipbuilding projects.
- (iv) Extending financial aid for purchasing ships and constructing shipyards on a gratuitous or non-gratuitous basis.

The cooperation measures mentioned in (i) through (iii) are extended on a gratuitous basis.

International cooperation on a private basis

Efforts to promote international cooperation on a private basis have continued with exchanges between the Shipbuilders' Association of

Japan (SAJ) and the Association of West European Shipbuilders (AWES) that have been witnessed since 1964, about the same time when government level discussions opened at OECD.

The main activities include exchanging views and information on the state of the shipbuilding industry, anticipated future trend and forecasting demand for newbuildings. Currently, experts of the two associations swap their views and information on the above-mentioned matters whenever a vital discussion arises.

Since November 1982, leaders of Japanese and the Republic of Korea's shipbuilding industries have held regular meetings on nine occasions by June 1988 and through exchanging views and information at the meetings, they have forged close relationships between the two countries.

Recent Technical Development

In Japan, shipbuilding research and development has been promoted on the themes based on the following basic policies and objectives; namely, promotion of low transportation cost (or promoting energy-saving transportation); enhancing efficiency in transportation (or developing new ship types and hull forms to meet with transportation requirements); securing safety at sea; preventing sea pollution and disasters; and developing offshore resources.

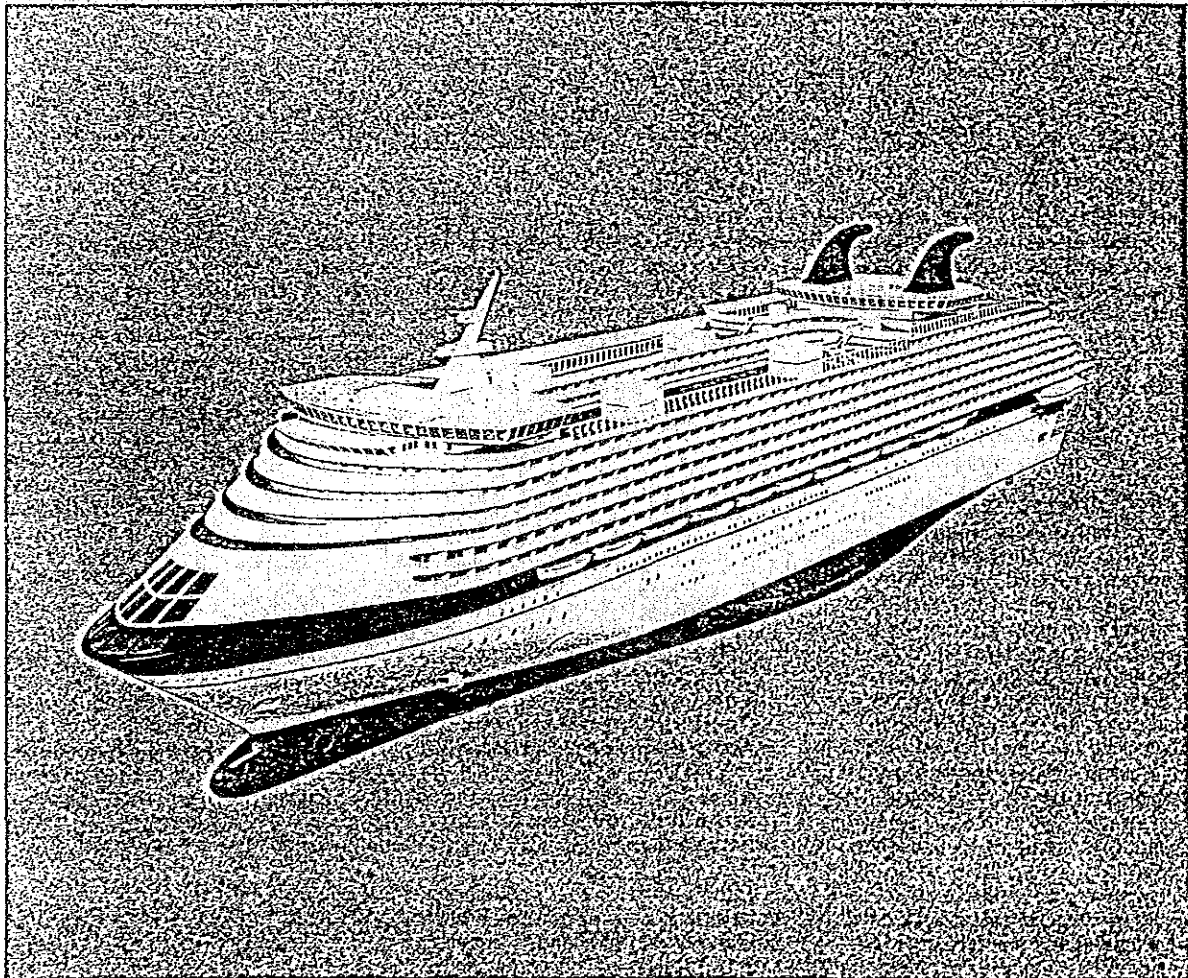
As regards large projects of national importance, the Council for Transport Technology (CTT) of the Ministry of Transport undertakes studies on technological problems and development plans and the projects are implemented at the recommendation of CTT.

