# NAVAL POSTGRADUATE SCHOOL
## Monterey, California






# THESIS

EXTERNAL AND INTERNAL FACTORS SHAPING
THE JAPAN MARITIME SELF-DEFENSE FORCE
(JMSDF)

by

Shinji Tsukigi

June, 1993

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## REPORT DOCUMENTATION PAGE

| | | | |
|---|---|---|---|
| 1a Report Security Classification: Unclassified | | 1b Restrictive Markings | |
| 2a Security Classification Authority | | 3 Distribution/Availability of Report | |
| 2b Declassification/Downgrading Schedule | | Approved for public release; distribution is unlimited. | |
| 4 Performing Organization Report Number(s) | | 5 Monitoring Organization Report Number(s) | |
| 6a Name of Performing Organization<br>Naval Postgraduate School | 6b Office Symbol<br>*(if applicable)* AS | 7a Name of Monitoring Organization<br>Naval Postgraduate School | |
| 6c Address *(city, state, and ZIP code)*<br>Monterey CA 93943-5000 | | 7b Address *(city, state, and ZIP code)*<br>Monterey CA 93943-5000 | |
| 8a Name of Funding/Sponsoring Organization | 6b Office Symbol<br>*(if applicable)* | 9 Procurement Instrument Identification Number | |
| Address *(city, state, and ZIP code)* | | 10 Source of Funding Numbers | |
| | | Program Element No / Project No / Task No / Work Unit Accession No | |

11 Title *(include security classification)* EXTERNAL AND INTERNAL FACTORS SHAPING THE JAPAN MARITIME SELF-DEFENSE FORCE (JMSDF)

12 Personal Author(s) Shinji Tsukigi

| 13a Type of Report | 13b Time Covered | 14 Date of Report *(year, month, day)* | 15 Page Count |
|---|---|---|---|
| Master's Thesis | From To | 1993 June 17 | 91 |

16 Supplementary Notation The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

| 17 Cosati Codes | | | 18 Subject Terms *(continue on reverse if necessary and identify by block number)* |
|---|---|---|---|
| Field | Group | Subgroup | Japan Maritime Self-Defense Force |
| | | | |

19 Abstract *(continue on reverse if necessary and identify by block number)*

This thesis examines factors shaping the Japan Maritime Self-Defense Force (JMSDF). It focuses on issues concerning Japan's financial resources to improve the JMSDF in the future and the level of complementarity between the JMSDF and the U.S. Navy.

The examination reveals that there is a high level of complementarity overall between the JMSDF and the U.S. Pacific Fleet. This relationship is most likely going to continue into the future. The JMSDF most likely will not to have the financial resources it will need to enhance its inventory much beyond its current force level because of the mounting pressure of other domestic budgetary needs and a lower expected Gross National Product (GNP) rate of growth.

It is concluded that the future direction of the JMSDF will be that of keeping an effective complementary relationship with that of the U.S. Navy.

| 20 Distribution/Availability of Abstract | 21 Abstract Security Classification | |
|---|---|---|
| X unclassified/unlimited ___ same as report ___ DTIC users | Unclassified | |
| 22a Name of Responsible Individual<br>Katsukiaki L. Terasawa | 22b Telephone *(include Area Code)*<br>(408) 656-2463 | 22c Office Symbol<br>AS/TK |

DD FORM 1473,84 MAR 83 APR edition may be used until exhausted security classification of this page

All other editions are obsolete Unclassified

Approved for public release; distribution is unlimited.

External and Internal Factors Shaping
the Japan Maritime Self-Defense Force
(JMSDF)

by

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Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
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## ABSTRACT

This thesis examines factors shaping the Japan Maritime Self-Defense Force (JMSDF). It focuses on issues concerning Japan's financial resources to improve the JMSDF in the future and the level of complementarity between the JMSDF and the U.S. Navy.

The examination reveals that there is a high level of complementarity overall between the JMSDF and the U.S. Pacific Fleet. This relationship is most likely going to continue into the future. The JMSDF most likely will not have the financial resources it will need to enhance its inventory much beyond its current force level because of the mounting pressure of other domestic budgetary needs and a lower expected Gross National Product (GNP) rate of growth.

It is concluded that the future direction of the JMSDF will be that of keeping an effective complementary relationship with that of the U.S. Navy.

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# I. INTRODUCTION

## A. BACKGROUND

The end of the Cold-War has influenced Japanese and United States (U.S.) defense forces in many respects. Plans for the reduction of the U.S. military have started to take shape. The U.S. Department of Defense publication, "A Strategic Framework for the Asian Pacific Rim: Looking toward the 21st Century," outlines the rearrangement of U.S. military forces. These changes, in turn, are expected to influence the future role of Pacific Rim allies, in particular, the Japan Maritime Self-Defense Force (JMSDF).

## B. PURPOSE

The purpose of this thesis is to analyze "external and internal factors shaping the JMSDF."

The primary research questions are: "Does JMSDF have the financial resources to improve its forces in the future?" And "What has been and will be the level of complementarity between the JMSDF and the U.S. Navy?"

## C. FRAMEWORK OF THE RESEARCH

### 1. Outline

There are four parts to this thesis. The first part provides background information and an introduction to this research. The second part examines and analyzes the JMSDF's financial resources for improving its forces. The third part examines and analyzes the level of complementarity between the JMSDF and the U.S. Navy. The final part presents findings and conclusions.

## 2. Methodology

Data on Japan's national budget, the JMSDF budget, the procurement prices of ships and aircraft, and other information was collected from the Japan Maritime Staff Office in Tokyo. This data was mainly used to conduct analysis as described in the second part of this thesis. Jane's Fighting Ships and Aircraft, 1992-93, data and data from "The Military Balance 1992-1993" (The International Institute for Strategic Studies) were used to conduct a simple statistical comparison in the third part.

## 3. Scope

Internal factors refer to Japanese domestic matters and external factors refer to matters outside of Japan. In this thesis I examined budgetary matters as one of the internal factors and the relationship between the JMSDF and the U.S. Navy as one of the external factors, because I judged that these factors were the most fundamental factors shaping the JMSDF. Therefore I didn't deal with other internal factors such as Japan's Consitution or other external factors such as Japan's relations with East Asian countries.

## II. RESOURCES FOR JMSDF IMPROVEMENT

### A. OUTLINE OF JAPAN'S DEFENSE PROGRAM

The defense policy Japan pursues under its constitution is based on the "Basic Policy for National Defense" (see Appendix A) adopted by the National Defense Council and approved by the Cabinet in May 1957. Since 1957, defense buildup plans were put into effect based on this basic policy. Table 1 shows a history and outline of Japan's Defense Program.

At first in order to implement its basic policy, Japan put four Defense Buildup Plans into effect. These plans all stressed the importance of improving the fighting capat ities of the Japan Self-Defense Forces (JSDF) and preparing the military for potential crises (see Appendix B).

With the completion of the Fourth Defense Buildup Plan in FY 1976, the "National Defense Program Outline (NDPO)" was adopted by the National Defense Council and approved by the Cabinet in October 1976.

"The NDPO is based on the concept of basic defense capability. The basic defense capability is aimed at enabling the country to be fully on the alert in peacetime and to effectively counter any limited and small-scale act of aggression."[1]

"Since the NDPO was adopted by the Cabinet, the Government has ceased to formulate defense buildup plans covering a fixed period of time as it did before. Instead, it was decided to adopt mainly the so-called 'single fiscal-year

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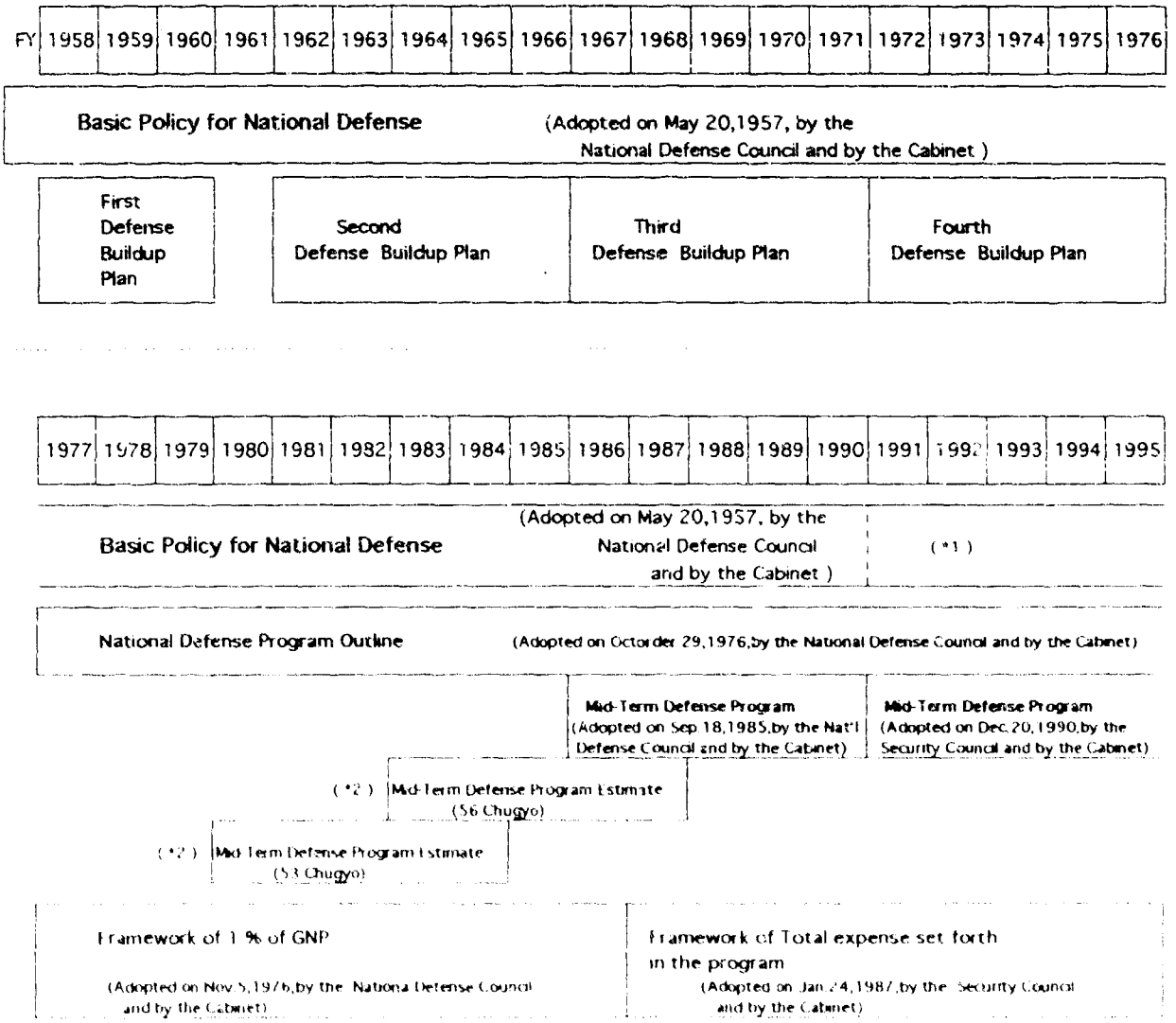
[1]Defense of Japan 1991 (Japan Defense Agency) p80

# TABLE 1
## Outline of Japan's Defense Buildup




(*1) : Basic Policy on Defense Planning in and after FY1991 (Adopted on Dec. 19 1990, by the Security Council and by the Cabinet)

(*2) : "Mid-Term Defense Program Estimate" is an intra-department document of the Defense Agency formulated for the purpose of serving as a reference when the Agency draws up its annual defense plan

Note: See Appendix B for brief description of buildup plans

Source: Zusetsu Nihon No Zaisei (Toyokeizai Shinposha) P197

formula' by which a necessary decision is made annually."[2] Unlike a series of previous Defense Buildup Plans, the estimated total expenditures required to implement the programs were not specified. "There was also a need to reflect a public mood for tighter restrictions on a defense budget that had increased 17.7% in 1970 to 21% in 1975."[3] On October 5, 1976, the government decided on a "Defense Buildup for the Time Being," in which placing a ceiling on defense expenditures of 1% of GNP (the so-called framework of 1 percent of GNP) was instituted.

In September 1985, the government formulated the Mid-Term Defense Program to be implemented during the period from FY1986 through FY1990. This was elevated to the status of government plan by subjecting mid-term estimates by the Defense Agency to National Security Council debates for the purpose of ensuring tighter civilian control.

In the process of the compilation of the FY1987 budget, it became certain that defense expenditures exceeded 1% of GNP. Through heated discussions among political parties, the Cabinet finally decided to discard the framework of 1 percent of GNP. Due to a need for a new limit instead of the framework of 1 percent of GNP, in January 1987, the "Defense Buildup for the Future" plan was adopted by the Security Council and approved by the Cabinet (see Appendix C).

With the completion of the Mid-Term Defense Program in FY 1990, the "Basic Policy on Defense Planning in and after FY1991" was adopted by the National Defense Council and approved by the Cabinet on December 19, 1990. This Policy stated that "The decision was based on the judgment that a trend

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[2]Defense of Japan 1982 (Japan Defense Agency) p110

[3]Managing Defense: Japan's Dilemma (Harrison M. Holland) p49

toward the stability of international relations, on the premise of which the NDPO was formulated, is currently emerging in a more advanced form--and that it is appropriate to continue efforts for defense buildup in line with the basic concept of the NDPO."[4] In accordance with this judgment, on December 20, 1990, the government formulated the Mid-Term Defense Program to be implemented during the period from FY1991 through FY1995.

## B. JAPAN'S DEFENSE EXPENDITURES

### 1. Trends in Defense Expenditures

From Figure 1, the ratio of the Defense Expenditures to GNP has been under 1 percent of GNP since FY1967 except in FY1987 through FY1989. The ratios in FY1987 through FY1989 were 1.004, 1.013, and 1.006 percent of GNP respectively (see Appendix D). Defense expenditures to GNP increased during the 1980's and decreased since FY1990.

With respect to the ratio of defense expenditures to national budget, the ratio decreased from a high of 11.32% in FY1958 to 5.13% in FY1981, from FY1981 to FY1988 the ratio increased to 6.53% then turned down again till FY1991 settling at 6.3% in FY1992.

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[4]Defense of Japan 1991 (Japan Defense Agency) p95

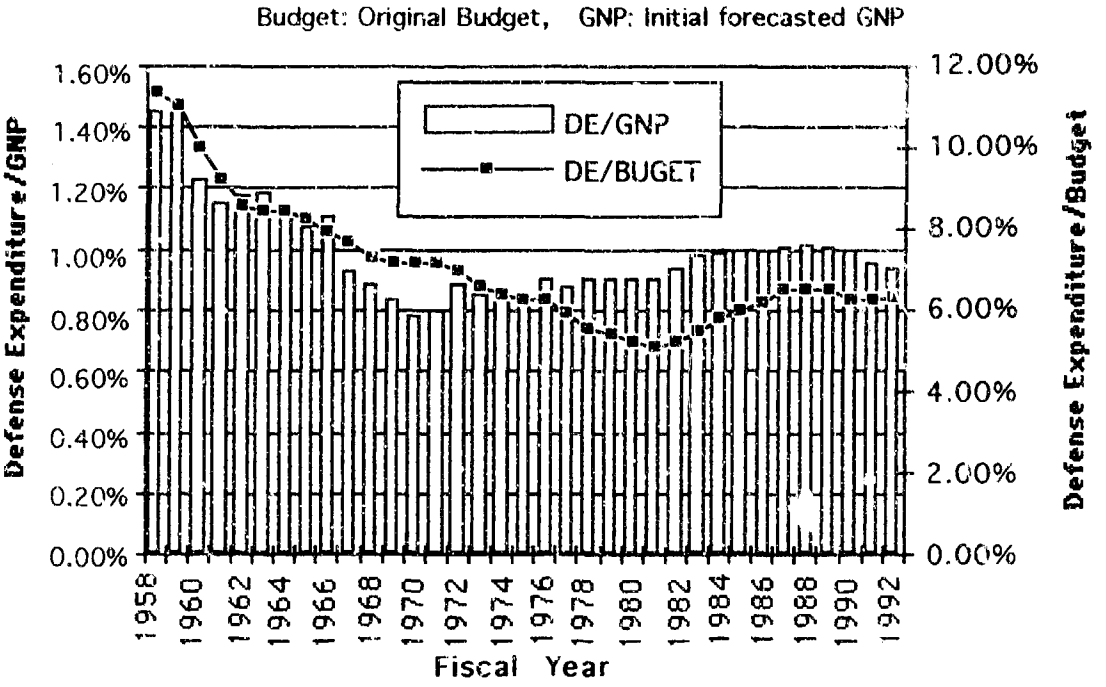
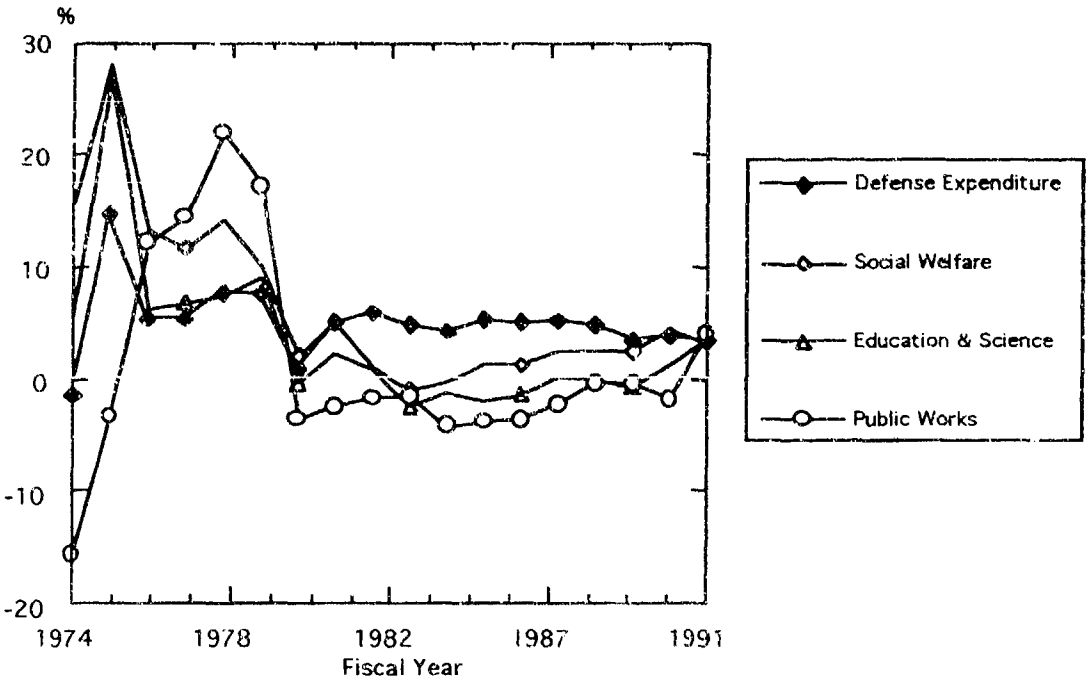



Figure 1
Trend in Japan's Defense Expenditure(DE)/GNP & DE/Budget

In comparison to the growth rate from previous fiscal years of other major budget items (Social Welfare, Education and Science, and Public Works), the growth rate of the defense expenditure for the first time exceeded those of other major budget items. This continued till FY1989 (see Figure 2 and Appendix E). From FY1982 through FY1988 the growth rate of the defense expenditures exceeded the entire budget. We can see here a clear shift of priority toward defense during the 1980's.



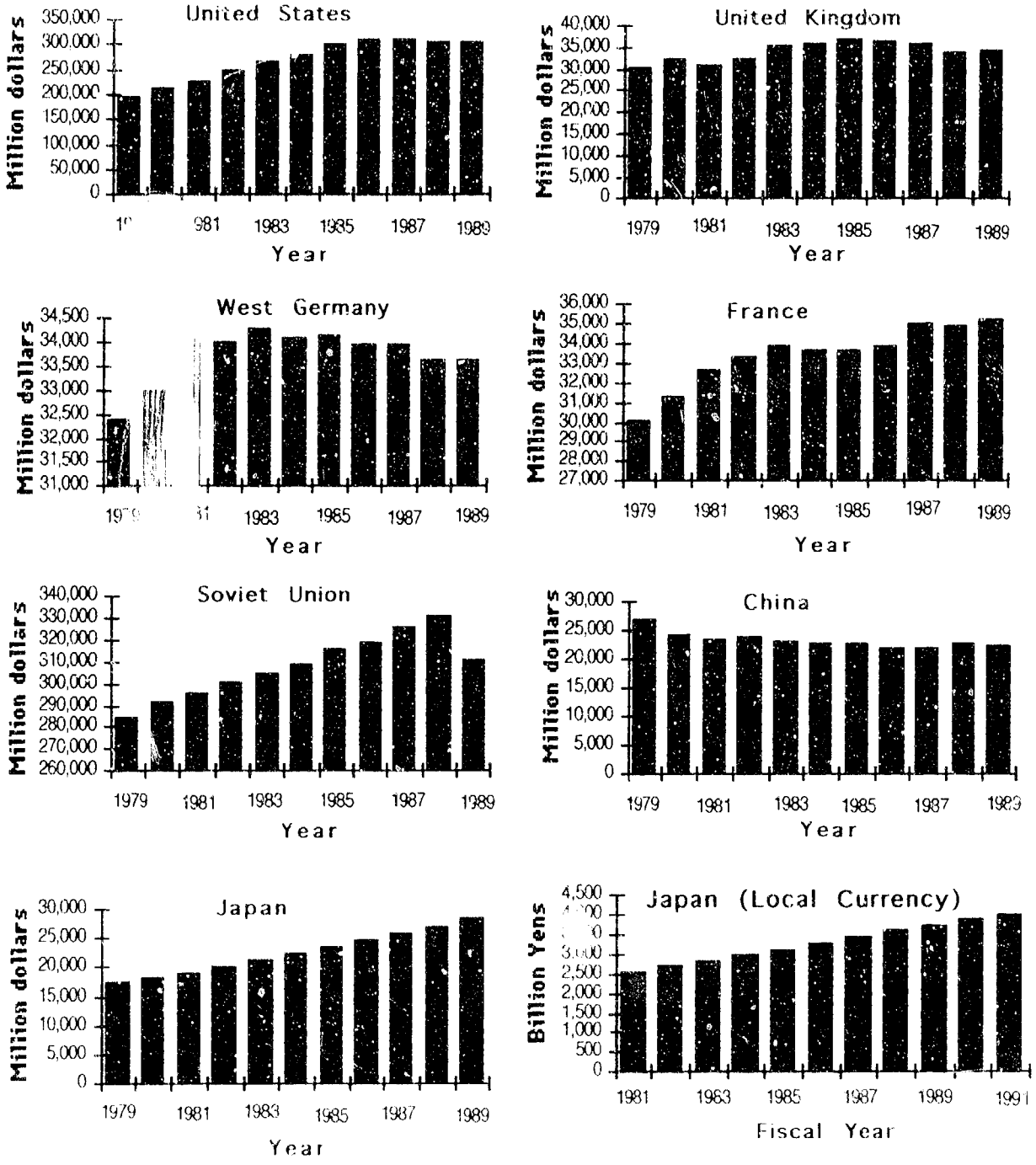

Note: This chart is expressed in real Yens, based on FY1985 prices and a FY1985 deflator.