A typical example of such projects is the Research and Develop-

ment of Technologies for Intelligent and High-Reliability Vessels which has been conducted since 1983 in accordance with the No. 13 proposal submitted by CTT on August 20, 1982.

Advanced electronics and new materials technologies today are ushering in a technological innovation rapidly and supporters of the foregoing R&D project intend to use such advanced major technologies to build automated ships and save manpower drastically to cope with further reduction of the number of complement.

In concrete terms, the project focuses developing a High-Reliability Marine Propulsion Plant that will operate under stable condition for an extended period without any maintenance. Simultaneously, R&D is being conducted under this project for an "Intelligent Ship Operat-



Scale model of an ultra-modern cruise ship by NKK Corp.

ing Automation System" to embody an intelligent system and joint function of both land bases and ships.

Meanwhile, industrial structures have been undergoing changes recently in various sectors of industry as exemplified in the factory automation (FA) system in their manufacturing processes.

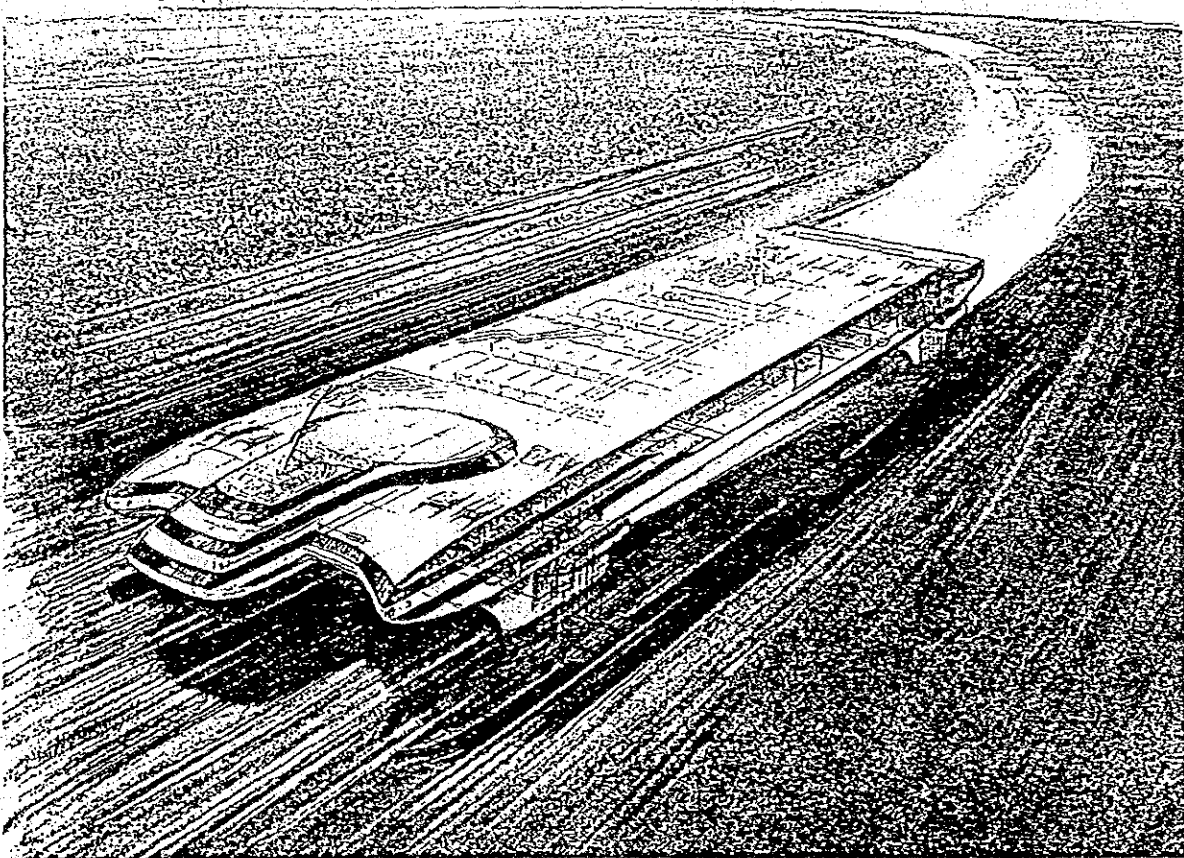
Taking such factors into considerations, a survey regarding the next-generation shipbuilding system is now being carried out with a target set for R&D of CIMS (Computer Integrated Manufacturing System) to transform the shipbuilding industry from the labor-intensive to the knowledge-intensive one.