Figure 2
Growth Rate in Major Account Expenditures

In comparison to the defense expenditures of other countries, Japan's defense expenditures have been increasing steadily year by year (see Figure 3). United States' defense expenditures declined slightly year by year since 1987. Soviet Union's defense expenditures declined substantially in 1989 and China's defense expenditures have been constant or slightly declining during the 1980's.

2. Trends in Defense Expenditures Classified by Expenses

Figure 4 shows the trend in Japan's Defense Expenditures classified by expenses (personnel and provisions, current-year obligatory outlay, and current-year materials). Personnel and provisions expenses are outlays for

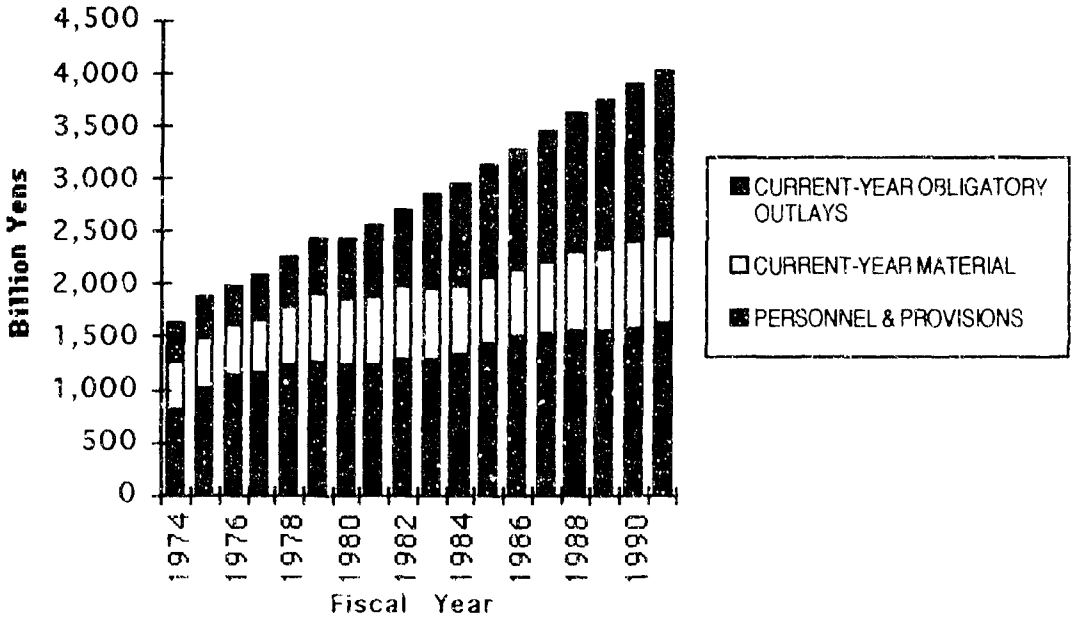



Note: These charts are expressed in U.S. dollars, based on 1989 prices and using a 1989 deflator. Japan's defense expenditures (local currency) are expressed in Yens, based on FY1985 prices and using a FY1985 deflator.

Source: World Military Expenditures and Arms Transfers 1990 (U.S. Arms Control and Disarmament Agency)

Figure 3
Defense Expenditures

pay and meals for JSDF personnel. Current-year obligatory outlays are expenses of contract authorization and expenses for continued projects already approved by the Diet by the preceding fiscal year. Current-year materials expenses are payable in the current fiscal year for the repair and improvement of equipment, for purchase of oil, for the education and training of JSDF personnel and for the procurement of new equipment. From Figure 4 one can see that the growth rate from previous years of current-year obligatory expenses were higher than those of other expenses (see Appendix F).




Note: This chart is expressed in real Yens, based on FY1985 prices and a FY1985 deflator.

Figure 4
Trends in Japan's defense Expenditures (by Expenses)

Figure 5 shows the share trend in Defense Expenditures classified by expenses. From this figure one can see that the share of current-year obligatory outlays has been increasing year by year since FY1979. On the

other hand, the shares of personnel and provisions expenses and current-year materials expenses have been decreasing.

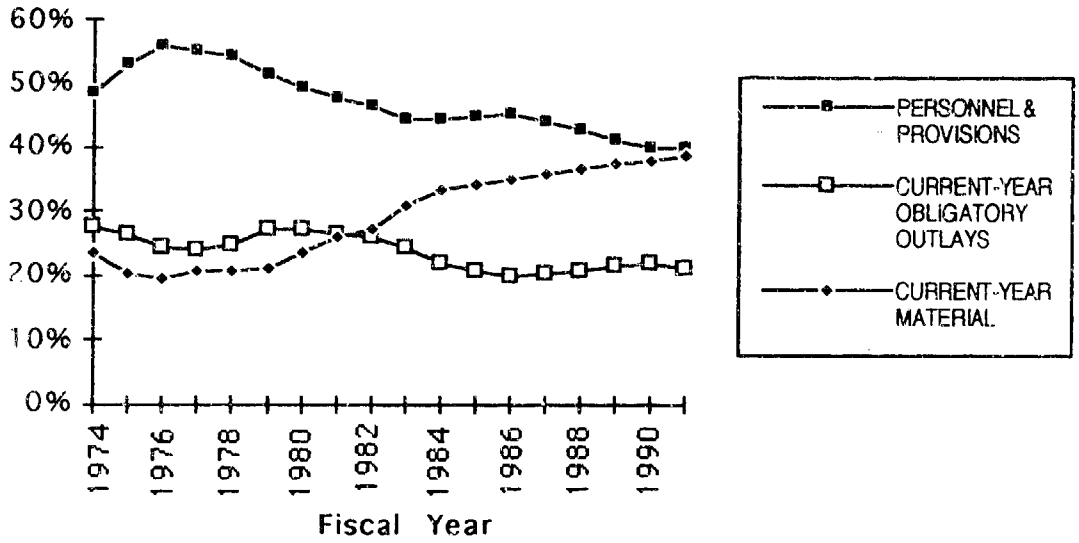
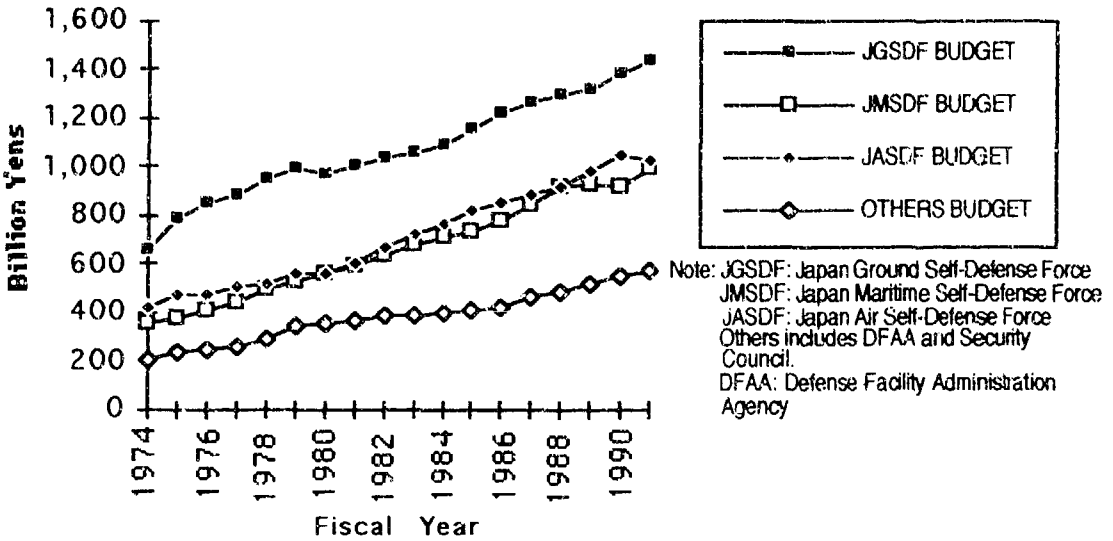



Figure 5
Trends in Japan's Defense Expenditures (By Expenses)

3. Trends in Defense Expenditures classified by Organization

Figure 6 shows the trends of the Service budgets since FY1974 and Figure 7 shows their share trends. Figure 6 shows steady budget growth for each Service. From Figure 7, in recent years the budget share of the JGSDF has been about 35% of the entire Defense Expenditure. It has decreased by 5% from what it was in FY1980. About 25% of Defense Expenditures is the JMSDF budget and that is almost the same as the JASDF budget (see Appendix G).




Note: This chart is expressed in Yens, based on FY1985 prices and using a FY1985 deflator.

Figure 6
Trends in Japan's Defense Expenditures (by Organization)

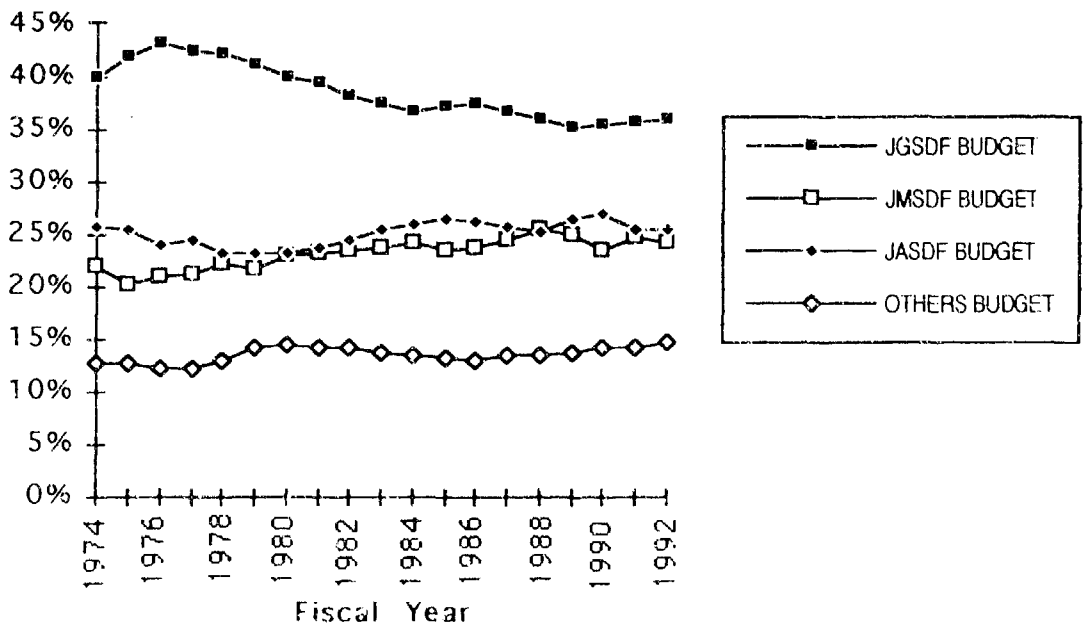



Figure 7
Share Trends in Japan's Defense Expenditures
(by Organization)

When we look into the ratio of each Service's budget to GNP, we can see the difference between data before FY1981 and data after FY1982. Table 2 shows the average ratio of each Service budget to GNP (also see Appendix H).

TABLE 2 Ratio of Each Service Budget to GNP

| | Average Ratio (FY1974-FY1981) | Average Ratio (FY1982-FY1991) | Change |
|---|---|---|---|
| JGSDF | 0.36% | 0.36% | 0% |
| JMSDF | 0.19% | 0.24% | 0.05% |
| JASDF | 0.21% | 0.25% | 0.04% |

The increase of Japan's Defense Expenditures compared to GNP during the 1980's was caused by increases in the JMSDF and JASDF budgets.

4. JMSDF Budget

As stated above, the JMSDF budget is approximately 25 percent of the entire defense budget. Figure 8 shows the share trend in the JMSDF budget classified by expenses (personnel and provisions, current-year obligatory outlays, and current-year materials) (see Appendix I). Figure 9 shows the share trend in the JMSDF budget classified by three components, that is, personnel and provisions, front-line, and others. Front-line expenses are outlays for the procurement of ships and aircraft, etc. From Figures 8 and 10, since the late 1970's current-year obligatory outlay expenses and front-line expenses are larger compared to other expenses of the JMSDF budget. The priority of the JMSDF budget was set for shipbuilding expenses and aircraft procurement expenses (see Figure 10 and Appendix J).

We will find this change more clearly, when we look into the modernization of ships and aircraft later.

Another significant change is that the JMSDF budget was allocated most to personnel and provisions expenses during FY1974 through FY1979. It was caused by the cost increase driven by the so-called oil crisis. The inflation driven by the effect of the so-called oil crisis impacted substantially on the materials costs for shipbuilding also. As a result of the increased materials prices, shipbuilding could not be performed smoothly in accordance with the original program.

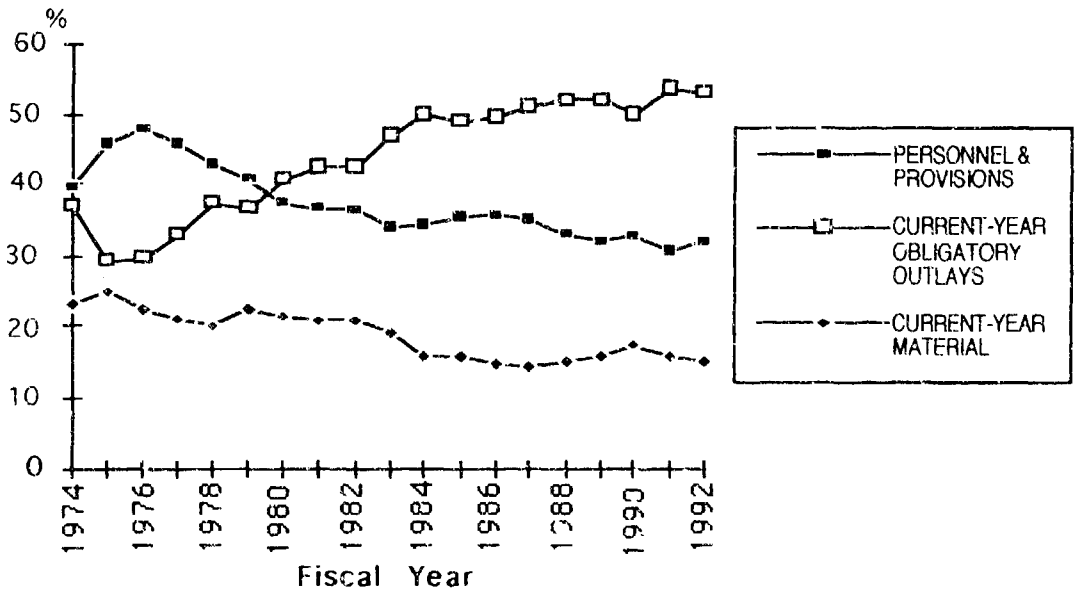



Figure 8
Share trends in JMSDF Budget (by Expenses)

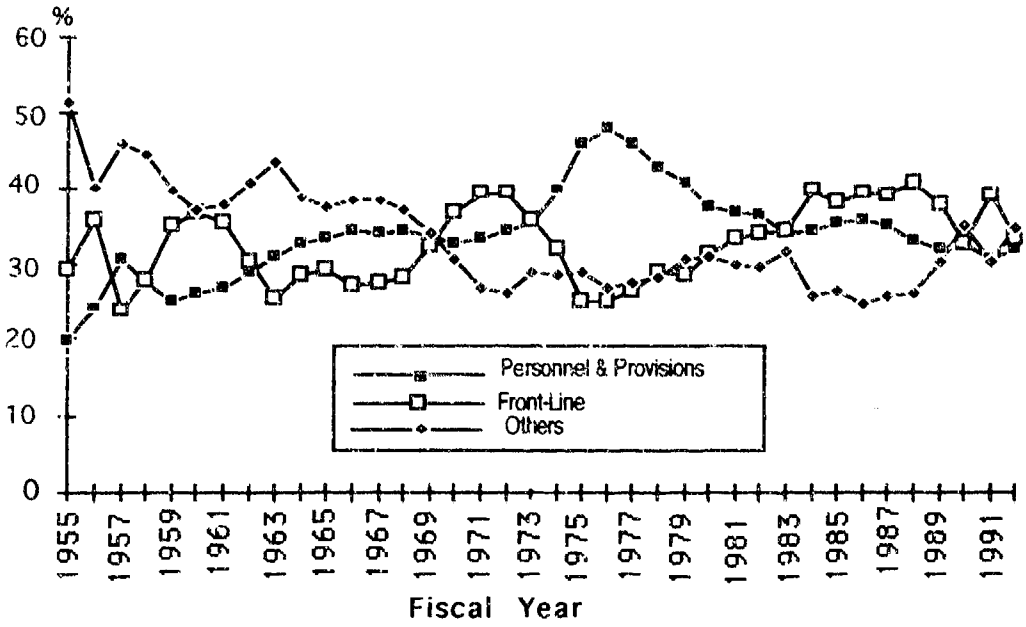
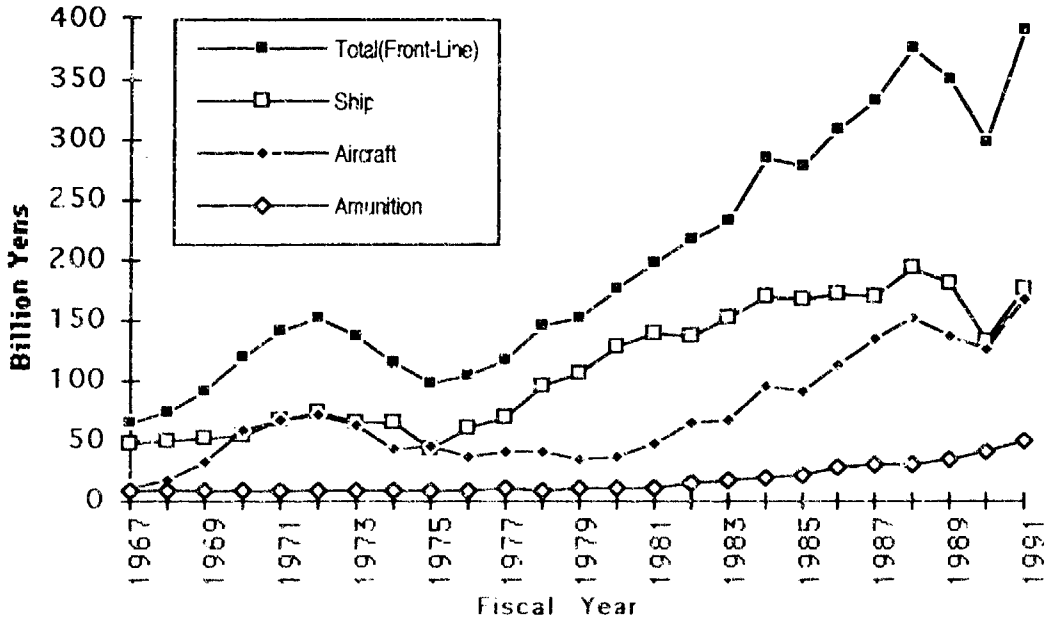



Figure 9
Share Trends in JMSDF Budget (by 3 Components)




Note: This chart is expressed in real Yens, based on FY1985 prices and a FY1985 deflator.

Figure 10
Trends in JMSDF Front-Line Expenses

Table 3 clearly shows the effect of the oil crisis driven inflation on the cost of shipbuilding. The cost of ships scheduled in FY1973 increased by 30%-60% from the original cost. These additional expenses were paid from the construction fund that was supposed to have been spent for a DE and a SS scheduled for FY1974.

TABLE 3 Oil Crisis Effect on the Shipbuilding Program

| Fiscal Year | Ship type | Ship Name | Ton | Original Cost (1,000Yen) | Revised Cost (1,000Yen) | Change Cost (1,000Yen) | Change (%) |
|---|---|---|---|---|---|---|---|
| 1973 | DDG | ASAKAZE | 3,850 | 22,968,064 | 30,136,794 | 7,168,730 | 31.2 |
| | DE | NOSHIRO | 1,500 | 5,101,807 | 8,131,297 | 3,029,490 | 59.4 |
| | SS | YAESHIO | 1,850 | 9,808,169 | 15,232,172 | 5,424,003 | 55.3 |
| 1974 | DD | YUGUMO | 2,150 | 11,610,697 | 12,987,931 | 1,377,234 | 11.9 |
| | DE | | | 6,117,329 | 0 | -6,117,329 | -100.0 |
| | SS | | | 11,037,005 | 0 | -11,037,005 | -100.0 |

Source: Kaijojieitai Yoyan Jimuteiyo (Kaijobakuryokanbu)

## C. SHIP AND AIRCRAFT EXPANSION IN THE JMSDF

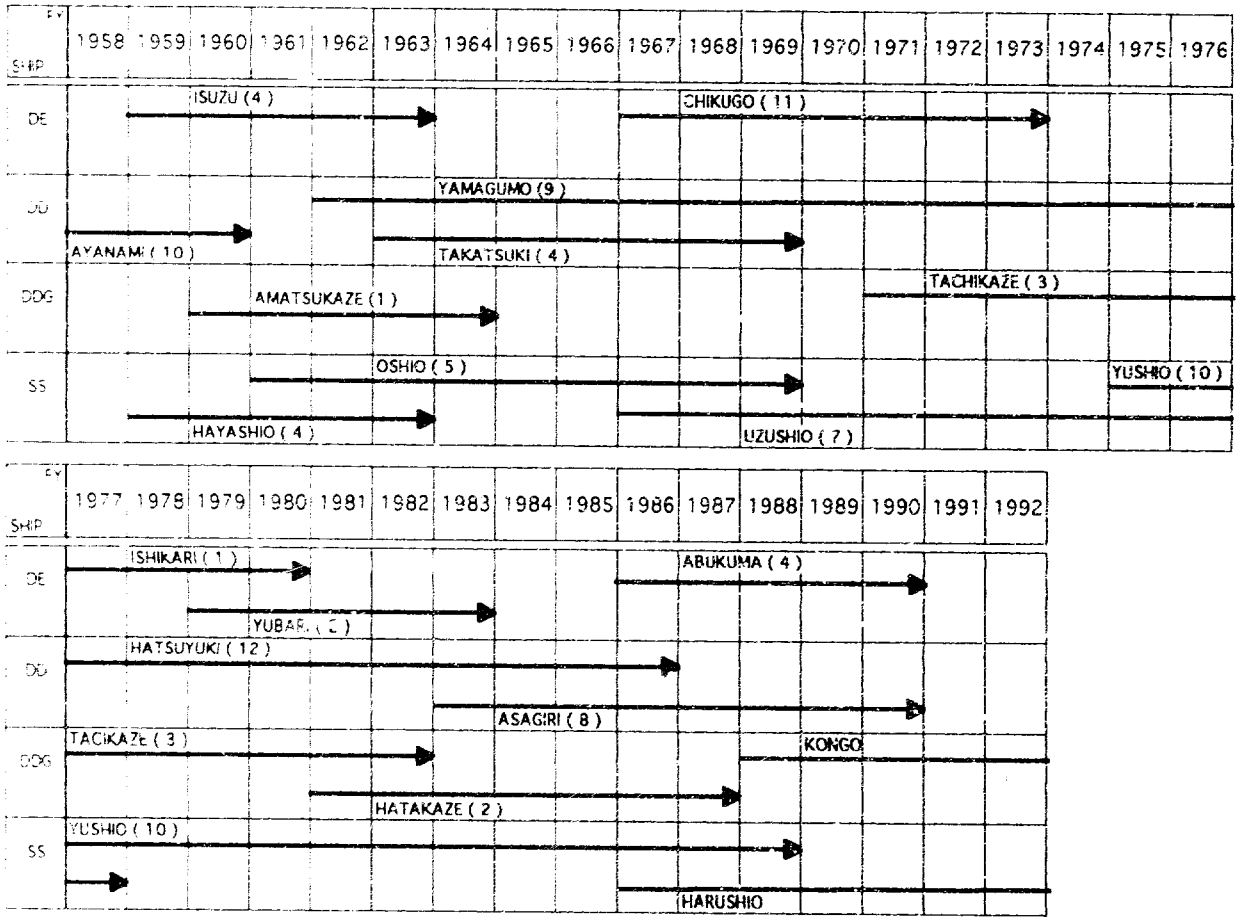
### 1. Ship Expansion

From observing ship construction over 30 years in the JMSDF, new ship types have been created every 7 to 10 years on average (see Table 4). The ship expansion pace has been substantially fast. Needless to say, new ship types bring increased costs.