CIMS is also expected to settle the knotty problems confronting the shipbuilding industry and that is, the order-based production of small quantity of items in a wide variety of

kinds requiring a very large number of equipment and parts.

Furthermore, considering recently growing demand for effective use of space above the ocean, improvement in designing and construction expertise for offshore floating structures such as an offshore floating buildings are also in the development stage.

As mentioned above, R&D in Japan is avidly cooperating with the public and private sectors as well as academic circles and with such joint efforts, this country's shipbuilding industry will maintain its vitality and achieve rapid advancement as an attractive enterprise by building high-performance ships to cope with the future requirements.



A high-speed cargo vessel on the drawing board.

Building Berths and Docks (capacity of 5,000 G/T or more)

(As of April 1, 1988)

Group	Shipbuilding Company	Name of Shipyard	Berth or Dock	Nominal Capacity (G/T)
MHI-Imabari	Mitsubishi Heavy Industries, Ltd.	Kobe Shipyard & Engine Works	Berth No.3	48,000
		Shimonoseki Shipyard & Engine Works	Berth No.2	19,800
		Nagasaki Shipyard & Engine Works	Dock No.1	117,000
			Berth Nos.1-2	45,000
		Koyagi Works	Dock	250,000
		Nagahama Works	Berth No.1	11,000
	Imabari Shipbuilding Co., Ltd.	Imabari Shipyard	Berth No.1	15,900
		Marugame Headquarters	Berth No.1	37,000
			Dock No.1	53,000
	Koyo Dockyard Co., Ltd.		Dock No.1	75,000
Miho Shipyard Co., Ltd.		Berth No.3	8,000	
KHI-NKK	Kawasaki Heavy Industries, Ltd.	Kobe Works	Berth No.4	49,000
		Sakaide Works	Dock No.3	300,000
	NKK Corporation	Tsurumi Works	Berth No.2	55,000
		Tsu Works	Dock No.1	154,100
IHI	Ishikawajima-Harima Heavy Industries Co., Ltd.	Tokyo Shipbuilding & Crane Works	Berth No.1	15,000
			Berth No.2	5,000
		Aioi Shipbuilding & Boiler Works	Berth No.3	91,000
		Kure Shipbuilding & Fabricated Structure Works	Dock No.2	95,000
			Dock No.3	251,000
Hitachi	Hitachi Zosen Corporation	Maizuru Works	Berth No.1	21,000
			Dock No.3	40,400
		Ariake Works	Dock No.1	250,000
	Namura Shipbuilding Co., Ltd.	Imari Shipyard	Dock	80,000

Group	Shipbuilding Company	Name of Shipyard	Berth or Dock	Nominal Capacity (G/T)
Hitachi Group	Naikai Shipbuilding & Engineering Co., Ltd.		Berth No.1	19,800
	Sumitomo Heavy Industries, Ltd.	Oppama Shipyard	Dock	210,000
SHI		Urage Works	Berth No.3	16,800
	Oshima Shipbuilding Co., Ltd.		Dock	80,000
	Sanoyas Corporation	Mizushima Shipyard	Dock	80,000
MES	Mitsui Engineering & Shipbuilding Co., Ltd.	Chiba Works	Dock No.2	213,000
		Tamano Works	Berth No.2	76,300
	Shikoku Dockyard Co., Ltd.		Berth No.1	10,800
Tsunishi-Onomichi-Minaminippon			Berth No.1	49,000
	Tsunishi Shipbuilding Co., Ltd.		Berth No.2	12,000
			Dock	60,900
	Hashihama Shipbuilding Co., Ltd.	Tadotsu Shipyard	Dock No.1	91,000
	Onomichi Dockyard Co., Ltd.		Berth No.2	58,000
	Kanda Shipbuilding Co., Ltd.		Berth No.2	20,000
	Minaminippon Shipbuilding Co., Ltd.		Berth No.2	19,900
	Usuki Iron Works, Ltd.	Saiki	Berth No.2	13,000
	Kurinoura Dockyard Co., Ltd.		Berth No.2	8,200
Kurushima			Dock No.2	22,800
	Shin Kurushima Dockyard Co., Ltd.	Onishi Factory	Dock No.3	75,000
		Taihei Factory	Berth No.1	8,700
	Sasebo Heavy Industries Co., Ltd.		Dock No.4	225,000
	Kanasashi Shipbuilding Co., Ltd.	Toyohashi Works	Dock No.1	30,000
	The Hakodate Dock Co., Ltd.	Hakodate Shipyard	Berth No.1	22,000