Figure 11 shows trends in shipbuilding costs for the different types of ships (Escort Vessel : DE, Destroyer : DD, Guided Missile Destroyer : DDG, Submarine : SS)(see Appendices K and L). In every type the real building cost per ship increased substantially. For example, in DE the real building cost of ABUKUMA is 3.2 times as that of KITAKAMI. In the same manner, in DD, the

TABLE 4

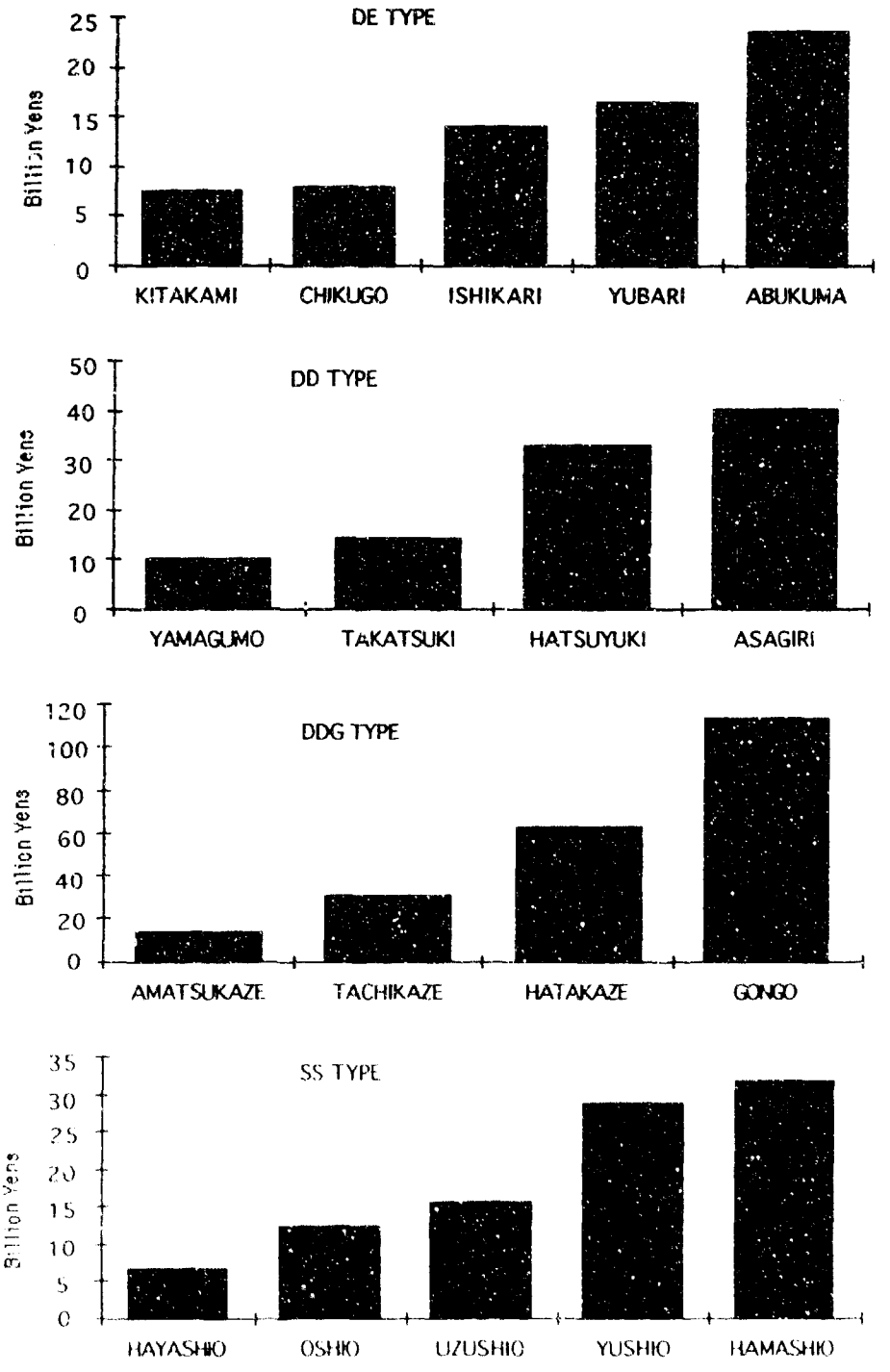
Trends in JMSDF Ship Construction




Note : 1. Number in parenthesis is number of ships built as the same type.

2. ⟶ is a period of ship building in the same type.

Source: Kantei To Kokukisyu (Kaijojieishinbunsya)




Note: These charts are expressed in real Yens based on FY1985's prices and a 1985 deflator.

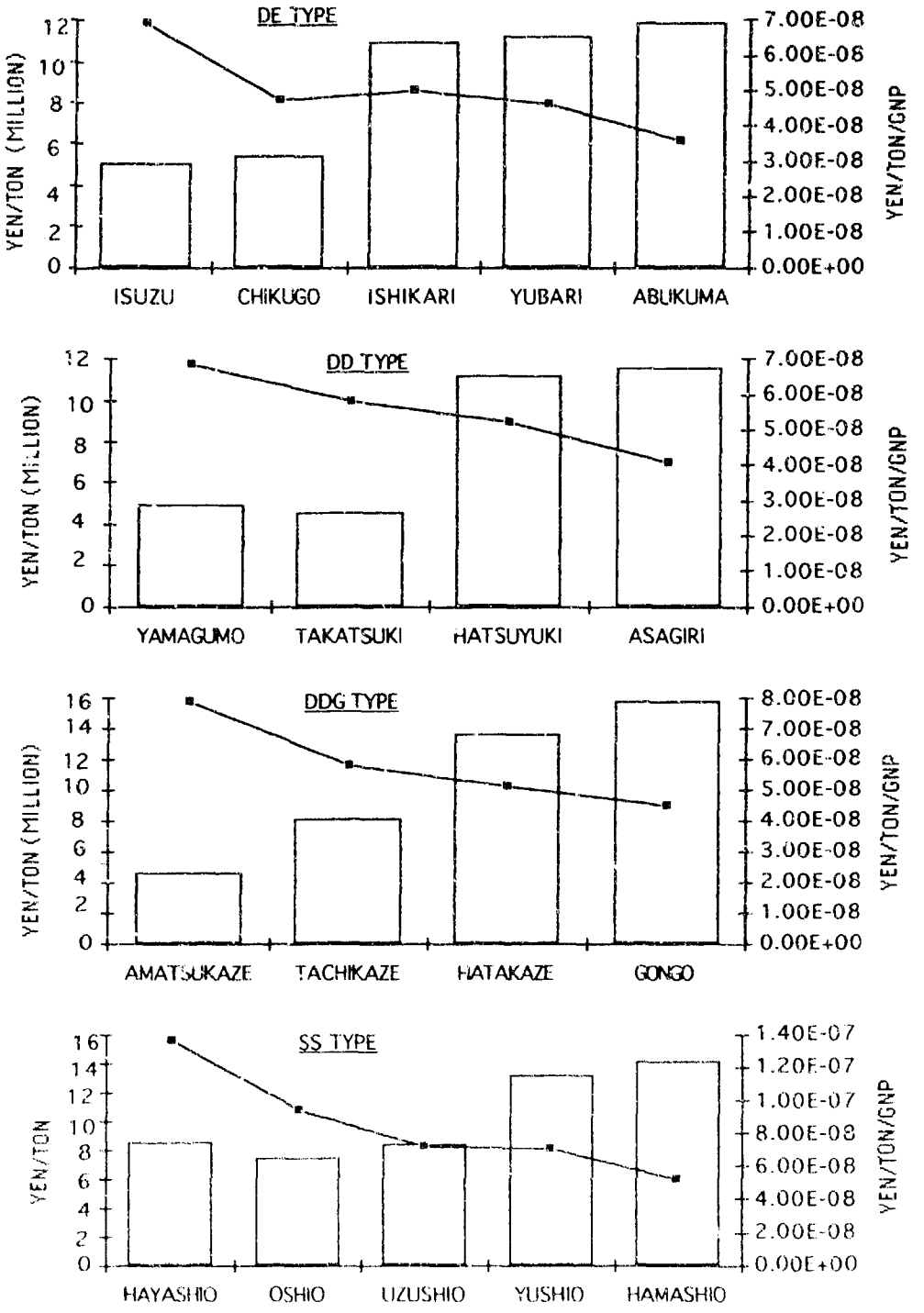
Figure 11
Trend of Shipbuilding Cost (by Ship type)

ASAGIRI's cost is 4 times of YAMAGUMO's, in DDG, the KONGO's cost is 8 times of AMATSUKAZE's, in SS, the HARUSHIO's cost is 4.8 times of HAYASHIO's (see Appendix M).

In terms of the real building cost per ship per standard displacement ton, we can see an ascendant trend like in the real building cost per ship (see Figure 12). We also notice that there is a big difference in the real building cost per ship per standard displacement ton between CHIKUGO and ISHIKARI in DE, between TAKATSUKI and HATAUKI in DD, between TACHIKAZE and HATAKAZE in DDG, and between UZUSHIO and YUSHIO in SS. This big difference means significant qualitative improvement in ship's system performance. In fact, there were introductions of computerized systems which control and access much tactical information and also gas turbines for main propulsion machinery. In addition, the JMSDF is starting to equip missile weapon systems on all new ships. This ship modernization with high technology started in the late 1970's. Ship modernization with highly efficient systems had an impact on the real ship building costs. As a result, the real ship building costs rose suddenly.

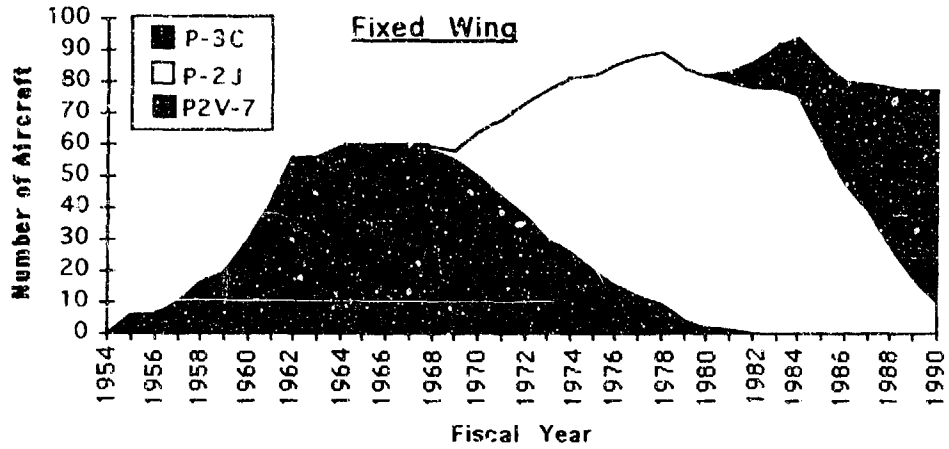
2. Aircraft Expansion

In the JMSDF almost all combat aircraft are Anti-Submarine Warfare (ASW) aircraft. From Figure 13 (also see Appendix N), we can see clearly the trend of ASW aircraft inventories over 30 years in the JMSDF. New type aircraft have been acquired about every 12 years in both fixed-wing aircraft and helicopters. There were sudden increases of the real costs between HSS-2 and HSS-2B in helicopters and between P-2J and P-3C in fixed-wing aircraft. The real cost of HSS-2B is 2.5 times as that of HSS-2 and P-3C cost is 2.3 times




Note: 1. Yen/Ton in these charts are expressed in Yens, based on FY1985 prices and using a FY1985 deflator.
2. Line graph is measured by the right-hand scale.

Figure 12
Trend of Yen/Ton and Yen/Ton/GNP



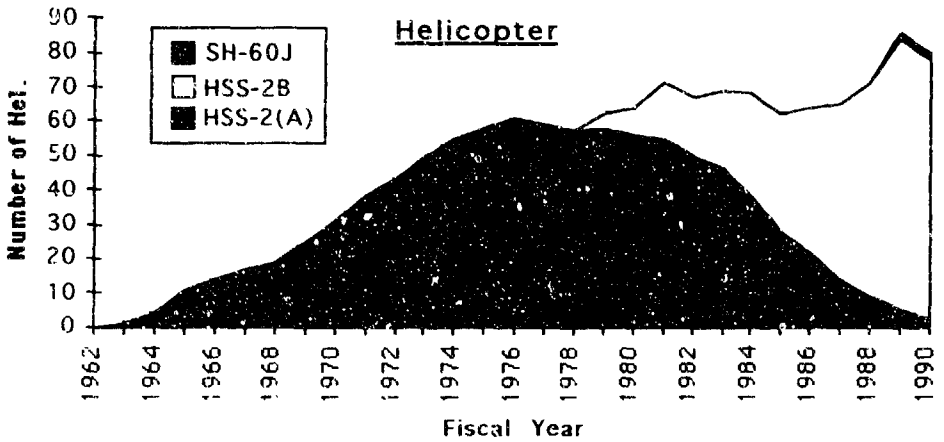
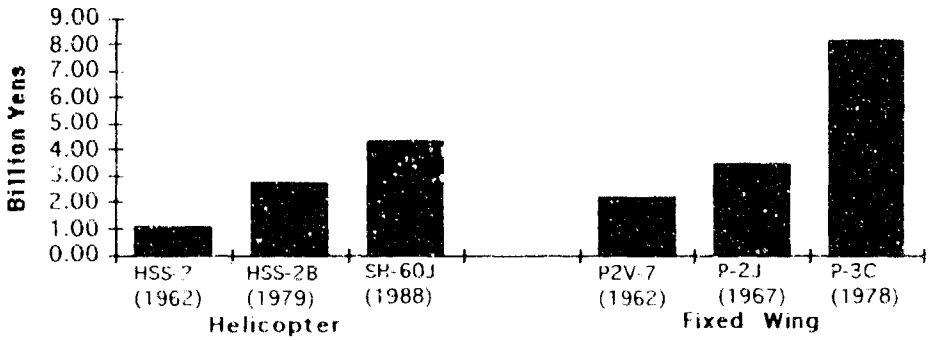




Figure 13
Trend of ASW Aircraft Inventories




Note : (Number) is the fiscal year when the aircraft was procured.
This chart is expressed in real Yens, based on FY1985 prices and a FY1985 deflator.

Figure 14
Aircraft Cost Trend (by Type)

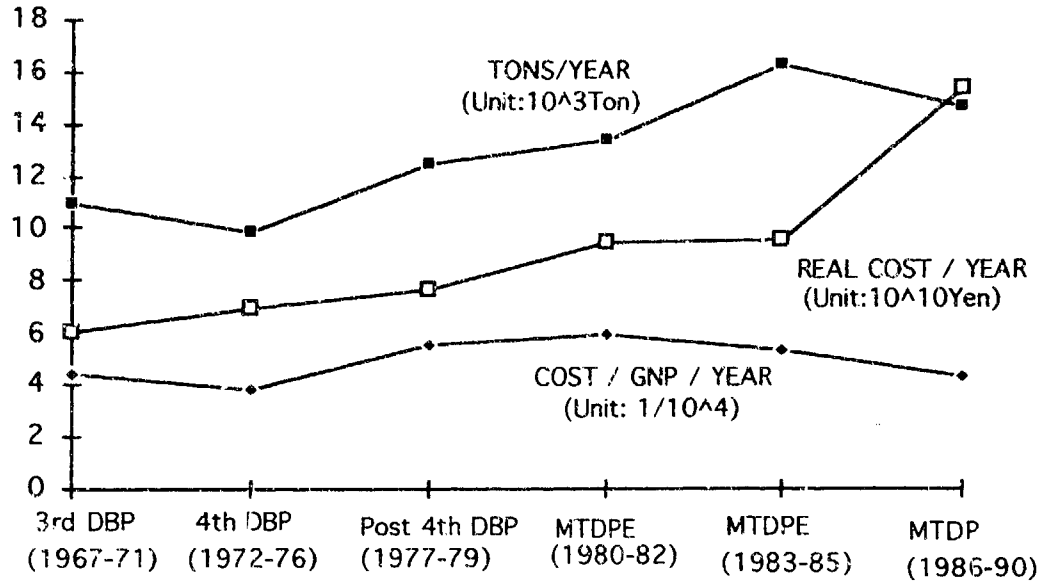
P-2J cost (see Figure 14 and Appendix O). P-3C's are equipped with computerized systems that can deal with a lot of collected tactical information in a short time. HSS-2B's are equipped with enhanced capabilities to manage information, such as the tactical data display system. This sudden rise of the real aircraft procurement cost also means an enhancement of capability and performance. Acquisitons of P-3C's and HSS-2B's began in the late 1970's.

### 3. Further Observations in Ship Expansion

As seen above, expansion of ships and aircraft with computer systems and enhanced capability and performance equipment has been promoted strongly since the late 1970's when the 4th Defense Buildup Plan was completed and the National Defense Program Outline was formulated. It is true that this expansion resulted in increased real procurement costs. We can, however, find different significant aspects by looking further at the expansion of ships and aircraft.

I examined the trend of the ratio of shipbuilding cost per ton to GNP shown. In DE: the ratio declines from KITAKAMI of 6.88/100million (expressed below as 6.88 instead of 6.88/100million) to ISHIKARI of 4.99 and to ABUKUMA of 3.58; in DD: from YMAGUMO of 6.87 to HATSUYUKI of 5.23 and to ASAGIRI of 4.08; in DDG: from AMATSUKAZE of 7.90 to HATAKAZE of 5.11 and to KONGO of 4.48; and in SS: NATSUSHIO of 13.7 to UZUSHIO of 7.23 and to HAMASHIO of 5.25.

Figure 15 shows the trends of displacement (Tons) built per year (Tons/Year), real building cost (FY 1985) per year (RealCost/Year), and the ratio of shipbuilding cost per year to average GNP (Cost/Year/GNP) during each defense program.




Note:DBP:Defense Buildup Plan; MTDPE: Mid-Term Defense Program Estimate;
MTDP: Mid-Term Defense Program

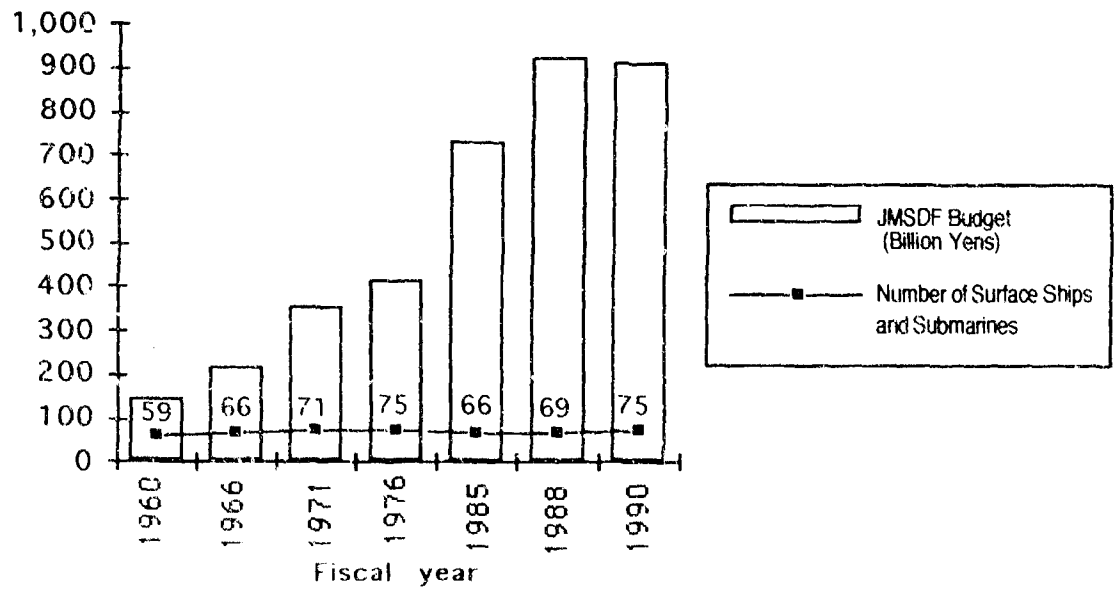
**Figure 15**
**Trends in Shipbuilding (by 3 Indicators)**

The result of a decline of the ratio of a shipbuilding cost per ton to GNP in each ship type, caused no expansion of the ratio of Cost/Year/GNP in each defense program. The ratio of Cost/Year/GNP in the 3rd Defense Buildup Plan (DBP) is almost the same as that in the Mid-Term Defense Program (MTDP). On the other hand, Tons/Year increased from 11,000 in 3rd DBP to 14,700 in MTDP and RealCost/Year also increased from 60 billion in 3rd DBP to 154 billion in MTDP. These increasing rates are 1.34 times in Tons/Year and 2.57 times in Real Cost/Year (see Appendix P). This means that the JMSDF could increase the amount of ships by almost the same cost to GNP, in spite of substantially increasing real shipbuilding costs.

In the past Japan's Defense Budget was allocated by about 1 percent of GNP and on average GNP has increased by 4.3% each year for the last 20 years (see Appendix Q). Under this situation, the JMSDF could have financial

resources to increase its number of ships and aircraft without causing financial difficulty.

As seen in Figure 16, the number of ships (Surface ships and Submarines) has remained constant at about 70 ships for the last 30 years. On the other hand the JMSDF's budget has increased. Since this means that extra money was spent on the same number of ships, displacement per ship was increased or more expensive and effective weapon systems were installed.




Note: Budget is expressed in Yen based on FY1985 prices and using a FY1985 deflator.
Source: Boei handbook (Asagumoshinbunsha)

Figure 16
JMSDF Budget and Ship Inventories

## D. FINANCIAL RESOURCES TO IMPROVE JMSDF

Assuming the Defense Budget will be allocated around 1 percent of GNP and GNP will continue to increase as it has in the past, JMSDF will have a potential capability to enhance its number of ships without financial difficulty.

When we take into account domestic issues and international situations at the present and in the future, we must say the assumption above is fairly optimistic. At first the average real growth rate of the Japanese economy in the future might be lower than that of the past[5]. "The next ten years will be a critical period for Japan, which must begin considering how to provide for its aging society. If Japan does not invest in societal infrastructure during this period, when saving rates are high and its population active, it will not be able to insure that people continue to enjoy a quality of life similar to that of Europe and the United States."[6] The priority of budget allocation will tend to shift to Social Welfare and Public Works.

Figure 17 shows real shipbuilding costs (FY1985) per ton for DE, DD, and SS. We can categorize two groups by before FY1974 and after FY1975. As I stated before, DE ISHIKARI, DD HATSUYUKI, and SS USHIO are ships equipped with highly computerized equipment, missile weapon systems, and gas turbine machinery (except SS). Ships after FY1975 are, so-called, New-Type-Ships and ships before FY1974 are, so-called, Conventional-Type-Ships. From Figure 17, we can see that real costs will rise substantially when the ships equipped with

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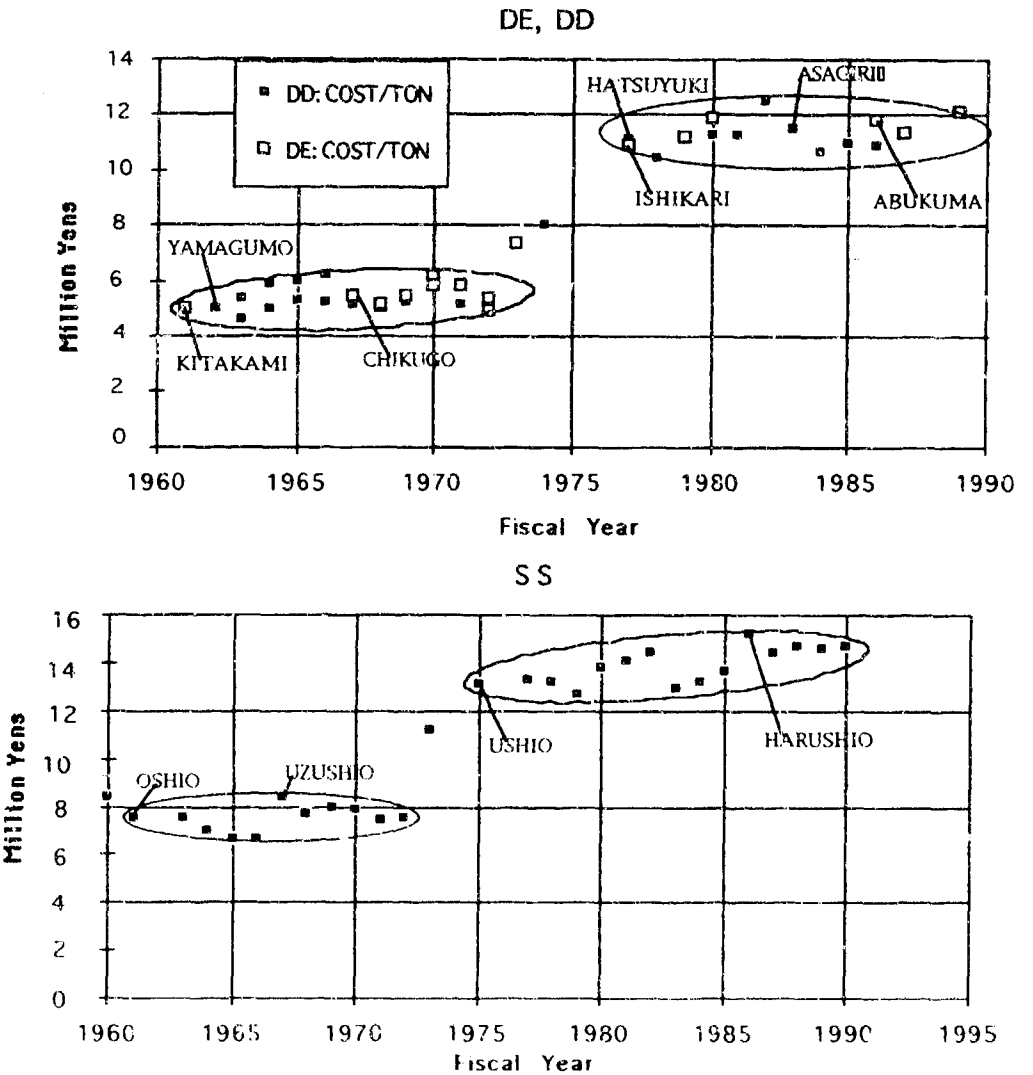
[5]The Japanese new economic plan (formulated by the Economic Deliberation Committee in January 1992) set average real growth rate target at 3.5%.

[6]Asian Security 1992-93 (Research Institute For Peace And Security, Tokyo) p129




Note : The shipbuilding costs are expressed in real Yens based on FY1985 prices and using a Fy1985 deflator

Figure 17
Trends in Shipbuilding Cost/Ton

highly advanced technological systems are constructed. In the past the JMSDF had enough financial resources to cover the increased costs introduced by advanced technological systems.

In addition the end of the Cold War will not lead Japan to enhance military forces over its current levels and will likely cause defense expenditures to be cut.

When we focus on the future of the JMSDF taking the above factors into consideration, the JMSDF is likely to have less financial resources to enhance its current force level.

## III. COMPLEMENTARY RELATIONSHIP BETWEEN THE JMSDF AND THE U.S. NAVY

### A. BALANCED NAVY CONCEPT

"...From the Sea", which is the U.S. Navy and Marine Corps White Paper published in September 1992 by the Department of the Navy of the U.S., stated the following about Naval Forces and Naval organizations. "As Naval Forces shift from a Cold War, open ocean, blue water naval strategy to a regional, littoral, and expeditionary focus, Naval organizations will change. Responding to crises in the future will require great flexibility and new ways to employ our forces." Naval Force Packages will consist of the following different types of ships and aircraft:

- Aircraft carriers and air wings
- Amphibious ships with embarked Marines
- Surface combatants
- Navy Special Warfare Forces
- Submarines
- Maritime Patrol Aircraft
- Mine Warfare Forces

If we follow the U.S. Naval strategy, the balanced Navy concept continues to be relevant in the future even though the U.S. Naval Forces shift from "a Cold War, open ocean, blue water naval strategy to a regional, littoral, and expeditionary focus". Therefore I will compare Naval Forces among different countries based on the balanced Navy concept. When we measure relative levels of certain country's naval capabilities to accomplish its mission(s), this concept is one way to compare fleet composition of certain country's navies with that of other countries' navies. It can be allowed to categorize fleet composition into Aircraft Carriers (CV), Ballistic Missile Submarines (SSBN), other Submarines (SS), Cruisers, Destroyers (DD) and Frigates (FF), Mine

Warfare Ships (M/W), Amphibious Warfare Ships (A/W), and others. Both CVs and SSBNs have strategic missions.

## B. COMPARISON OF FLEET COMPOSITION

Figures 18 and 19 show fleet compositions with numbers of ships and displacement (full load tons) in natural logarithms respectively in light of the above categories (see Appendices R, S, and T). These include fleet compositions of the entire U.S Navy, U.S. Pacific Fleet, Russian Navy[7], Russian Pacific Fleet, French Navy, U.K. Navy, and the JMSDF.

In terms of number of ships from Figure 18, we can say the following: the U.S. Pacific Fleet is approximately one half of the entire U.S. Navy. The number of SSBNs and SSs in the U.S. Pacific Fleet is, however, one-third of the entire U.S. Navy. Two-thirds of the entire SSBNs and SSs of the U.S. are deployed in the Atlantic Fleet. It shows the U.S. sets the priority of deterrent by SSBNs on the Atlantic Ocean rather than on the Pacific Ocean because the Atlantic Ocean faces NATO allies and Russia. In addition, Mine Warfare Forces of the U.S. Navy are relatively smaller not only than other component forces but also that of the Russian Navy. The U.S. does not deploy diesel submarines. The reason is that the U.S. Navy has emphasized offensive capabilities. The Russian Pacific Fleet makes up one-third of the entire Russian Navy. The French Navy, the U.K. Navy, and the JMSDF take similar shapes. But it's hard to say that this is an appropriate way to measure fleet capabilities, because this

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[7]In this thesis, I will use "Russia" as the word meaning the former U.S.S.R.. In "Military Balance 1992-1993" (The international Institute for Strategic Studies), the word "Russia" is used instead of former U.S.S.R.. Also in "Jane's Fighting Ships 1992-93", the word "Russia and Associated States" is used.

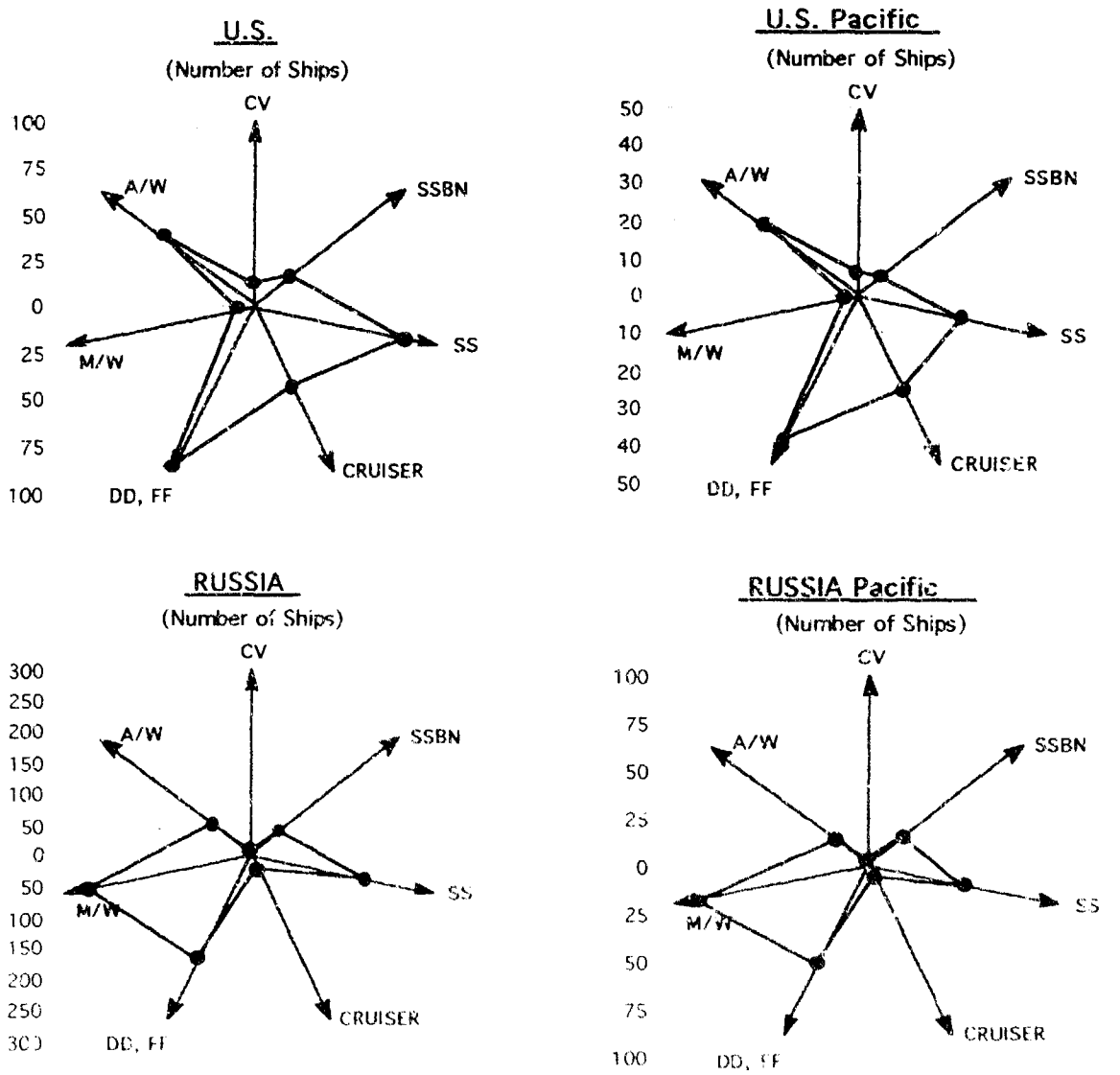


Figure 18

FLEET COMPOSITION (Part 1)
(Number of Ships)

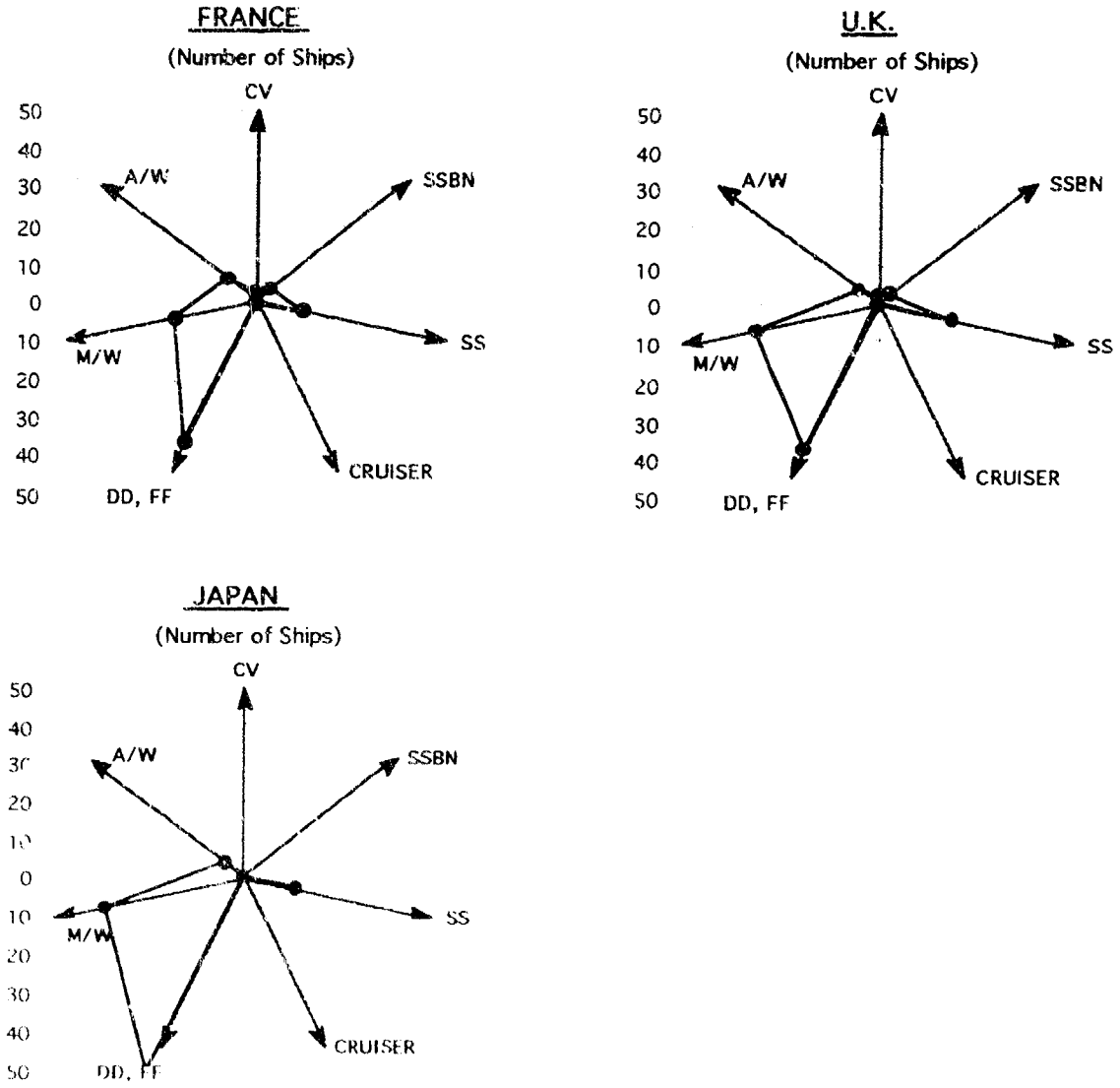


Figure 18

FLEET COMPOSITION (Part 2)
(Number of Ships)

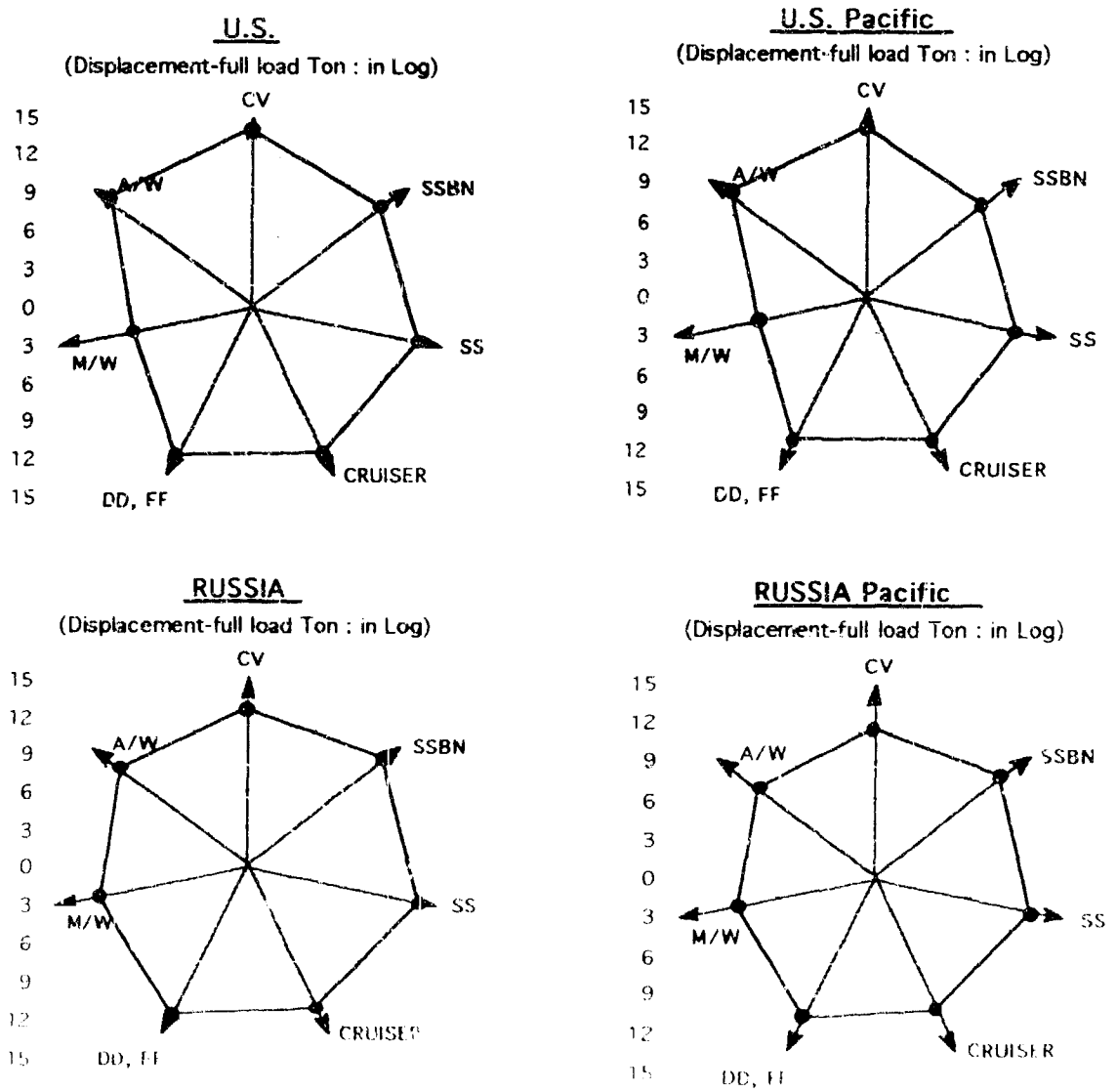


Figure 19

FLEET COMPOSITION (Part 1)
(Displacement, Full Load Ton: In Natural Log.)