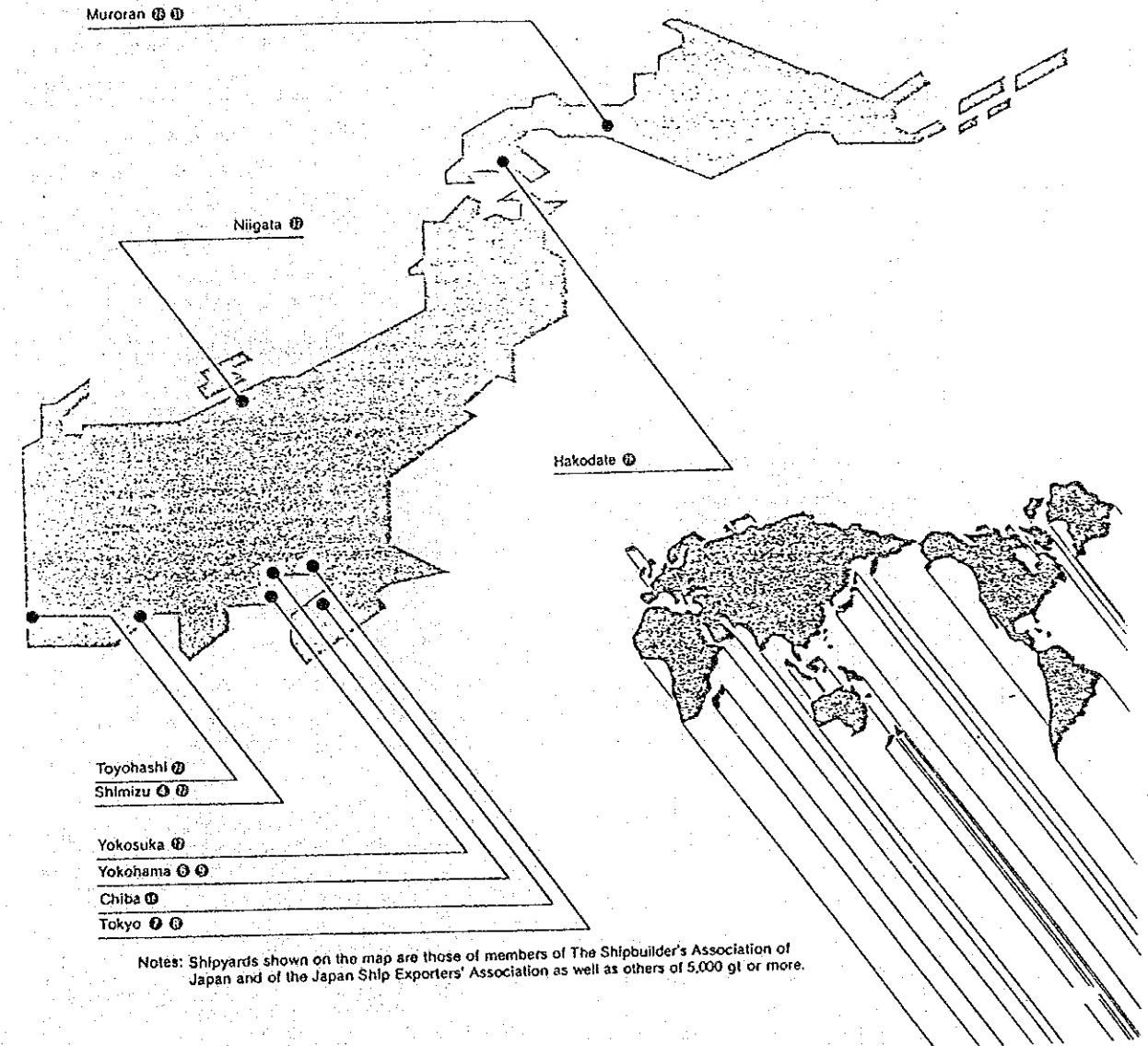