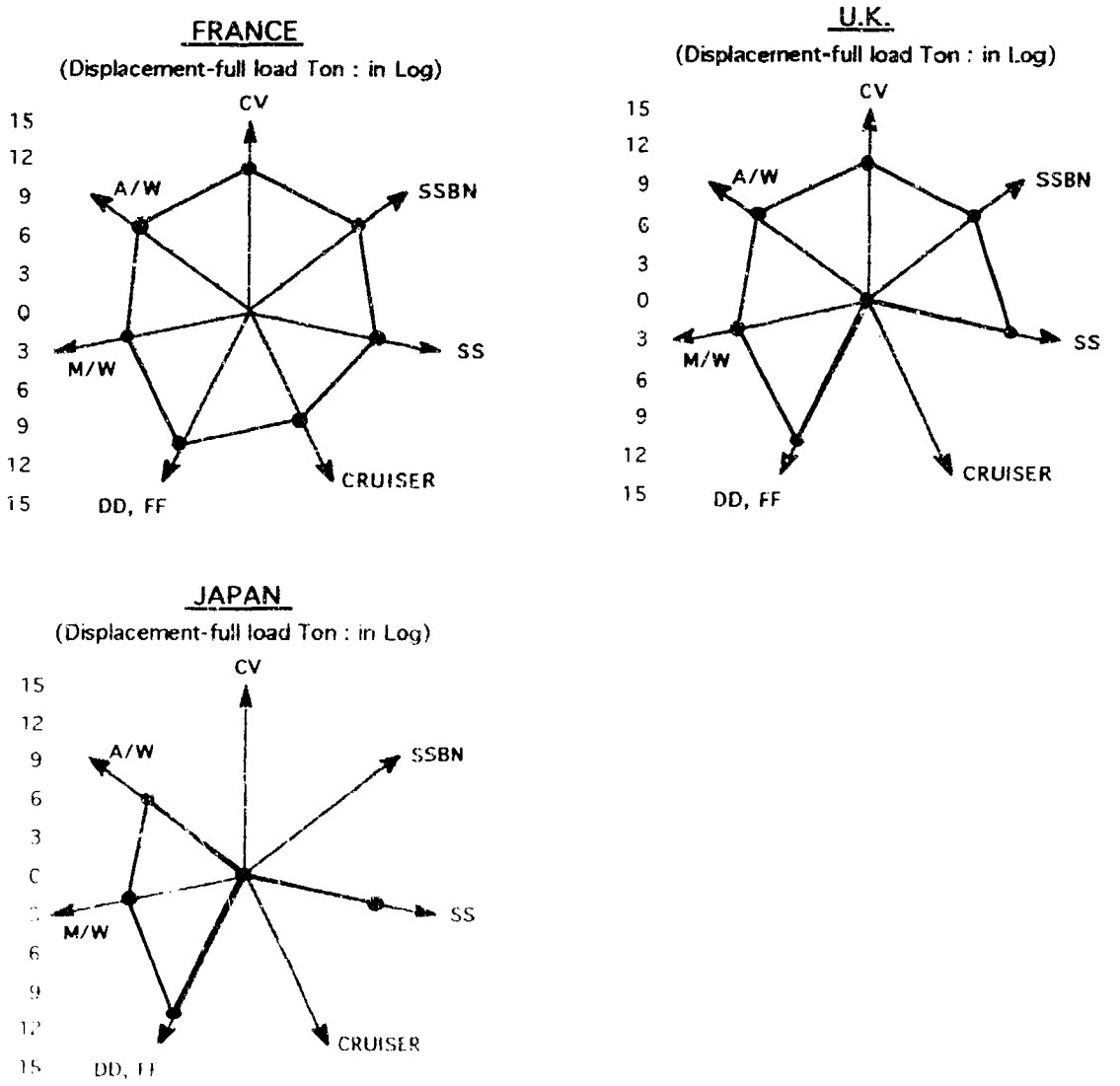


Figure 19

FLEET COMPOSITION (part 2)
(Displacement, Full Load Ton: In Natural Log.)

figure considers the capability of one ship as the same as that of any other ship regardless of its size.

Figure 19, which deals with fleet composition with displacement (full load ton) in natural logarithm, is better than Figure 17 in measuring fleet capability as a whole[8]. Because ship displacement is a good cost driver of shipbuilding, there is a high positive correlation between ship displacement and shipbuilding cost. As seen in different types of ships such as the CV, DD, SSBN, SS, etc., the greater the capability of the ship is, the higher the shipbuilding cost.

From Figure 19, we can see obviously that all the Fleets I listed above except the JMSDF have well balanced fleet compositions and capabilities and the JMSDF looks rather unique in its fleet composition in comparison to the other countries.

With respect to the JMSDF from Figures 18 and 19, many destroyers and mine-sweeping ships are the main feature of the JMSDF's physical ship assets. The JMSDF lacks strategic capability against other countries. Nowadays the JMSDF's destroyers are equipped with anti-air missile systems. These missile systems have difficulties dealing with many targets at the same time because of the limitations of their tracking radars. Therefore from these figures we can also see that the JMSDF has a drawback of no air cover to protect its ships on sea in areas beyond air cover offered by the fighters of the Japan Air Self-Defense Force (JASDF).

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[8]There is another way to measure fleet composition by inventory value that may be the best measure. We have not, however, employed this inventory value measure, which is the dollar value of the different class of ships known, because of the difficulties in comparing different currencies.

## C. COMPARISON OF AIRCRAFT ASSETS

Figure 20 is my attempt to show the aircraft asset composition each navy has. I tried categorizing navy combat aircraft into Bomber (BBR) and Fighter (FTR), Anti-submarine Warfare (ASW) Aircraft and Maritime Reconnaissance (MR) aircraft, Electronic Warfare (EW) aircraft, Airborne Early Warning (AEW) aircraft, Commando (CDO) aircraft, and Mine Countermeasure (MCM) aircraft. In the case of aircraft, unlike ships, it will be allowed to consider the capability of one aircraft type as equivalent to other aircraft types even though they have different missions. Therefore I measure aircraft force capability by the number of aircraft in each category.

From Figure 20, although shapes of fleet composition of French Navy, U.K. Navy, and JMSDF took similar shape, in the case of aircraft, they have substantially different aircraft asset compositions. The U.K. has greater aircraft capabilities than France. Major features of the JMSDF are ASW, MR, and MCM aircraft. From Table 5, we can see the qualitative aspects of each countries' aircraft inventories. Figure 21, which shows the totals of land-based ASW maritime patrol aircraft (MPA) in NATO and Japanese forces, also reinforces the JMSDF's ASW feature. Japan has about 14 percent of the total MPA aircraft.

## D. CONSISTENCE WITH JAPANESE AUTHORITY

As stated above, many destroyers, mine-sweeping ships, many ASW and MR aircraft, and MCM aircraft are major features of the JMSDF's physical assets. This result should be both intended and well achieved by the Japanese authority.

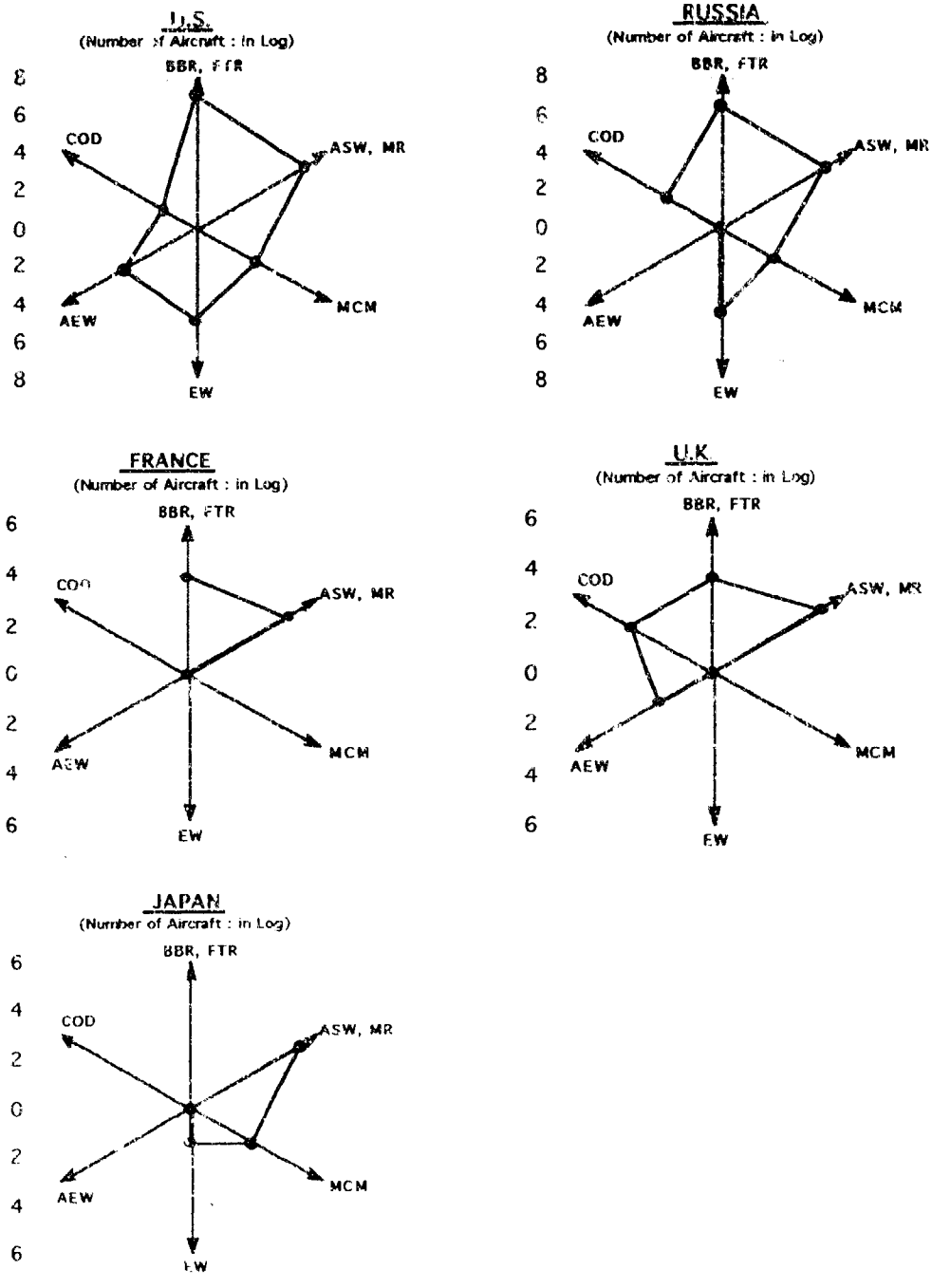



Figure 20

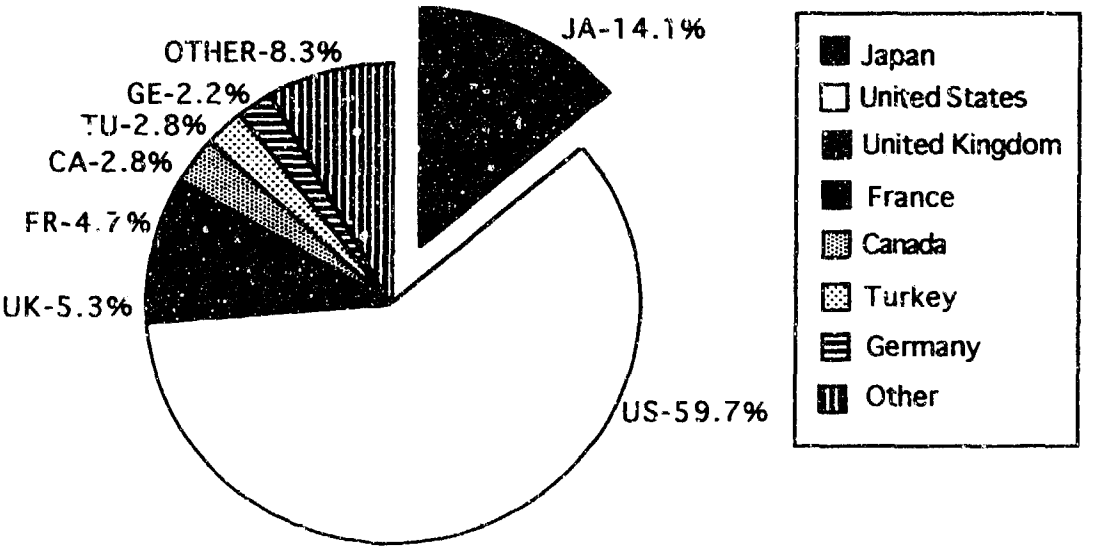
AIRCRAFT ASSET COMPOSITION
(Number of aircraft ; in Natural Log.)

# TABLE 5 Contents of Aircraft Assets

| AIRCRAFT: | U.S. | | RUSSIA | | FRANCE | | U.K. | | JAPAN | |
|---|---|---|---|---|---|---|---|---|---|---|
| BOMBER | | | TU-26 | 155 | | | | | | |
| | | | TU-16 | 70 | | | | | | |
| STRIKE | | | | | SUPER ETENDA | 38 | | | | |
| FTR | F-14-A | 266 | SU-17 | 165 | CRUSADER | 12 | SEA HARRIER | 40 | | |
| | F-14-A PLUS | 68 | SU-24 | 100 | | | | | | |
| | F-14-D | 41 | SU-25 | 55 | | | | | | |
| | F/A-18-A | 225 | MIG-27 | 30 | | | | | | |
| | F/A-18-C | 283 | MIG-29 | 35 | | | | | | |
| | A-6-E | 279 | | | | | | | | |
| ASW | S-3A/B | 99 | TU-142 | 58 | ALIZE | 17 | | | | |
| | | | Il-38 | 41 | | | | | | |
| | | | BE-12 | 92 | | | | | | |
| MR | P-38/C | 209 | TU-22 | 5 | ATLANTIC | 24 | | | P-3C | 66 |
| | | | SU-24 | 12 | ATRANTIQUE | 6 | | | P-2J | 10 |
| | | | AN-12 | 8 | GARDIAN | 5 | | | | |
| | | | Il-20 | 2 | | | | | | |
| EW | EA-6B | 109 | TU-95 | 24 | | | | | EP-2J | 2 |
| | EA-3 | 5 | TU-16 | 39 | | | | | EP-3C | 2 |
| | EP-3 | 17 | | | | | | | | |
| AEW | E-2C | 72 | | | | | | | | |
| COMMAND | EC-130Q | 7 | | | | | | | | |
| TRG | F/A-18-B | 27 | | | ETENDARD | 10 | SEA HARRIER | 5 | KM-2 | 30 |
| | F/A-18-D | 92 | | | ALIZE | 8 | JETSTREAM | 19 | P-SC | 10 |
| | F-5E/F/T-38 | 40 | | | ZEPHYR | 14 | CHIPMUNK | 14 | QUEEN AIR 65 | 22 |
| | F-16-N | 22 | | | NORD 262 | 15 | | | T-5 | 8 |
| | TF-16N | 4 | | | NAVAJO | 2 | | | TC-90/UC-90 | 23 |
| | A-4E/F | 59 | | | XINGU | 11 | | | YS-11T | 10 |
| | TA-4F/J | 194 | | | RALLYE 880 | 4 | | | | |
| | TE-2B | 10 | | | MS-760 | 8 | | | | |
| | T-2B/C | 150 | | | FALCON 10MER | 3 | | | | |
| | T-39D/N | 18 | | | | | | | | |
| | TA-7C | 7 | | | | | | | | |
| | T-44 | 54 | | | | | | | | |
| | T-45 | 16 | | | | | | | | |
| MISC | | 98 | | 59 | | 56 | | 34 | | 22 |

| HELICOPTERS: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ASW | SH-60B | 137 | MI-14 | 69 | LYNX | 35 | SEA KING | 51 | HSS-2A/B | 81 |
| | SH-60F | 60 | KA-25 | 85 | SA-321 | 12 | LYNX | 77 | | |
| | SH2F/G | 74 | KA-27 | 110 | | | | | | |
| | SH-3D/G/H | 108 | | | | | | | | |
| MCM | RH-53D | 6 | MI-14 | 25 | | | | | KV-107A | 5 |
| | MH-53E | 31 | | | | | | | S-80 | 12 |
| EW | | | KA-25 | 25 | | | | | | |
| AEW | | | | | | | SEA KING | 10 | | |
| COMMANDO | | | KA-27 | 25 | | | SEA KING | 34 | | |
| TRG | CH-46 | 231 | | | SA-313 | 4 | SEA KING | 25 | HSS-2A/B | 10 |
| | | | | | SA-316/-319 | 15 | GAZELLE HT-2/-3 | 26 | OH-6D/J | 12 |
| MISC | | 16 | | 17 | | 35 | | 0 | | 4 |

Source: The Military Balance 1992-1993 (the International Institute for Strategic Studies)




Source: Report on Allied Contributions to the Common Defense,
(U.S. Secretary of Defense)
P2-34

Figure 21
ASW Aircraft (in 1988) Total NATO and Japan

We can easily see this authority in the "National Defense Program Outline" (NDPO). The following refers to the posture of the JMSDF in the NDPO.

1. The JMSDF must possess one fleet escort force as a mobile operating ship unit in order to quickly respond to aggressive action and such situations at sea. The fleet escort force must be able to maintain at least one escort flotilla on alert at all times.

2. The JMSDF must possess, as ship units assigned to coastal surveillance and defense, surface anti-submarine capability of at least one ship division in operational readiness at all times in each assigned sea district.

3. The JMSDF must maintain submarine units, anti-submarine helicopter units and minesweeping units, providing the capability for surveillance and defense missions as well as minesweeping at important harbors and major straits when such necessity arises.

4. The JMSDF must maintain fixed-wing anti-submarine aircraft units in order to provide the capability of carrying out missions of surveillance and patrol of the nearby seas and ship protection.

Descriptions of the actual scales of organizations and primary equipment under the foregoing concepts are given in its attachment (see Table 6).

TABLE 6 Inventory Level in JMSDF by NDPO

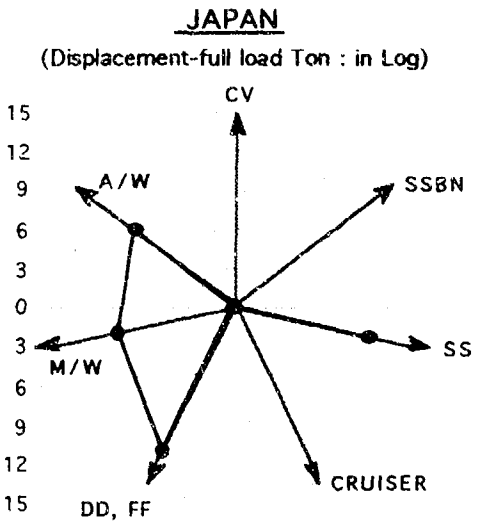
| | |
|---|---|
| Basic Units | |
| Anti-submarine Surface-Ship Units (for mobile operations) | 4 Escort Flotillas |
| Anti-submarine Surface-Ship Units (Regional District Units) | 10 Divisions |
| Submarine Units | 6 Divisions |
| Minesweeping Units | 2 Flotillas |
| Land-based Anti-submarine Aircraft Units | 16 Squadrons |
| Main Equipment | |
| Anti-submarine Surface Ships | Approx. 60 Ships |
| Submarines | 16 Submarines |
| Combat Aircraft | Approx. 220 Aircraft |

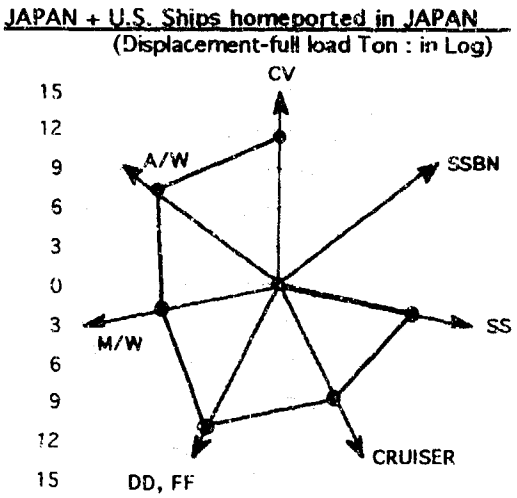
Here we can see that the features of the JMSDF's physical assets are consistent with the contents of the NDPO.

## E. COMPLEMENTARY TO THE JMSDF

I assume here again that the entire function of the navy is measured both by the level of fleet composition categorized into CV, SSBN, SS (less SSBN), Cruisers, DD and FF, Mine Warfare Ships, Amphibious Warfare Ships, and others, and by the number of navy combat aircraft categorized into BBR and Fighter, ASW Aircraft and MR aircraft, EW aircraft, AEW aircraft, CDO aircraft, and MCM aircraft.

Figure 22 shows some combinations between the JMSDF and some parts of the U.S. Navy in fleet composition (also see Appendix U). I consider U.S. Navy ships homeported in Japan and one-third of the U.S. Pacific Fleet as some parts of the U.S. Navy. Because they seem to be considered as the marine force



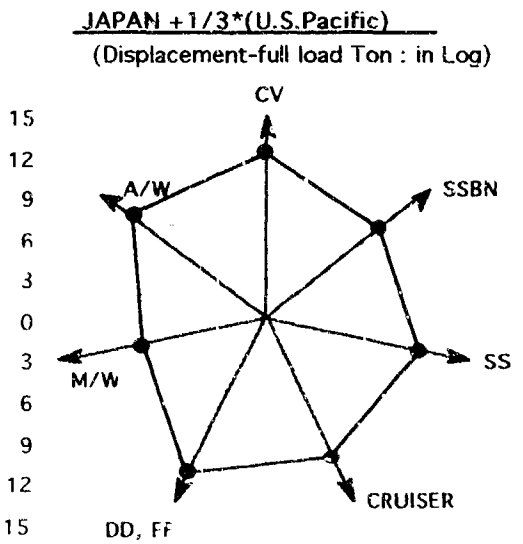




Figure 22

FLEET COMBINATION BETWEEN JAPAN AND U.S.
(Displacement, Full Load Ton: In Natural Log.)

together with the JMSDF which influence sea control in the East Asian Pacific sea area around the island of Japan. It is based on my assumption that approximately one-third of the U.S. Pacific Fleet may be viewed for this purpose.

A cruiser-destroyer-frigate group and an amphibious group of the U.S. Navy are homeported in Japan, as is one aircraft carrier. One aircraft carrier, two cruisers, three destroyers, three frigates, and six amphibious warfare ships are homeported in Japan at present. A combined maritime force between the JMSDF fleet and the U.S. ships homeported in Japan will have a better balanced fleet composition and capability than the JMSDF does by itself. That combined maritime force still lacks SSBN capabilities. Because Japan adheres to the "Three Non-nuclear Principals" as national policy, it is not expected for an SSBN to homeported in Japan. When U.S. ships homeported in Japan conduct operations together with the JMSDF, the U.S. ships supplement the missing air cover function of the JMSDF.

Next, a combined maritime force between the JMSDF and the U.S. Seventh Fleet will have a fleet composition like Figure 22. This maritime force has a completely well-balanced fleet composition. In terms of fleet composition, the U.S. Seventh Fleet is complementary to the JMSDF.

This result is consistent with the concept of maritime operations described in the "Guidelines for Japan-U.S. Defense Cooperation."[9] The following outlines its concept: when an armed attack against Japan takes place, "the JMSDF and the U.S. Navy will jointly conduct maritime operations

[9]This is the report by the Subcommittee for Defense Cooperation, submitted to and approved by the Japan-U.S. Security Consultative Committee.

for the defense of surrounding waters and the protection of sea lanes of communication. The JMSDF will primarily conduct operations for the protection of major ports and straits in Japan; and anti-submarine operations, operations for the protection of ships and other operations in the surrounding waters. U.S. Navy Forces will support JMSDF operations and conduct operations, including those which may involve the use of task forces providing additional mobility and strike power, with the objective of repelling enemy forces."

While it might be hard to conclude that the JMSDF or Japan is complementary to the U.S. Navy and its physical assets, at least the following can be stated. With the physical assets the JMSDF has, it is obvious that the JMSDF can't perform as many maritime missions as the U.S. Navy. But the JMSDF can conduct substantial anti-submarine warfare operations in the sea area around Japan by using many highly efficient anti-submarine surface ships and anti-submarine maritime patrol aircraft. Needless to say, this JMSDF effort not only contributes to Japan's security directly, but also enhances the U.S. Navy's capability in the far east region. Because the Seventh Fleet has a vast area of responsibility, from the Kamchatka Peninsula of Russia to the Persian Gulf, if her burden around Japan is released by the JMSDF's effort, she can shift her assets to other areas.

## F. U.S. MILITARY STRATEGY IN THE ASIA-PACIFIC REGION

The U.S. maritime doctrine or strategic concept is driven by the National Military Strategy of the U.S. which is effected by the U.S. president's National Security Strategy.

The collapse of the Soviet Union and the end of the Cold War has meant that the East-West confrontation that had keynoted the world military situation

for over 40 years has come to an end. Needless to say, this great change has forced a change in the U.S. National Security Strategy. A new U.S. National Security Strategy was announced in August 1991.

A few months later, in January 1992, the National Military Strategy of the U.S. was published. At the beginning of this strategy, it is stated that "Most significant is the shift from containing the spread of communism and deterring Soviet aggression to a more diverse, flexible strategy which is regionally oriented and capable of responding decisively to the challenges of this decade."[10] This strategy is built upon the four foundations of Strategic Deterrence and Defense, Forward Presence, Crisis Response, and Reconstitution.[11] This strategy also states that the U.S. will deter and defend against strategic nuclear attacks as the U.S. has for the past forty years and also project a forward presence and provide crisis responses as fundamental parts of its regionally oriented strategy.

The U.S. remains an Asia-Pacific power with interests in East Asia. The U.S. Department of Defense has stated, "Despite the decade of change that we foresee, our regional interests in Asia will remain similar to those we have pursued in the past. With a total two-way transpacific trade exceeding 300 billion dollars annually, 50 percent more than our transatlantic trade, it is in our own best interest to help preserve peace and stability. The principal elements of our Asian strategy -- forward deployed forces, overseas bases, and bilateral security arrangements -- will remain valid and essential to

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[10]The National Military Strategy of the United States (Chairman Joint Chiefs of Staff) P1

[11]The National Military Strategy of the United States (Chairman Joint Chiefs of Staff) P6

maintaining regional stability, deterring aggression, and preserving U.S. interests."[12] U.S. interests in this region require a continuing commitment. Therefore forward presence forces in this region are essential to the U.S. Military Strategy. "Forward presence forces will be principally maritime. The U.S. plans to keep one aircraft carrier battle group and an amphibious ready group homeported in Japan and has developed new forward options not dependent upon U.S.'s former bases in the Philippines."[13]

## G. COMPLEMENTARY TO THE U.S. NAVY

As seen in the new U.S. Military strategy, in spite of the great changes in the international situation, forward presence still remains as one of the four foundations of new U.S. Military strategy. This is because of the U.S. perception that over the past 45 years, the day-to-day presence of U.S. forces in regions vital to U.S. national interests has been key to averting crises and preventing war. "In addition to forces stationed overseas and afloat, forward presence includes periodic and rational deployments, access and storage agreements, combined exercises, security and humanitarian assistance, port visits, and military-to-military contacts."[14]

By considering this U.S. Military strategy, we can conclude that Japan or the JMSDF is complementary to U.S. Navy strategy. Japan provides bases and facilities and capabilities which accommodate CVs. "It is in the U.S. interest to

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[12]A Strategic Framework for the Asian Pacific Rim; Looking Toward the 21st Century (Department of Defense, 1990) P8

[13]The National Military Strategy of the United States (Chairman Joint Chiefs of Staff) P22

[14]The National Military Strategy of the United States (Chairman Joint Chiefs of Staff) P7

maintain a forward deployed presence in Japan over the long-term for two reasons: the geostrategic location of bases and the cost effectiveness of U.S. presence compared to anywhere else."[15]

Therefore Japan contributes to the U.S.'s Forward presence.

## H. COOPERATION IN NAVAL ACTIVITIES

It is important to understand the level of cooperative activities between the JMSDF and the U.S. Navy. From the U.S. perspective, cooperation is part of the U.S. extending a forward presence. It serves to promote better mutual understanding and close communications. As a result, it also serves to upgrade interoperability between forces. Therefore regular combined training and other types of cooperative activities are indispensable to ensure smooth cooperation of JMSDF-U.S. Navy actions in the event of any emergencies involving Japan.

The JMSDF has been involved in the following Japan-U.S. combined training activities (also see Table 7):

1. RIM OF THE PACIFIC (RIMPAC) EXERCISE is a comprehensive exercise projected by the U.S. 3rd Fleet and is conducted every other year in the eastern Pacific Ocean. Ships of foreign countries, such as Canada, Australia, and New Zealand, participate in this exercise. The JMSDF took part in RIMPAC in 1980 for the first time and has participated in every exercise since then. Eight DD's (Destroyer), one AOE (Fast Combat Support Ship), and eight P-3C's out of the JMSDF took part in RIMPAC '90.

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[15]A Strategic Framework for the Asian Pacific Rim; Looking Toward the 21st Century (Department of Defense, 1990) P17

## TABLE 7
## Performance of JMSDF-U.S. Navy Combined Training in FY1991

| Exercise Designation | Date | Place | Participating Forces Japan | Participating Forces U.S. | Outline |
|---|---|---|---|---|---|
| Special Anti-submarine Training | May 8-12, 1991 | Sea area extending south of Boso to east of Ogasawara Islands | 9 vessels<br>7 aircraft (combined total) | 4 vessels<br>14 aircraft (combined total) | Anti-submarine training, Air defense training, Electronic warfare training, etc. |
| Special Anti-submarine Training | June 18-24, 1991 | Sea area south-west of Kyushu | 8 vessels<br>9 aircraft (combined total) | 2 vessels<br>6 aircraft (combined total) | Anti-submarine training, Air defense training, Electronic warfare training, etc. |
| Special Anti-submarine Training | August 23-28, 1991 | Sea area south-west of Kyushu | 8 vessels<br>8 aircraft (combined total) | 2 vessels<br>5 aircraft (combined total) | Anti-submarine training, Air defense training, Electronic warfare training, etc. |
| Special Anti-submarine Training | October 8-11, 1991 | Sea area south-west of Kyushu | 8 vessels<br>5 aircraft (combined total) | 1 vessel<br>6 aircraft (combined total) | Anti-submarine training, Air defense training, Electronic warfare training, etc. |
| Japan-U.S. Combined Training in JMSDF Exercise | November 8-15, 1991 | Sea area south and east of Honshu | 15 vessels<br>90 aircraft (combined total) | 17 vessels (including the aircraft carrier Independence, Lincoln)<br>About 160 aircraft (combined total) | Anti-submarine training, Air defense training, Electronic warfare training, etc. |
| Special Mine-sweeping Training | February 15-27, 1992 | Suonada Sea | 25 vessels<br>26 aircraft (combined total) | 4 aircraft (combined total) | Minesweeping training |
| Special Anti-submarine Training | February 24-29, 1992 | Sea area south-west of Kyushu | 6 vessels<br>13 aircraft (combined total) | 6 vessels<br>13 aircraft (combined total) | Anti-submarine training, Air defense training, Electronic warfare training, etc. |
| Command Post Exercise | March 15-28, 1992 | U.S. Naval War College | 20 from the JMSDF Staff Office, etc. | About 50 from the 7th Fleet, U.S. Naval Forces, Japan, Headquarters, etc. | Training on coordination |

Source: Defense of Japan (Defense Agency, Japan) P231

2. A JMSDF-U.S. Navy Combined Exercise is conducted in the sea area from Hawaii to California every other year when the RIMPAC exercise is not conducted. Three DD's and five P-3C's out of the JMSDF take part in this exercise.

3. Special Anti-Submarine Warfare Training is conducted several times each year in the sea area around Japan between the JMSDF and the U.S. Navy.

4. Special Mine-Sweeping Training is conducted yearly.

5. The JMSDF Annual Exercise is the biggest exercise in which almost all ships, aircraft, and personnel in the JMSDF are involved. As a part of this exercise, JMSDF-U.S. Navy combined training is conducted. A U.S. Navy aircraft carrier usually takes part in this exercise.

6. The first Japan-U.S. combined command post exercise was conducted in 1989 at the U.S. Naval War College and has been conducted yearly since then.

## I. LEVEL OF COMPLEMENTARITY AND FUTURE TRENDS

It has been found that there is a high level of complementarity between the JMSDF and the U.S. Navy either in terms of fleet composition, military strategy, or cooperation in naval activities. Japan's complementary relationship with the U.S. will most likely continue in the future. Assuming that this complementary relationship continues, as I examined in Section II the JMSDF will probably not have sufficient financial resources in the future to enhance its naval forces over the current levels. However, if the complementary relationship with the U.S. continues, Japan will not need a balanced maritime force. It is also anticipated that Japan will continue to

maintain a defensive strategy and improve its current complementary relationship with the U.S..

On the other hand, the U.S. Navy considers that U.S. Navy forces can operate with other elements of joint or combined task forces, including allied forces and assets in order to respond to U.S. national needs. Also the U.S. itself may not prefer that Japan enhance its military beyond its current force level. The Department of Defense in the U.S. stated that "Increases in Japanese military strength undertaken to compensate for declining U.S. capabilities in the region could prove worrisome to regional nations, especially if they perceive Japan is acting independent of the U.S.-Japan security relationship."[16] The U.S. stresses "the importance of maintaining interoperability in our military weapons systems by encouraging maximum procurement from the U.S., increasing technology flowback, and discouraging the development of non-complementary systems."[17] Also in November 1991, the U.S. Secretary of Defense, the Honorable Richard Cheney, unveiled complementary defense cooperation as one principle of U.S. strategy for East Asia.

Taking into account the above factors, there is little likelihood for the JMSDF to take a separate path from the current complementary relationship with the U.S. Navy.

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[16]A Strategic Framework for the Asian Pacific Rim: Looking Toward the 21st Century (Department of Defense, 1990) P6

[17]A Strategic Framework for the Asian Pacific Rim: Looking Toward the 21st Century (Department of Defense, 1990) P18

# VI. CONCLUSION

As I stated at the outset, one of the primary research questions was "Does the JMSDF have the financial resources to improve its forces in the future?" Another question was "What has been and will be the level of complementarity between the JMSDF and the U.S. Navy?" For the first question, throughout Section II we find that if about 1 percent of GNP will be allocated to the JMSDF budget and GNP will continue to increase as in the past, and assuming that the total number of major ships is fixed like the current situation, it might be possible for the JMSDF to make larger and more modern ships without serious financial problems. When we take into account, however, the coming aging society and other social welfare issues, the JMSDF budget may not be allocated the same as it has in the past. The average real growth rate of the Japanese economy in the future might be lower than that of the past. The introduction of advanced technological systems to ships and/or aircraft will require substantive additional costs. This leads me to conclude that the JMSDF is not likely to be allocated enough financial resources to enhance its inventory much beyond its current force level. This situation tends to lead Japan to continue on a complementary relationship with the U.S..

With respect to the second question, the examination reveals that there is a high level of complementarity overall between the JMSDF and the U.S. Pacific Fleet. This relationship will most likely continue in the future.

Therefore it is concluded that the future direction of the JMSDF will be that of keeping an effective complementary relationship with that of the U.S. Navy.

## APPENDIX A

## BASIC POLICY FOR JAPAN'S NATIONAL DEFENSE

The objective of national defense is to prevent direct and indirect aggression, but once invaded, to repel such action, thereby preserving the independence and peace of Japan founded upon democratic principles.

To achieve this objective, the government of Japan hereby establishes the following principles:

1. To support the activities of the United Nations and promote international cooperation, thereby contributing to the realization of world peace.

2. To promote public welfare and enhance the people's love for the country, thereby establishing the sound basis essential to Japan's security.

3. To develop progressively the effective defense capabilities necessary for self-defense, with regard to the nation's resources and the prevailing domestic situation.

4. To deal with external aggression on the basis of the Japan-U.S. security arrangements, pending the effective functioning of the United Nations in the future in deterring and repelling such aggression.

Source : Defense of Japan (Defense Agency, Japan)

## APPENDIX B

## BRIEF ON JAPAN'S DEFENSE PROGRAMS POLICIES

1. First Defense Buildup Plan(FY1958-1960)
-Constructing a fundamental ground defense capability in order to cope with the rapid reductions in U.S. ground forces stationed in Japan
-Establishing maritime and air defense capability

3. Second Defense Buildup Plan(FY1962-1966)
-Strengthening that defense potential to the point of capability in meeting conventional aggression on a scale no greater than localized conflict

3. Third Defense Buildup Plan(FY1967-1971)
-Consolidation of the most effective defense potential capable of meeting conventional aggression on a scale no greater than localized conflict

4. Fourth Defense Buildup Plan(FY 1972-1976)
-Following up the third plan

5. Mid-Term Defense Program(FY1986-1990)
-to attain the level of defense capability laid down in the National Defense Program Outline (NDPO)
-to upgrade the defense capability enough to match the international military situation and trends in the technological gains of other countries
-the furtherance of systematically coordinated relations among the three self-defense forces and the demonstration of joint operational effects

6. New Mid-Term Defense Program (FY1991-1995)
-to maintain efficiently the level of defense capability laid down in the NDPO
-to maintain and enhance the credibility of the Japan-U.S. Security Arrangements
-to maintain a well-balanced posture in all dimensions

Source : Defense of Japan (Defense Agency, Japan)

## APPENDIX C

### OUTLINE OF JAPAN'S DEFENSE BUILDUP FOR THE FUTURE

1. First of all, Japan will stick steadfastly to its exclusive defense policy under the peace constitution. At the same time, Japan, holding fast to the Japan-U.S. Security arrangements, will continue maintaining the basic defense policy it has pursued over the past years, including the moderate improvement of its defense capability.

2. The defense-related expenditure for each fiscal year during the enforcement period of the Mid-Term Defense Program is decided within the framework of required expenses set forth in this program. And the total amount of expenses is set as the actual ceiling of defense expenditure for the five years of the program that was scheduled to be prepared anew three years henceforth.

3. As regards defense-related expenditures in and after fiscal 1991, it will be decided by the time the Mid-Term Defense Program is completed, in accordance with Japan's basic policy as a peace-loving nation by taking into consideration factors such as the international situation, and economic and fiscal situations.

4. Furthermore, considering that the decision on "Defense Buildup for the Time Being" in 1976 has so far played a vital role as a guideline for the defense buildup expenses, the government, with this well in mind, will continue holding in high esteem the spirit of the decision calling for a moderate defense buildup.

Source: Summary of Defense of Japan 1988 (Defense Agency, Japan) P89

## APPENDIX D

## CHANGES IN JAPAN'S DEFENSE EXPENDITURES

(Unit:100 million Yen, %)

| FY | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 |
|---|---|---|---|---|---|---|---|---|
| Defence (DE) | 1,485 | 1,560 | 1,568 | 1,803 | 2,085 | 2,412 | 2,751 | 3,014 |
| GNP | 102,470 | 107,620 | 127,480 | 156,200 | 176,700 | 203,900 | 240,700 | 281,600 |
| BUDGET | 13,121 | 14,192 | 15,697 | 19,528 | 24,268 | 28,500 | 32,554 | 36,581 |
| Ratio(%) | | | | | | | | |
| (1)DE/GNP | 1.45% | 1.45% | 1.23% | 1.15% | 1.18% | 1.18% | 1.14% | 1.07% |
| (2)DE/BUDGET | 11.32% | 10.99% | 10.00% | 9.23% | 8.59% | 8.46% | 8.45% | 8.24% |

| FY | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 |
|---|---|---|---|---|---|---|---|---|
| Defence (DE) | 3,407 | 3,809 | 4,221 | 4,838 | 5,695 | 6,709 | 8,002 | 9,355 |
| GNP | 308,500 | 409,500 | 478,400 | 578,600 | 724,400 | 843,200 | 905,500 | 1,098,000 |
| BUDGET | 43,143 | 49,509 | 58,185 | 67,395 | 79,497 | 94,143 | 114,677 | 142,841 |
| Ratio(%) | | | | | | | | |
| (1)DE/GNP | 1.10% | 0.93% | 0.88% | 0.84% | 0.79% | 0.80% | 0.88% | 0.85% |
| (2)DE/BUDGET | 7.90% | 7.69% | 7.25% | 7.18% | 7.16% | 7.13% | 6.98% | 6.55% |

| FY | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|
| Defence (DE) | 10,930 | 13,273 | 15,124 | 16,906 | 19,010 | 20,945 | 22,302 | 24,000 |
| GNP | 1,315,000 | 1,585,000 | 1,681,000 | 1,928,500 | 2,106,000 | 2,320,000 | 2,478,000 | 2,648,000 |
| (2)DE/BUDGET | 170,994 | 212,888 | 242,960 | 285,143 | 342,950 | 386,001 | 425,888 | 467,881 |
| Ratio(%) | | | | | | | | |
| (1)DE/GNP | 0.83% | 0.84% | 0.90% | 0.88% | 0.90% | 0.90% | 0.90% | 0.91% |
| (2)DE/BUDGET | 6.39% | 6.23% | 6.22% | 5.93% | 5.54% | 5.43% | 5.24% | 5.13% |

| FY | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |
|---|---|---|---|---|---|---|---|---|
| Defence (DE) | 25,861 | 27,542 | 29,346 | 31,371 | 33,435 | 35,174 | 37,003 | 39,198 |
| GNP | 2,772,000 | 2,817,000 | 2,960,000 | 3,146,000 | 3,367,000 | 3,504,000 | 3,652,000 | 3,897,000 |
| BUDGET | 496,808 | 503,796 | 506,272 | 524,996 | 540,886 | 541,010 | 566,997 | 604,142 |
| Ratio(%) | | | | | | | | |
| (1)DE/GNP | 0.93% | 0.98% | 0.99% | 0.997% | 0.993% | 1.004% | 1.013% | 1.006% |
| (2)DE/BUDGET | 5.21% | 5.47% | 5.80% | 5.98% | 6.18% | 6.50% | 6.53% | 6.49% |

| FY | 1990 | 1991 | 1992 |
|---|---|---|---|
| Defence (DE) | 41,593 | 43,860 | 45,518 |
| GNP | 4,172,000 | 4,596,000 | 4,837,000 |
| BUDGET | 662,368 | 703,474 | 722,180 |
| Ratio(%) | | | |
| (1)DE/GNP | 0.997% | 0.954% | 0.941% |
| (2)DE/BUDGET | 6.28% | 6.23% | 6.30% |

Source: Boei Handbook (Asagumo Shinbunsha) P228-230

note: 1. BUDGET is shown by Original Budget.