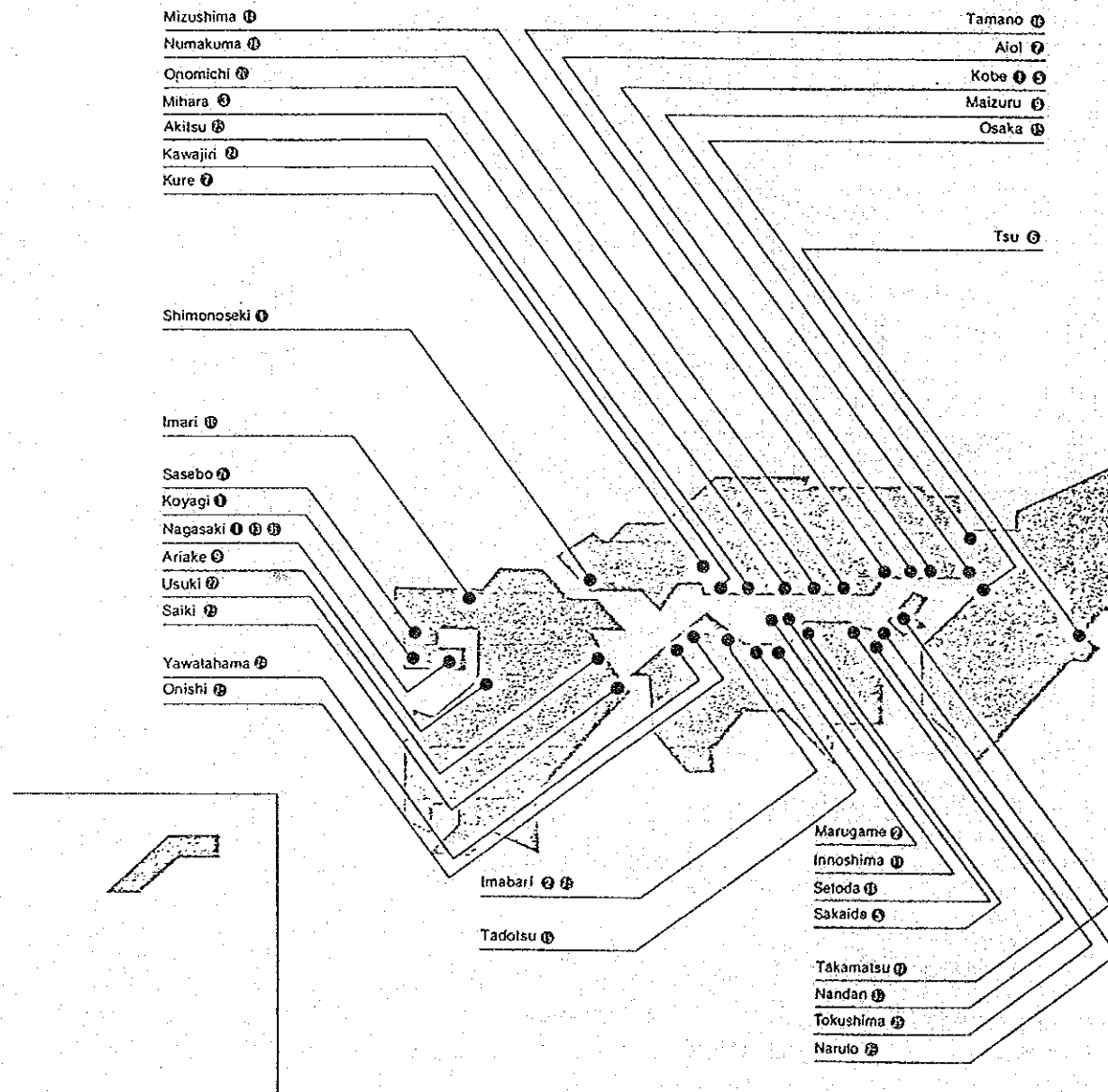
Location of Shipyards

- ① Mitsubishi Heavy Industries, Ltd.
Kobe Shipyard & Engine Works
Shimonoseki Shipyard & Engine Works
Nagasaki Shipyard & Engine Works
Koyagi Works
Nagahama Works
- ② Imabari Shipbuilding Co., Ltd.
Imabari Shipyard
Marugame Headquarters
- ③ Koyo Dockyard Co., Ltd.
- ④ Miho Shipyard Co., Ltd.
- ⑤ Kawasaki Heavy Industries, Ltd.
Kobe Works
Sakaide Works
- ⑥ NKK Corporation
Tsurumi Works
Asano Works
Tsu Works

- ⑦ Ishikawajima-Harima Heavy Industries Co., Ltd.
Tokyo Shipbuilding & Crane Works
Aiol Shipbuilding & Boiler Works
Kure Shipbuilding & Fabricated Structure Works
- ⑧ Ishikawajima Ship & Chemical Plant Co., Ltd.
- ⑨ Hitachi Zosen Corporation
Kanagawa Works
Maizuru Works
Ariake Works
- ⑩ Namura Shipbuilding Co., Ltd.
- ⑪ Naikal Shipbuilding & Engineering Co., Ltd.
Seloda Shipyard
Taguma Shipyard
- ⑫ Sumitomo Heavy Industries, Ltd.
Oppama Shipyard
Uruga Works

- ⑬ Oshima Shipbuilding Co., Ltd.
- ⑭ Sanoyaa Corporation
- ⑮ Osaka Shipbuilding Co., Ltd.
- ⑯ Mitsui Engineering & Shipbuilding Co., Ltd.
Chiba Works
Tamano Works
- ⑰ Shikoku Dockyard Co., Ltd.
- ⑱ Tsuneishi Shipbuilding Co., Ltd.
- ⑲ Hashihama Shipbuilding Co., Ltd.
- ⑳ Onomichi Dockyard Co., Ltd.
- ㉑ Kanda Shipbuilding Co., Ltd.
- ㉒ Minaminippon Shipbuilding Co., Ltd.
- ㉓ Usuki Iron Works, Ltd.
- ㉔ Kurinoura Dockyard Co., Ltd.
- ㉕ Shin Kurushima Dockyard Co., Ltd.
Onishi Factory
Taihei Factory
Hashihama Factory

- ㉖ Sasebo Heavy Industries Co., Ltd.
- ㉗ Kanasashi Shipbuilding Co., Ltd.
Shimizu Head Office
Toyohashi Works
- ㉘ The Hakodate Dock Co., Ltd.
Hakodate Shipyard
Muroran Manufactory
- ㉙ Kanrei Shipbuilding Co., Ltd.
Head Office & Works
Tokushima Works
- ㉚ Nagasaki Shipyard Co., Ltd.
- ㉛ Narasaki Shipbuilding Co., Ltd.
- ㉜ Niigata Engineering Co., Ltd.
- ㉝ Teraoka Shipyard Co., Ltd.