2. GNP is Shown by Initial forecasted GNP.

## APPENDIX E

### CHANGE IN JAPAN'S MAJOR GENERAL ACCOUNT EXPENDITURES (Original Budget)

(Unit:100 million Yen Expressed in Nominal Term)

| Fiscal Year | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Social Welfare | 21,154 | 28,919 | 39,282 | 48,075 | 56,919 | 67,811 | 76,266 | 82,124 | 88,369 | 90,848 | 91,398 |
| Education & Science | 15,708 | 19,633 | 26,401 | 30,292 | 34,301 | 38,516 | 42,997 | 45,250 | 47,420 | 48,637 | 48,186 |
| Defense | 9,355 | 10,930 | 13,273 | 15,124 | 16,906 | 19,010 | 20,945 | 22,302 | 24,000 | 25,861 | 27,542 |
| Public Works | 28,408 | 28,407 | 29,095 | 35,272 | 42,810 | 54,501 | 65,401 | 66,554 | 66,554 | 66,554 | 66,554 |
| Others | 68,221 | 83,105 | 104,837 | 114,196 | 134,207 | 163,112 | 180,392 | 209,659 | 241,537 | 264,906 | 270,116 |
| Total | 142,846 | 170,994 | 212,888 | 242,960 | 285,143 | 342,950 | 386,001 | 425,889 | 467,880 | 496,806 | 503,796 |

| Fiscal Year | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|---|---|---|---|---|---|---|---|---|---|
| Social Welfare | 93,210 | 95,736 | 98,346 | 100,896 | 103,845 | 108,947 | 116,148 | 122,122 | 127,374 |
| Education & Science | 48,665 | 48,409 | 48,445 | 48,497 | 48,581 | 49,371 | 51,129 | 53,944 | 56,834 |
| Defense | 29,346 | 31,371 | 33,435 | 35,174 | 37,003 | 39,198 | 41,593 | 43,870 | 45,518 |
| Public Works | 65,200 | 63,689 | 62,233 | 60,824 | 60,824 | 61,974 | 62,147 | 65,897 | 69,409 |
| Others | 269,849 | 285,792 | 298,426 | 295,618 | 316,744 | 344,653 | 391,350 | 417,641 | 412,212 |
| Total | 506,270 | 524,997 | 540,885 | 541,009 | 566,997 | 604,143 | 662,367 | 703,474 | 711,347 |

Source: Kaijojieitai Yosan Jimuteiyo (Kaijobakuryokanbu)

## APPENDIX F

### TRENDS IN JAPAN'S DEFENSE EXPENDITURES (By Expenses)

(Unit: 1000Yen, Expressed in nominal term)

| FISCAL YEAR | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
|---|---|---|---|---|---|---|---|
| PERSONNEL & PROVISIONS | 529,646,420 | 702,088,220 | 847,656,901 | 930,391,598 | 1,034,505,944 | 1,076,450,985 | 1,099,977,831 |
| CURRENT-YEAR MATERIAL | 304,785,726 | 352,767,151 | 372,498,221 | 408,649,106 | 468,851,617 | 572,411,176 | 607,885,174 |
| CURRENT-YEAR OBLIGATORY OUTLAY | 258,591,749 | 272,466,501 | 292,195,474 | 351,572,621 | 397,672,032 | 445,627,130 | 522,339,473 |
| TOTAL | 1,093,023,895 | 1,327,321,872 | 1,512,350,596 | 1,690,613,325 | 1,901,029,593 | 2,094,489,291 | 2,230,202,478 |

| FISCAL YEAR | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|
| PERSONNEL & PROVISIONS | 1,144,369,784 | 1,205,311,648 | 1,225,824,750 | 1,309,441,289 | 1,413,952,438 | 1,508,551,282 | 1,543,867,016 |
| CURRENT-YEAR MATERIAL | 631,062,141 | 679,339,320 | 673,185,236 | 642,070,591 | 649,725,434 | 665,137,387 | 708,593,611 |
| CURRENT-YEAR OBLIGATORY OUTLAY | 624,586,984 | 701,484,503 | 855,224,397 | 983,132,904 | 1,073,470,276 | 1,169,860,401 | 1,264,973,154 |
| TOTAL | 2,400,018,909 | 2,586,135,471 | 2,754,234,383 | 2,934,644,784 | 3,137,148,148 | 3,343,549,070 | 3,517,433,781 |

| FISCAL YEAR | 1988 | 1989 | 1990 | 1991 |
|---|---|---|---|---|
| PERSONNEL & PROVISIONS | 1,578,864,769 | 1,613,580,741 | 1,668,028,636 | 1,756,766,471 |
| CURRENT-YEAR MATERIAL | 770,487,217 | 838,074,880 | 906,434,203 | 929,152,825 |
| CURRENT-YEAR OBLIGATORY OUTLAY | 1,350,975,954 | 1,467,178,674 | 1,582,878,247 | 1,700,115,710 |
| TOTAL | 3,700,327,940 | 3,918,834,295 | 4,159,341,086 | 4,386,035,006 |

Source: Kaijojieitai Yosan Jimuteiyo (Kaijobakuryokanbu)

## APPENDIX G

### TRENDS IN JAPAN'S DEFENSE EXPENDITURES (by Organization)

(Unit: 1000Yen, Expressed in nominal term)

| FISCAL YEAR | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
|---|---|---|---|---|---|---|---|
| JGSDF BUDGET | 436,063,610 | 556,630,000 | 651,653,279 | 714,429,431 | 799,065,903 | 859,871,056 | 887,274,653 |
| JMSDF BUDGET | 238,992,567 | 268,047,521 | 314,051,000 | 357,156,190 | 421,108,858 | 454,003,847 | 509,657,110 |
| JASDF BUDGET | 279,999,635 | 335,587,155 | 362,179,754 | 413,594,535 | 437,841,542 | 482,653,097 | 514,435,291 |
| OTHERS BUDGET | 137,968,083 | 167,057,216 | 184,466,563 | 205,433,169 | 243,013,290 | 297,961,291 | 318,835,424 |
| TOTAL | 1,093,023,895 | 1,327,321,872 | 1,512,350,596 | 1,690,613,325 | 1,901,029,593 | 2,094,489,291 | 2,230,202,478 |

| FISCAL YEAR | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|
| JGSDF BUDGET | 944,307,702 | 986,020,584 | 1,027,337,475 | 1,077,538,962 | 1,161,200,110 | 1,249,516,952 | 1,286,199,804 |
| JMSDF BUDGET | 553,162,912 | 602,902,259 | 654,037,117 | 705,983,574 | 733,266,575 | 793,286,424 | 861,548,204 |
| JASDF BUDGET | 564,635,120 | 633,668,319 | 699,426,640 | 758,720,730 | 827,518,662 | 870,559,587 | 898,204,910 |
| OTHERS BUDGET | 337,913,175 | 363,544,309 | 373,433,151 | 392,401,518 | 415,162,801 | 430,186,107 | 471,400,863 |
| TOTAL | 2,400,018,909 | 2,586,135,471 | 2,754,234,383 | 2,934,644,784 | 3,137,148,148 | 3,343,549,070 | 3,517,433,781 |

| FISCAL YEAR | 1988 | 1989 | 1990 | 1991 | 1992 |
|---|---|---|---|---|---|
| JGSDF BUDGET | 1,330,266,211 | 1,379,272,640 | 1,474,852,513 | 1,563,154,276 | 1,633,400,000 |
| JMSDF BUDGET | 946,146,023 | 971,559,636 | 976,022,583 | 1,085,383,204 | 1,100,200,000 |
| JASDF BUDGET | 934,169,264 | 1,030,049,496 | 1,121,705,999 | 1,118,218,270 | 1,153,200,000 |
| OTHERS BUDGET | 495,143,542 | 537,952,323 | 586,759,991 | 619,279,256 | 665,100,000 |
| TOTAL | 3,700,327,940 | 3,918,834,295 | 4,159,341,086 | 4,386,035,006 | 4,551,700,000 |

Source: Kaijojieitai Yosan Jimuteiyo (Kaijobakuryokanbu)

## APPENDIX H

### TRENDS IN EACH SERVICE'S BUDGET AS A PERCENTAGE OF GNP (by Organization) IN JAPAN

| FISCAL YEAR | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|
| JGSDF BUDGET | 0.352% | 0.351% | 0.388% | 0.370% | 0.379% | 0.371% |
| JMSDF BUDGET | 0.182% | 0.169% | 0.187% | 0.185% | 0.200% | 0.196% |
| JASDF BUDGET | 0.213% | 0.212% | 0.215% | 0.214% | 0.208% | 0.208% |
| OTHER'S BUDGET | 0.105% | 0.105% | 0.110% | 0.107% | 0.115% | 0.128% |
| TOTAL | 0.831% | 0.837% | 0.900% | 0.877% | 0.903% | 0.903% |

| FISCAL YEAR | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 |
|---|---|---|---|---|---|---|
| JGSDF BUDGET | 0.358% | 0.357% | 0.356% | 0.365% | 0.364% | 0.369% |
| JMSDF BUDGET | 0.206% | 0.209% | 0.217% | 0.232% | 0.239% | 0.233% |
| JASDF BUDGET | 0.208% | 0.213% | 0.229% | 0.248% | 0.256% | 0.263% |
| OTHER'S BUDGET | 0.129% | 0.128% | 0.131% | 0.133% | 0.133% | 0.132% |
| TOTAL | 0.900% | 0.906% | 0.933% | 0.978% | 0.991% | 0.997% |

| FISCAL YEAR | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|---|---|---|---|---|---|---|
| JGSDF BUDGET | 0.371% | 0.367% | 0.364% | 0.354% | 0.354% | 0.340% |
| JMSDF BUDGET | 0.236% | 0.246% | 0.258% | 0.249% | 0.234% | 0.236% |
| JASDF BUDGET | 0.259% | 0.256% | 0.256% | 0.264% | 0.269% | 0.243% |
| OTHER'S BUDGET | 0.128% | 0.135% | 0.136% | 0.138% | 0.141% | 0.135% |
| TOTAL | 0.993% | 1.004% | 1.013% | 1.006% | 0.997% | 0.954% |

Source : Kaijojieitai Yosan Jimuteiyo (Kaijobakuryokanbu)

## APPENDIX I

## TRENDS IN JMSDF BUDGET (by Expenses)

(Unit : 1000Yen, Expressed in nominal term)

| FISCAL YEAR | 1974 | 1975 | 1976 | 1977 | 1978 |
|---|---|---|---|---|---|
| PERSONNEL & PROVISIONS | 94,699,262 | 122,846,066 | 149,937,055 | 163,262,653 | 179,762,677 |
| CURRENT-YEAR OBLIGATORY OUTLAY | 88,474,142 | 78,643,333 | 93,336,011 | 117,989,670 | 156,902,314 |
| CURRENT-YEAR MATERIAL | 55,819,163 | 66,558,122 | 70,777,934 | 75,903,867 | 84,443,867 |
| TOTAL | 238,992,567 | 268,047,521 | 314,051,000 | 357,156,190 | 421,108,858 |

| FISCAL YEAR | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|
| PERSONNEL & PROVISIONS | 185,334,281 | 191,297,957 | 203,530,509 | 219,986,573 | 221,455,053 |
| CURRENT-YEAR OBLIGATORY OUTLAY | 166,073,958 | 208,331,903 | 235,123,960 | 256,648,036 | 307,216,830 |
| CURRENT-YEAR MATERIAL | 102,595,608 | 110,027,250 | 114,508,443 | 126,267,650 | 125,365,234 |
| TOTAL | 454,003,847 | 509,657,110 | 553,162,912 | 602,902,259 | 654,037,117 |

| FISCAL YEAR | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|
| PERSONNEL & PROVISIONS | 241,612,693 | 258,862,767 | 282,669,935 | 301,194,097 | 310,677,258 |
| CURRENT-YEAR OBLIGATORY OUTLAY | 351,878,604 | 358,749,604 | 392,317,167 | 437,329,163 | 489,198,578 |
| CURRENT-YEAR MATERIAL | 112,492,277 | 115,654,204 | 118,299,332 | 123,024,944 | 140,872,987 |
| TOTAL | 705,983,574 | 733,266,575 | 793,286,424 | 861,548,204 | 940,748,823 |

| FISCAL YEAR | 1989 | 1990 | 1991 | 1992 |
|---|---|---|---|---|
| PERSONNEL & PROVISIONS | 311,969,791 | 317,413,953 | 331,612,132 | 352,100,000 |
| CURRENT-YEAR OBLIGATORY OUTLAY | 504,890,583 | 487,397,898 | 581,473,610 | 583,400,000 |
| CURRENT-YEAR MATERIAL | 154,699,462 | 171,210,732 | 172,297,462 | 168,500,000 |
| TOTAL | 971,559,636 | 976,022,583 | 1,085,383,204 | 1,104,000,000 |

Source : Kaijo Jieitai Yosan Jimutelyo (Kaijobakuryokanbu)

# APPENDIX J

## TRENDS IN JMSDF BUDGET (by 3 Components)

(Unit: 1000 Yen, Expressed in nominal term)

| FISCAL YEAR | 1955 | 1956 | [illegible] | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 Personnel & Provisions | 3,751,705 | 5,551,961 | 6,688,630 | 7,106,355 | 8,121,650 | 9,586,280 | 11,382,979 | 13,734,107 | 16,024,315 | 18,964,681 |
| Personnel | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Provisions | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| 2 Front-Line | 5,544,680 | 8,165,571 | 5,200,543 | 7,133,104 | 11,267,817 | 13,480,314 | 15,014,571 | 14,436,714 | 13,305,675 | 16,520,257 |
| Ship | 5,544,680 | 7,804,378 | 5,200,543 | 6,711,416 | 8,195,834 | 9,460,712 | 8,005,970 | 6,967,694 | 9,526,228 | 10,717,186 |
| Aircraft | 0 | 361,193 | 0 | 421,688 | 3,070,243 | 3,984,415 | 6,011,726 | 6,018,785 | 2,270,371 | 3,960,605 |
| Ammunition | 0 | 0 | 0 | 0 | 740 | 35,189 | 996,875 | 1,452,235 | 1,509,076 | 1,842,466 |
| 3 Others | 9,715,952 | 9,137,007 | 10,035,936 | 11,430,341 | 12,813,561 | 13,525,306 | 16,025,476 | 19,295,435 | 22,504,971 | 22,556,593 |
| 4 TOTAL | 19,012,337 | 22,854,539 | 21,925,109 | 25,669,800 | 32,203,028 | 36,591,900 | 42,423,026 | 47,466,256 | 51,834,961 | 58,041,531 |

| FISCAL YEAR | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 Personnel & Provisions | 22,702,398 | 25,731,298 | 28,931,137 | 33,429,846 | 38,523,576 | 45,595,607 | 54,233,668 | 64,296,981 | 76,188,068 | 94,699,262 |
| Personnel | ** | ** | ** | ** | ** | 42,431,809 | 50,738,044 | 60,446,785 | 71,863,917 | 89,787,989 |
| Provisions | ** | ** | ** | ** | ** | 3,163,798 | 3,495,624 | 3,850,196 | 4,324,151 | 4,911,273 |
| 2 Front-Line | 19,933,305 | 20,398,770 | 23,371,295 | 27,669,137 | 36,850,351 | 51,097,600 | 64,076,797 | 74,074,522 | 76,220,965 | 76,302,541 |
| Ship | 13,657,606 | 14,836,034 | 17,220,429 | 18,751,384 | 21,071,000 | 22,815,329 | 30,463,006 | 35,369,449 | 36,573,559 | 43,439,980 |
| Aircraft | 4,059,427 | 3,348,111 | 3,497,407 | 6,314,583 | 13,030,092 | 25,329,498 | 30,001,167 | 34,986,618 | 35,519,312 | 28,196,529 |
| Ammunition | 2,216,272 | 2,214,625 | 2,653,459 | 2,603,170 | 2,749,259 | 2,952,773 | 3,612,622 | 3,718,455 | 4,128,094 | 4,666,032 |
| 3 Others | 25,426,287 | 28,914,089 | 32,693,402 | 36,170,624 | 39,033,417 | 42,587,984 | 43,909,630 | 49,491,948 | 62,043,894 | 67,990,764 |
| 4 TOTAL | 68,061,990 | 75,044,167 | 84,995,834 | 97,269,607 | 114,407,344 | 139,281,191 | 162,220,095 | 187,863,451 | 214,452,927 | 238,992,567 |

| FISCAL YEAR | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 Personnel & Provisions | 122,846,066 | 149,937,055 | 163,262,653 | 179,762,677 | 185,334,281 | 191,297,937 | 203,530,509 | 219,986,573 | 221,455,053 | 241,612,693 |
| Personnel | 117,101,727 | 143,507,653 | 156,835,786 | 172,738,026 | 178,487,242 | 183,657,108 | 195,220,126 | 211,933,374 | 213,610,019 | 233,337,365 |
| Provisions | 5,744,339 | 6,429,402 | 6,426,867 | 7,024,651 | 6,847,039 | 7,640,849 | 8,310,383 | 8,053,199 | 7,845,034 | 8,275,328 |
| 2 Front-Line | 67,798,003 | 79,282,791 | 94,825,664 | 122,036,601 | 129,885,952 | 159,706,698 | 184,520,099 | 205,031,650 | 224,606,414 | 280,595,496 |
| Ship | 30,505,971 | 45,435,678 | 54,778,854 | 80,355,593 | 90,752,394 | 116,159,631 | 129,848,344 | 129,010,634 | 145,533,804 | 167,256,728 |
| Aircraft | 32,013,465 | 27,302,695 | 32,247,862 | 34,760,293 | 29,969,429 | 33,770,764 | 44,384,208 | 61,917,254 | 63,562,177 | 94,498,117 |
| Ammunition | 5,278,567 | 6,544,418 | 7,798,948 | 6,920,715 | 9,164,129 | 9,776,303 | 10,287,547 | 14,103,762 | 15,510,433 | 18,840,651 |
| 3 Others | 77,403,452 | 84,831,154 | 99,067,873 | 119,309,580 | 138,783,614 | 158,652,455 | 165,112,304 | 177,884,036 | 207,975,650 | 183,775,385 |
| 4 TOTAL | 268,047,521 | 314,051,000 | 357,156,190 | 421,108,858 | 454,003,847 | 509,657,110 | 553,162,912 | 602,902,259 | 654,037,117 | 705,983,574 |

| FISCAL YEAR | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|---|---|---|---|---|---|---|---|---|
| 1 Personnel & Provisions | 258,862,767 | 282,669,925 | 301,190,637 | 310,677,258 | 311,969,791 | 317,413,953 | 331,612,132 | 352,070,892 |
| Personnel | 250,243,013 | 273,905,603 | 292,209,296 | 301,411,255 | 302,651,459 | 307,889,707 | 323,319,513 | 344,950,847 |
| Provisions | 8,619,754 | 8,764,322 | 8,981,001 | 9,266,003 | 9,318,332 | 9,524,246 | 8,292,619 | 7,120,045 |
| 2 Front-Line | 278,395,331 | 313,741,813 | 338,066,676 | 383,589,887 | 365,232,202 | 317,391,989 | 424,201,821 | 367,768,428 |
| Ship | 167,226,780 | 173,761,134 | 171,185,059 | 197,900,806 | 186,803,025 | 140,526,832 | 190,080,170 | 166,575,259 |
| Aircraft | 89,744,488 | 113,136,954 | 136,201,730 | 154,620,946 | 142,162,227 | 133,067,936 | 181,779,526 | 155,759,020 |
| Ammunition | 21,424,063 | 26,843,725 | 30,679,887 | 31,068,135 | 36266950 | 43797221 | 52342125 | 45434149 |
| 3 Others | 196,008,477 | 196,874,686 | 222,287,431 | 246,481,678 | 294,357,843 | 341,216,641 | 329,569,251 | 380,315,090 |
| 4 TOTAL | 733,266,575 | 793,286,424 | 861,548,204 | 940,748,823 | 971,559,836 | 976,022,583 | 1,085,383,204 | 1,100,154,410 |

Source: Kaijojieitai Yosan Jimuteryo (Kaijobakuryokanbu)

## APPENDIX K

## JMSDF SHIPBUILDING COST (DE, DD, DDG, SS)

| Fiscal Year | Type | Ship Name | Ton (Standard) | Total Real Value FY1985 Base (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | Nominal Value 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1956 | SS | OYASHIO | 1,100 | 12,144,905 | 2,718,000 | 456,000 | 1,182,520 | 729,430 | 160,503 | 189,547 | | |
| 1957 | DD | HARUSAME | 1,800 | 8,308,898 | 1,934,721 | | 365,910 | 601,451 | 967,360 | | | |
| 1957 | DD | TAKANAMI | 1,700 | 8,308,898 | 1,934,721 | | 365,910 | 601,451 | 967,360 | | | |
| 1958 | DD | ONAMI | 1,700 | 8,488,423 | 2,045,774 | | | 638,415 | 499,616 | 907,743 | | |
| 1958 | DD | MAKINAMI | 1,700 | 8,488,423 | 2,045,774 | | | 638,415 | 499,616 | 907,743 | | |
| 1959 | DE | SUZU | 1,490 | 7,043,042 | 1,767,481 | | | | 418,985 | 1,022,090 | 326,406 | |
| 1959 | DE | MOGAMI | 1,490 | 7,043,042 | 1,767,481 | | | | 418,985 | 1,022,090 | 326,406 | |
| 1959 | SS | HAYASHIO | 750 | 6,606,476 | 1,678,868 | | | | 351,773 | 761,349 | 327,449 | 238,298 |
| 1959 | SS | WAKASHIO | 750 | 6,606,476 | 1,678,869 | | | | 351,773 | 761,349 | 327,449 | 238,298 |

| Fiscal Year | Type | Ship Name | Ton (Standard) | Total Real Value FY1985 Base (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1960 | DDG | AMATSUKAZE | 3,050 | 14,215,567 | 4,013,287 | 265,379 | 929,678 | 650,900 | 1,387,050 | 780,080 | | |
| 1960 | SS | NATSUSHIO | 790 | 6,674,718 | 1,796,909 | 302,100 | 1,052,190 | 168,522 | 274,097 | | | |
| 1960 | SS | FUYUSHIO | 790 | 6,674,718 | 1,796,909 | 302,100 | 1,052,190 | 168,522 | 274,097 | | | |
| 1961 | DE | ODI | 1,490 | 7,420,057 | 2,039,298 | | 346,183 | 1,172,818 | 520,297 | | | |
| 1961 | DE | KITAKAMI | 1,490 | 7,420,057 | 2,039,298 | | 346,183 | 1,172,818 | 520,297 | | | |
| 1961 | SS | OOSHIO | 1,600 | 12,058,401 | 3,511,731 | | 419,500 | 434,457 | 1,447,988 | 1,209,786 | | |
| 1962 | DD | YAMAGUMO | 2,050 | 10,110,612 | 3,055,652 | | | 336,710 | 809,379 | 1,462,843 | 446,730 | |
| 1963 | DD | MAKIGUMO | 2,050 | 10,953,853 | 3,445,847 | | | | 541,299 | 1,461,068 | 1,443,480 | |
| 1963 | DE | TAKATSUKI | 3,100 | 14,242,918 | 4,615,877 | | | | 857,024 | 838,447 | 1,380,099 | 1,540,307 |
| 1963 | SS | ASASHIO | 1,650 | 12,367,662 | 3,971,804 | | | | 766,536 | 763,582 | 1,646,111 | 795,575 |

| Fiscal Year | Type | Ship Name | Ton (Standard) | Total Real Value FY1985 Base (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | DD | ASAGUMO | 3,050 | 10,154,748 | 3,472,577 | 525,060 | 920,302 | 1,251,314 | 775,901 | | | |
| 1964 | DD | KIKUZUKI | 3,050 | 17,934,419 | 6,176,966 | 706,338 | 1,867,289 | 1,675,105 | 1,928,234 | | | |
| 1964 | SS | HARUSHIO | 1,650 | 11,620,773 | 3,971,804 | 646,540 | 887,198 | 1,666,107 | 771,959 | | | |
| 1965 | DD | MINEGUMO | 2,100 | 11,023,913 | 3,946,441 | | 801,542 | 977,786 | 1,383,432 | 783,681 | | |
| 1965 | DD | MOTIZUKI | 3,100 | 16,380,248 | 6,660,128 | | 1,083,570 | 1,069,663 | 2,534,628 | 1,972,267 | | |
| 1965 | SS | MITISHIO | 1,650 | 11,003,653 | 3,936,853 | | 917,172 | 768,462 | 1,465,790 | 784,429 | | |
| 1966 | DD | NATSUGUMO | 2,100 | 10,955,084 | 4,157,155 | | | 669,413 | 517,731 | 2,075,557 | 896,454 | |
| 1966 | DD | NAGATSUKI | 3,100 | 19,283,520 | 7,296,452 | | | 1,225,127 | 896,243 | 3,835,421 | 1,339,661 | |
| 1966 | SS | ARASHIO | 1,650 | 11,038,516 | 4,170,149 | | | 926,507 | 913,029 | 1,242,689 | 1,087,924 | |
| 1966 | TV | KATORI | 3,350 | 8,959,309 | 3,421,518 | | | 149,400 | 637,574 | 1,991,965 | 642,579 | |
| 1967 | DD | MURAKUMO | 2,150 | 11,051,293 | 4,456,114 | | | | 735,962 | 468,456 | 2,356,636 | 895,060 |
| 1967 | DE | CHIKUGO | 1,470 | 7,955,372 | 3,206,833 | | | | 547,985 | 288,446 | 1,786,799 | 583,603 |
| 1967 | SS | UZUSHIO | 1,850 | 15,479,852 | 6,175,385 | | | | 1,407,771 | 1,041,882 | 2,369,272 | 1,356,460 |

Source: Kaijobetai Hosan Jimutelyo (Kaijobakuryokanbu)