Chronology of Japanese Shipbuilding

- 1947 • The Shipbuilders' Association of Japan (SAJ) and the Japanese Shipowners' Association (JSA) are organized.
- The government-sponsored shipbuilding program is started.
- 1948 • First postwar ship export order is received (for two Norwegian whalers).
- 1950 • Japanese ships are permitted to pass through the Panama Canal.
- The Export-Import Bank is established.
- 1951 • The Japan Development Bank is established.
- Japan/New York liner service is inaugurated.
- 1952 • Japan/Europe liner service is inaugurated. The Allied Occupation Forces return control of Japanese merchant ships to Japanese authorities.
- The Council for Rationalization of Shipping and Shipbuilding Industries is set up.
- 1953 • The Temporary Law for Coordination of Shipbuilding is promulgated.
- 1954 • Japan Ship Exporters' Association is established.
- 1955 • The first export ship boom starts.
- 1956 • Japan leads the world in ship launchings with 325 ships aggregating 1,746,425 gt, according to Lloyd's Register of Shipping.
- Egypt declares nationalization of the Suez Canal.
- The Suez Canal is closed to traffic.
- 1957 • The Suez Canal is reopened.
- 1958 • The Japan-Soviet Trade Agreement is signed (implications for shipbuilders: fishing boats for herring, tuna etc.).
- 1959 • NBC's 114,000 dwt tanker, the world's first 100,000-ton class oil tanker, is completed.
- The European Economic Community (EEC) is established.
- 1960 • Ishikawajima Heavy Industries Co., Ltd. merges with Harima Shipbuilding Co., Ltd.
- 1961 • The Ministry of Transport announces its five-year program for merchant fleet build-up.
- The world's first automated ship, 9,800 dwt "Kinkasan Maru" is completed.
- 1962 • The world's largest 132,000 dwt tanker "Nissho Maru" is completed.
- 1963 • The second export ship boom starts.
- OECD Board of Directors, Industrial Committee Working Party 5 (Shipbuilding) is established, and Japan participates in it from its first meeting.
- 1964 • A plan for building 20.5 million gt of domestic vessels is formulated under the government's medium-term economic program.
- Three Mitsubishi Heavy Industrial companies amalgamate to form the existing MHI.
- Japan joins the OECD; her contacts with West European shipbuilding nations are activated.
- The First Contact Committee Meeting of the Shipbuilders' Association of Japan and the West European Shipbuilders Informal Contact (WESIC) is held in London.
- 1965 • The third export ship boom starts.
- Leaders of West European shipbuilding circles successively visit Japan.
- OECD Board of Directors, Industrial Committee Working Party 5 (Shipbuilding) is dissolved.
- OECD Board of Directors, Special Working Committee is established.
- Japan Ship Centre (JSC) is established.
- WESIC is reorganized and renamed the Association of West European Shipbuilders (AWES).
- 1966 • The world's largest 210,000 dwt tanker "Idemitsu Maru" is completed.
- Special Working Party of the Board of Directors of OECD is reorganized and renamed the "OECD Board of Directors, Working Party 6".
- 1967 • The Shipbuilding Research Center of Japan is established.
- Mitsui Shipbuilding & Engineering Co., Ltd. merges with Fujinagata Shipbuilding & Engineering Co., Ltd.
- The Middle East War breaks out and the Suez Canal is closed.
- 1968 • A research and development project on a highly centralized control system for ship's super automation is launched.
- The world's largest 326,000 dwt tanker "Universe Ireland" is completed.
- Japan's first containership "Hakone Maru" enters service.
- Ishikawajima-Harima Heavy Industries Co., Ltd. merges with Kure Shipbuilding & Engineering Co., Ltd.
- 1969 • The Shipbuilding Industry Labour and Management Conference is set up.
- OECD unifies deferred payments terms for export ships.
- Japan's first nuclear-powered ship "Mutsu" is launched.
- The world's first LASH vessel is completed in Japan.
- Uraga Dock Co., Ltd. and Sumitomo Heavy Industries Ltd. merge into Sumitomo Shipbuilding & Machinery Co., Ltd.
- Kawasaki Heavy Industries Co., Ltd. merges with Kawasaki Rolling Stock Manufacturing Co., Ltd. and Kawasaki Aircraft Co., Ltd.
- 100% liberalization of corporate capitalization for Japanese shipbuilders.
- 1970 • Ship export contracts begin to be quoted in Yen as the fear of Yen's revaluation increases.
- The world's first "super-automated" ship, the 138,000 dwt tanker "Seiko Maru", is completed.
- 1971 • Domestic shipbuilding orders (7.74 million gt) surpass export shipbuilding orders for the first time in 10 years.
- Japanese shipbuilders suffer substantial exchange losses due to revaluation of the Yen. Yen-based shipbuilding contracts increase in number.
- The world's largest 377,000 dwt tanker "Nisseki Maru" is completed.
- Hitachi Zosen merges with Maizuru Shipbuilding Co., Ltd.
- 1972 • The OECD's working party on shipbuilding holds its meeting for the first time in Tokyo.
- The world's largest 483,000 dwt tanker "Globtik Tokyo" is completed.
- 1973 • Yen is floated.
- The oil crisis breaks out.
- The highest-ever level (33.79 million gt) of newbuilding orders received, in terms of building permits issued.
- 1974 • Newbuilding orders drop drastically due chiefly to the overtonnage of tankers.
- 1975 • The world's largest tanker, 484,000 dwt "Nissei Maru" is completed.
- First LNG carrier is completed in Japan.
- 1976 • The CRSSI, predicting shipbuilding demand in 1980 at 6.5 million gt and shipyards' operating ratio at 65%, recommends curtailment of shipbuilding capacity; the MOT issues its administrative guidance on shipbuilding prices.
- The MOT issues a ministerial recommendation concerning conduct of business to 40 major shipbuilding com-

- panies, setting the upper limits on operating hours for fiscal 1977 and 1978.
- 1977 • The MOT implements guidance to raise export ship prices by 5%, the OECD's working party on shipbuilding meets in Tokyo.
- The MOT issues the second ministerial recommendation concerning conduct of business to 45 major shipbuilding companies, and setting the upper limits on operating hours for fiscal 1978 and 1979.
 - Backlog of orders of Japanese shipbuilders fall below the 10 million gt level.
 - Development of energy-saving marine diesel propulsion plants and system progresses.
 - Affected by the shipbuilding recession, smaller shipyards go bankrupt in succession.
- 1978 • Shipbuilding permits issued for fiscal 1978 drop to 3.22 million gt, only 9.5% of the 33.79 million gt recorded in the peak year of 1973.
- Estimating Japan's existing shipbuilding capacity at 9.8 million Compensated Gross Registered Tons (CGRT) and predicting demand for oceangoing ship construction in 1980 and 1985 at 2.5 million cgrt and 6.4 million cgrt, respectively, the CRSSI recommends implementation of 35% curtailment of current capacity and taking appropriate financial, demand-creating and employment measures.
 - Shipbuilders using shipbuilding berths or docks large enough for the construction of 5,000 gt or bigger ships are designated as a specifically depressed industry under the Law Concerning Provisional Measures for the Stabilization of Specified Depressive Industries, and a basic program for stabilization is promulgated for the disposal of 35% of the existing shipbuilding facilities.
 - The Association for the Stabilization of Specified Shipbuilding Enterprises is established mainly to take charge of the purchases of superfluous shipbuilding facilities.
 - The MOT implements the third ministerial recommendation concerning the operating ratios in fiscal 1979 and 1980 on a cgrt basis to reduce them to 39% of the peak level.
 - Association of The Ship Scrapping Promotion is established.
- 1979 • A depression cartel is formed under the Antimonopoly Act to virtually take over the production curb under the ministerial recommendation, thereby enabling the shipbuilding industry to voluntarily adjust its production activities until fiscal 1980.
- 1980 • The Fair Trade Commission approves the recession cartel for fiscal 1981 as applied for by 35 major shipbuilding companies.
- The disposal of superfluous shipbuilding facilities by an average of 35% is completed, thereby reducing building berths and docks from 133 to 88 in number.
- 1981 • The world's largest ore carrier 267,889 DWT "Hitachi Venture" is completed.
- 1982 • The joint studies on the "High-Reliability Intellectualized Ship" and the "Ultra-Modernization of Production Technologies in Shipyards" are commenced.
- The First Summit Meeting of Japanese and Korean Shipbuilders is held in Pusan, Republic of Korea.
- 1983 • The Minister for Transport issues his administrative guidance to 33 major and medium-size shipbuilders for adjustment of their yard operation to 74% of capacity in fiscal 1983, and to 68% in fiscal 1984.
- Large-volume orders for energy-saving handy type bulk carriers are received by shipbuilders.
 - Meeting of OECD Working Party 6 is held in Tokyo.
- 1984 • Monte Carlo Meeting of SAJ/AWES is held.
- The MOT started research on the "Long Term Vision for the Shipbuilding Industry."
 - The MOT intensifies monitoring of ship prices, to improve the price of ships.
 - Reorganization of the Ministry of Transport.
 - Regular meetings initiated between the Ministry of Transport and the Republic of Korea's Department of Commerce and Industry concerning Japan-Korea shipbuilding problems.
- 1985 • A summit meeting by SAJ and AWES is held in Singapore.
- Japan Foundation for Shipbuilding Advancement announces its study and research results on the "Long Term Vision for the Shipbuilding Industry".
 - An inquiry is submitted to the CRSSI on how the future measures for the business stabilization and revitalization of shipbuilding enterprises should be oriented.
- 1986 • The Council for Rationalization of Shipping and Shipbuilding Industries (CRSSI) reported to the Minister for Transport measures for stabilizing and revitalizing shipbuilding industries.
- Japan and the Republic of Korea exchanged views on shipbuilding problems at both government and private levels.
- 1987 • Temporary Measures Law Concerning Operation Stabilization of Designated Shipbuilding Enterprises was proclaimed and promulgated in April 1, 1987 to promote optimization of production capacity or management as well as systematic disposition of excessive facilities of shipbuilding enterprises capable of building ships of 5,000GT or over.
- Based on the above law, basic policies were established and revealed on June 9 regarding the goal of stabilizing management, business cooperation improvement of production facilities, business diversification, etc.
 - Among the major shipbuilding enterprises in Japan, the antirecession cartel was formed under the Antimonopoly Act and instead of MOT's guidelines, it adjusts shipyard operation. Shipbuilding in 1987 is limited of 3,000,000 CGT on the ship launching basis.
- 1988 • In line with the Temporary Measures Law for Stabilizing Operation of Designated Shipbuilding Enterprises, shipbuilding capacity is reduced by 24%, and groupings of major shipbuilders are reduced to eight.
- Antirecession cartel continues and shipbuilding in 1988 is limited to 2,400,000 CGT on a ship-launching basis.
 - CRSSI reports to the Minister for Transport on measures to be taken to secure the future of the shipbuilding industry.
 - OECD WP6 held in Tokyo.

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