APPENDIX K (cont'd)

| Fiscal Year | Type | Ship Name | Ton (Standard) | Total Real Value FY1985 Base (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | Nominal Value 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1968 | DDH | HARUNA | 4,700 | 20,532,027 | 9,109,710 | 732,553 | 1,727,605 | 897,605 | 4,241,007 | 1,510,940 | | |
| 1968 | DE | AYASE | 1,480 | 7,510,484 | 3,226,378 | 266,579 | 313,859 | 1,921,342 | 724,598 | | | |
| 1968 | DE | MIKUMA | 1,470 | 7,510,484 | 3,226,378 | 266,579 | 313,859 | 1,921,342 | 724,598 | | | |
| 1968 | SS | MAKISHIO | 1,850 | 14,194,970 | 6,064,207 | 718,713 | 1,236,951 | 2,340,968 | 1,767,575 | | | |
| 1969 | DD | AOKUMO | 2,150 | 11,206,156 | 5,143,336 | | 450,751 | 504,262 | 2,903,622 | 1,284,701 | | |
| 1969 | DE | TOKATI | 1,470 | 7,968,508 | 3,650,927 | | 313,957 | 380,217 | 2,136,368 | 820,385 | | |
| 1969 | SS | ISOSHIO | 1,850 | 14,740,710 | 6,713,264 | | 708,911 | 1,438,083 | 2,617,352 | 1,948,918 | | |
| 1970 | DDH | HIEI | 4,700 | 20,746,106 | 10,981,532 | | | 228,053 | 1,798,761 | 4,541,999 | 1,534,455 | 2,878,264 |
| 1970 | DE | IWASE | 1,470 | 9,055,679 | 4,235,974 | | | 346,826 | 2,344,690 | 1,544,458 | | |
| 1970 | DE | CHITOSE | 1,480 | 8,570,139 | 4,249,145 | | | 346,826 | 475,990 | 2,392,618 | 1,033,711 | |
| 1970 | SS | NARUSHIO | 1,850 | 14,571,088 | 7,188,735 | | | 798,284 | 1,532,003 | 2,776,818 | 2,081,630 | |

| | | | | | | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1971 | DDG | TACHIKAZE | 3,850 | 31,198,660 | 18,488,161 | 665,045 | 4,274,562 | 3,756,677 | 6,298,103 | 3,493,774 | | |
| 1971 | DD | ASAGUMO | 2,150 | 11,025,293 | 6,229,048 | 536,537 | 639,850 | 3,404,700 | 1,627,961 | | | |
| 1971 | DE | NIYODO | 1,470 | 8,565,993 | 4,372,623 | 338,766 | 2,454,818 | 1,579,039 | | | | |
| 1971 | SS | KUROSHIO | 1,850 | 13,774,589 | 7,565,595 | 797,643 | 2,367,046 | 2,187,619 | 2,213,287 | | | |
| 1972 | DE | TESHIO | 1,500 | 8,053,066 | 4,723,877 | | 420,351 | 2,632,401 | 1,670,625 | | | |
| 1972 | DE | YOSHINO | 1,500 | 8,053,066 | 4,723,877 | | 420,851 | 2,632,401 | 1,670,625 | | | |
| 1972 | DE | KUMANO | 1,500 | 7,318,108 | 4,717,693 | | 420,851 | 482,644 | 2,678,840 | 1,135,358 | | |
| 1972 | SS | TAKASHIO | 1,850 | 13,949,194 | 8,554,981 | | 971,734 | 2,920,053 | 2,185,889 | 2,477,305 | | |

| | | | | | | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1973 | DDG | ASAKAZE | 3,850 | 40,308,987 | 30,136,794 | 1,952,953 | 4,633,867 | 4,312,261 | 4,781,559 | 9,173,913 | 5,282,241 | |
| 1973 | DE | NOSHIRO | 1,500 | 10,954,913 | 8,131,297 | 466,991 | 583,083 | 1,065,161 | 3,980,016 | 2,036,046 | | |
| 1973 | SS | YAESHIO | 1,850 | 20,705,002 | 15,232,172 | 964,898 | 701,612 | 4,793,300 | 4,353,327 | 4,419,035 | | |
| 1974 | DD | YUGUMO | 2,150 | 17,157,833 | 12,987,931 | | 1,490,478 | 1,804,465 | 5,233,676 | 4,459,312 | | |
| 1975 | DDH | SHIRANE | 5,200 | 47,666,371 | 39,100,797 | | | 369,250 | 10,368,230 | 4,444,308 | 14,933,687 | 8,985,322 |
| 1975 | SS | YUSHIO | 2,200 | 28,987,971 | 23,714,656 | | | 256,064 | 5,355,230 | 6,474,904 | 4,809,338 | 6,819,120 |

| | | | | | | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1976 | DDH | KURAMA | 5,200 | 48,869,649 | 42,018,626 | 981,653 | 8,669,666 | 3,703,481 | 15,945,356 | 12,718,670 | | |
| 1977 | DD | HATSUYUKI | 2,950 | 32,894,496 | 29,306,275 | | 290,492 | 7,339,468 | 3,850,824 | 13,121,976 | 4,703,515 | |
| 1977 | DE | ISHIKARI | 1,290 | 14,068,471 | 12,234,004 | | 63,138 | 3,146,710 | 5,820,292 | 3,203,864 | | |
| 1977 | SS | MOCHISHIO | 2,200 | 29,315,454 | 25,576,992 | | 390,362 | 12,578,885 | 2,820,062 | 9,787,583 | | |
| 1978 | DDG | SAWAKAZE | 3,950 | 46,479,217 | 42,379,873 | | | 1,069,455 | 10,219,757 | 8,989,744 | 17,371,400 | 4,729,617 |
| 1978 | DD | SHIRAYUKI | 2,950 | 30,735,065 | 28,143,950 | | | 570,492 | 6,413,630 | 4,291,371 | 11,977,391 | 4,891,066 |
| 1978 | SS | SETOSHIO | 2,200 | 29,175,424 | 26,319,941 | | | 297,361 | 9,162,075 | 6,709,320 | 10,151,185 | |

APPENDIX K (cont'd)

| Fisca Year | Type | Ship Name | Ton (Standard) | Total Real Value FY1985 Base (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | Nominal Value 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | DD | MINEYUKI | 2,950 | 32,921,674 | 30,901,596 | 825,214 | 7,590,097 | 5,178,194 | 12,405,573 | 4,902,518 | | |
| 1979 | DD | SAWAYUKI | 2,950 | 32,921,674 | 30,901,596 | 825,214 | 7,590,097 | 5,178,194 | 12,405,573 | 4,902,518 | | |
| 1979 | DD | HAMAYUKI | 2,950 | 32,921,674 | 30,901,596 | 825,214 | 7,590,097 | 5,178,194 | 12,405,573 | 4,902,518 | | |
| 1979 | DE | YUBARI | 1,470 | 16,396,047 | 15,209,907 | 534,403 | 5,418,135 | 6,885,705 | 2,370,664 | | | |
| 1979 | SS | OKISHIO | 2,200 | 27,925,058 | 25,877,989 | 275,415 | 12,468,179 | 6,950,569 | 6,183,826 | | | |
| 1980 | DD | ISOYUKI | 2,950 | 33,277,788 | 31,960,088 | | 887,625 | 7,878,073 | 5,521,568 | 12,384,745 | 5,288,077 | |
| 1980 | DD | HARUYUKI | 2,950 | 33,277,788 | 31,960,088 | | 887,625 | 7,878,073 | 5,521,568 | 12,384,745 | 5,288,077 | |
| 1980 | DE | YUBETSU | 1,470 | 17,497,082 | 16,592,106 | | 691,606 | 5,878,668 | 6,974,888 | 3,046,744 | | |
| 1980 | SS | NADASHIO | 2,250 | 31,173,098 | 29,551,456 | | 834,303 | 14,189,081 | 8,483,377 | 6,044,695 | | |
| 1981 | DDG | HATAKAZE | 4,600 | 62,670,571 | 61,197,355 | | | 4,959,518 | 9,607,821 | 13,243,892 | 23,895,175 | 9,490,849 |
| 1981 | DD | YAMAYUKI | 3,050 | 34,437,168 | 33,780,951 | | | 587,100 | 5,272,095 | 5,871,515 | 15,607,428 | 6,242,813 |
| 1981 | DD | MATSUYUKI | 3,050 | 34,437,168 | 33,780,951 | | | 587,100 | 5,272,095 | 5,871,515 | 15,607,428 | 6,242,813 |
| 1981 | SS | HAMASHIO | 2,250 | 31,724,905 | 30,768,117 | | | 463,729 | 8,712,209 | 12,030,065 | 9,562,114 | |
| | | | | | | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
| 1982 | DD | SETOYUKI | 3,050 | 38,022,103 | 37,882,943 | 703,675 | 6,190,439 | 5,050,870 | 18,780,033 | 7,157,926 | | |
| 1982 | DD | ASAYUKI | 3,050 | 38,022,103 | 37,882,943 | 703,675 | 6,190,439 | 5,050,870 | 18,780,033 | 7,157,926 | | |
| 1982 | DD | SHIMAYUKI | 3,050 | 38,022,103 | 37,882,943 | 703,675 | 6,190,439 | 5,050,870 | 18,780,033 | 7,157,926 | | |
| 1982 | SS | AKISHIO | 2,250 | 32,545,862 | 32,151,497 | 353,186 | 8,348,492 | 11,639,945 | 11,809,874 | | | |
| 1983 | DDG | SHIMAKAZE | 4,650 | 64,964,160 | 65,635,208 | | 1,241,279 | 10,582,831 | 12,177,983 | 29,205,115 | 12,424,000 | |
| 1983 | DD | ASAGIRI | 3,500 | 40,359,168 | 40,885,830 | | 71,636 | 5,361,632 | 5,716,837 | 21,087,196 | 8,648,337 | |
| 1983 | SS | TAKESHIO | 2,250 | 29,200,966 | 29,380,163 | | 48,672 | 7,228,888 | 9,162,809 | 12,939,794 | | |
| 1984 | DD | YAMAGIRI | 3,500 | 37,258,776 | 37,933,090 | | | 72,971 | 3,432,504 | 6,645,920 | 19,926,520 | 7,855,175 |
| 1984 | DD | YUGIRI | 3,500 | 37,258,776 | 37,933,090 | | | 72,971 | 3,432,504 | 6,645,920 | 19,926,520 | 7,855,175 |
| 1984 | DD | AMAGIRI | 3,500 | 37,258,776 | 37,933,090 | | | 72,971 | 3,432,504 | 6,645,920 | 19,926,520 | 7,855,175 |
| 1984 | SS | YUKISHIO | 2,250 | 29,739,792 | 30,194,849 | | | 41,[illegible] | 6,924,745 | 9,925,145 | 13,303,911 | |
| | | | | | | 1985 | 1986 | [illegible] | 1988 | 1989 | 1990 | 1991 |
| 1985 | DD | HAMAGIRI | 3,550 | 38,995,939 | 40,049,732 | 60,113 | 3,181,249 | 7,298,[illegible]36 | 19,381,958 | 9,627,676 | | |
| 1985 | DD | SETOGIRI | 3,550 | 38,995,939 | 40,049,732 | 60,113 | 3,181,249 | 7,298,736 | 19,88[illegible]958 | 9,627,676 | | |
| 1985 | DD | SAWAGIRI | 3,550 | 38,995,939 | 40,049,732 | 60,113 | 3,181,249 | 7,298,736 | 19,881,958 | 9,627,676 | | |
| 1985 | SS | SACHISHIO | 2,250 | 30,696,036 | 31,308,311 | 82,301 | 7,606,108 | 10,766,115 | 12,853,787 | | | |
| 1986 | DD | UMIGIRI | 3,550 | 38,674,024 | 40,477,713 | | 37,669 | 2,601,550 | 7,417,054 | 22,067,985 | 8,553,455 | |
| 1986 | DE | ABUKUMA | 2,000 | 23,609,808 | 24,341,835 | | 240,222 | 3,756,590 | 11,250,941 | 9,094,082 | | |
| 1986 | DE | JINTSUU | 2,000 | 23,609,808 | 24,341,835 | | 240,222 | 3,756,590 | 11,250,941 | 9,094,082 | | |
| 1986 | SS | HAMASHIO | 2,450 | 37,402,606 | 38,997,795 | | 148,808 | 2,836,863 | 12,623,798 | 13,535,700 | 9,852,626 | |
| 1987 | DE | OOYODO | 2,000 | 22,750,956 | 23,968,376 | | | 193,460 | 2,851,470 | 11,859,001 | 9,064,445 | |
| 1987 | DE | SENDAI | 2,000 | 22,750,956 | 23,968,376 | | | 193,460 | 2,851,470 | 11,859,001 | 9,064,445 | |
| 1987 | SS | NATSUSHIO | 2,450 | 35,477,370 | 37,226,224 | | | 166,930 | 10,604,993 | 10,842,613 | 15,611,688 | |

APPENDIX K (cont'd)

| Fiscal Year | Type | Ship Name | Ton (Standard) | Total Real Value FY1985 Base (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | Nominal Value 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1988 | DDG | KONGO | 7,200 | 113,380,204 | 122,274,218 | 3,328,159 | 20,250,031 | 23,901,616 | 59,791,769 | 15,002,643 | | |
| 1988 | SS | | 2,400 | 35,339,722 | 37,947,987 | 121,564 | 7,862,881 | 14,146,926 | 15,816,616 | | | |
| 1989 | DE | | 1,900 | 22,966,502 | 25,058,244 | | 156,837 | 2,974,134 | 12,431,758 | 9,495,515 | | |
| 1989 | DE | | 1,900 | 22,966,502 | 25,058,244 | | 156,837 | 2,974,134 | 12,431,758 | 9,495,515 | | |
| 1989 | SS | | 2,450 | 35,819,834 | 39,058,357 | | 135,865 | 7,573,920 | 13,585,479 | 17,763,093 | | |
| 1990 | DDG | | 7,200 | 116,951,534 | 129,212,919 | | | 3,403,061 | 21,101,827 | 25,337,932 | 63,521,492 | 15,847,607 |
| 1990 | SS | | 2,450 | 35,975,840 | 39,630,120 | | | 97,167 | 10,864,256 | 11,009,393 | 17,659,334 | |

| | | | | | | 1991 | 1992 | 1993 | 1994 | 1995 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1991 | DDG | | 7,200 | 109,987,409 | 122,672,009 | 3,021,493 | 19,518,092 | 23,744,641 | 60,786,954 | 15,600,869 |
| 1991 | DD | | 4,400 | 54,485,316 | 60,930,352 | 513,490 | 5,789,018 | 9,559,024 | 32,378,636 | 12,690,184 |

## APPENDIX L

### JMSDF SHIPBUILDING COST (EXCEPT DE, DD, DDG, SS)

| Fiscal Year | Type | SHIP NAME | TON (Standard) | Total Real Value FY1985 (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | Nominal Value 1964 | 1965 | 1966 | 1967 | 1968 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | PT | HIYODORI | 480 | 2,043,892 | 657,816 | 258,358 | 399,458 | | | |
| 1964 | MSC | RISHIRI | 340 | 1,807,224 | 583,734 | 196,073 | 387,661 | | | |
| 1964 | MSC | REBUN | 340 | 1,807,224 | 583,734 | 196,073 | 387,661 | | | |
| 1965 | MSC | AMAMI | 340 | 1,862,471 | 601,262 | 206,977 | 394,285 | | | |
| 1965 | MSC | OKUSHIRI | 340 | 1,862,471 | 601,262 | 206,977 | 394,285 | | | |
| 1965 | MSC | MINASE | 340 | 1,853,726 | 598,527 | 204,640 | 393,887 | | | |
| 1965 | ASH | NO-6 | 45 | 465,136 | 149,645 | 59,674 | 89,971 | | | |
| 1966 | MSC | IBUKI | 340 | 1,759,709 | 603,466 | | 205,133 | 398,333 | | |
| 1966 | MSC | KATSURA | 340 | 1,759,709 | 603,466 | | 205,133 | 398,333 | | |
| 1967 | MSC | TAKAMI | 330 | 2,653,048 | 985,287 | | | 190,547 | 241,932 | 552,808 |
| 1967 | MSC | KIE | 380 | 2,622,346 | 973,937 | | | 187,737 | 239,123 | 547,077 |
| 1967 | ASR | FUSHIMI | 1,500 | 3,461,235 | 1,277,333 | | | 322,060 | 382,254 | 573,019 |
| 1967 | ATF | AZUMA | 2,000 | 4,617,798 | 1,723,536 | | | 271,338 | 294,880 | 1,157,318 |
| 1967 | ACS | AKASI | 1,500 | 2,848,478 | 1,050,855 | | | 355,370 | 40,933 | 654,552 |

| | | | | | | 1967 | 1968 | 1969 | 1970 | 1971 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1968 | MSC | MIYAKE | 380 | 2,457,949 | 968,4[illegible] | 188,680 | 240,074 | 539,644 | | |
| 1968 | MSC | UTONE | 380 | 2,457,949 | 963,[illegible] | 188,680 | 240,074 | 539,644 | | |
| 1969 | MSC | AWAJI | 380 | 2,671,607 | 1,087,283 | | 102,296 | 984,987 | | |
| 1969 | MSC | TOSHI | 380 | 2,671,607 | 1,087,283 | | 102,296 | 984,987 | | |
| 1969 | MST | HAYASE | 2,000 | 5,941,508 | 2,445,097 | | 263,028 | 1,540,423 | 641,646 | |
| 1969 | MMC | SOYA | 2,000 | 7,520,426 | 3,096,749 | | 301,666 | 1,995,496 | 799,587 | |
| 1969 | PT | NO-11 | 100 | 2,178,830 | 869,902 | | 296,633 | 573,269 | | |
| 1970 | MSC | TEURI | 380 | 2,885,496 | 1,235,505 | | | 107,792 | 1,127,713 | |
| 1970 | MSC | MUROTSU | 380 | 2,885,496 | 1,235,505 | | | 107,792 | 1,127,713 | |
| 1970 | PT | NO-12 | 100 | 2,225,573 | 946,898 | | | 207,898 | 739,000 | |
| 1970 | LST | ATSUMI | 1,450 | 4,228,878 | 1,879,905 | | | 245,100 | 508,671 | 1,126,134 |
| 1970 | YAS | NO-103 | 500 | 859,306 | 363,770 | | | 117,501 | 246,269 | |

| | | | | | | 1970 | 1971 | 1972 | 1973 | 1974 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1971 | MSC | TASHIRO | 380 | 2,688,638 | 1,349,630 | 114,362 | 764,290 | 470,978 | | |
| 1971 | MSC | MIYATO | 380 | 2,688,638 | 1,349,630 | 114,362 | 764,290 | 470,978 | | |
| 1971 | MSB | NO-7 | 50 | 725,956 | 329,191 | 68,064 | 261,127 | | | |
| 1971 | MSB | NO-8 | 50 | 595,870 | 316,166 | 56,389 | 259,777 | | | |
| 1971 | PT | NO-13 | 100 | 2,359,584 | 1,062,864 | 323,139 | 739,725 | | | |
| 1971 | YAS | NO-104 | 500 | 850,330 | 383,077 | 115,759 | 267,318 | | | |

Source : Kaijoijieitai Yosan Jimutelyo (Kaijobakuryokanba)

APPENDIX E (cont'd)

| Fiscal Year | Type | Ship NAME | TON (Standard) | Total Real Value FY1985 (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | Nominal Value 1970 | 1971 | 1972 | 1973 | 1974 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1972 | MSC | TAKANE | 380 | 3,009,952 | 1,535,168 | | 138,039 | 842,775 | 554,354 | |
| 1972 | MSC | MUTSUKI | 380 | 3,009,952 | 1,535,168 | | 138,039 | 842,775 | 554,354 | |
| 1972 | MSB | NO-9 | 50 | 659,493 | 319,969 | | 48,803 | 271,166 | | |
| 1972 | MSB | NO-10 | 50 | 659,493 | 319,969 | | 48,803 | 271,166 | | |
| 1972 | PT | NO-14 | 100 | 2,391,148 | 1,146,896 | | 379,752 | 767,144 | | |
| 1972 | LST | MIURA | 2,000 | 6,164,231 | 3,268,492 | | 309,713 | 813,038 | 2,145,741 | |
| 1972 | LST | MOTOBU | 1,500 | 3,809,858 | 1,944,593 | | 341,127 | 1,503,456 | | |
| 1972 | YAS | NO-105 | 500 | 1,047,274 | 503,598 | | 146,606 | 356,933 | | |
| 1973 | MSC | YOKOTE | 380 | 2,739,152 | 1,563,956 | | | 153,223 | 1,094,495 | 316,238 |
| 1973 | MSC | SAKATE | 380 | 2,739,152 | 1,563,956 | | | 153,223 | 1,094,495 | 316,238 |
| 1973 | MSB | NO-11 | 50 | 649,105 | 355,547 | | | 55,662 | 299,885 | |
| 1973 | MSB | NO-12 | 50 | 649,105 | 355,547 | | | 55,662 | 299,885 | |
| 1973 | PT | NO-15 | 100 | 2,377,828 | 1,272,181 | | | 415,818 | 856,363 | |

| | | | | | | 1972 | 1973 | 1974 | 1975 | 1976 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1973 | LST | OMA | 2,000 | 4,991,647 | 3,086,048 | 269,055 | 812,097 | 2,004,896 | | |
| 1974 | MSC | OOMI | 380 | 2,952,064 | 1,961,828 | | 203,088 | 1,335,624 | 423,116 | |
| 1974 | MSC | FUKUE | 380 | 2,952,064 | 1,961,828 | | 203,088 | 1,335,624 | 423,116 | |
| 1974 | LST | SATSUMA | 2,000 | 5,349,459 | 3,617,310 | | 292,747 | 1,715,060 | 1,609,503 | |
| 1975 | MSC | OKITSU | 380 | 4,112,737 | 2,949,349 | | | 279,991 | 1,969,834 | 699,524 |
| 1975 | MSC | HASHIRA | 380 | 4,112,737 | 2,949,349 | | | 279,991 | 1,969,834 | 699,524 |
| 1975 | MSC | IWAI | 380 | 3,970,692 | 2,343,417 | | | 279,991 | 521,110 | 2,142,316 |
| 1975 | LST | NEMURO | 1,500 | 4,630,682 | 3,324,901 | | | 459,280 | 1,894,670 | 980,951 |

| | | | | | | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1976 | MSC | HATSUSHIMA | 440 | 5,378,024 | 4,239,887 | 226,062 | 1,283,983 | 2,729,842 | | |
| 1976 | AGS | FUTAMI | 2,000 | 9,401,465 | 7,463,893 | 433,781 | 1,371,008 | 5,659,104 | | |
| 1976 | AOE | SAGAMI | 5,000 | 15,316,700 | 12,144,972 | 578,213 | 2,737,768 | 8,928,991 | | |
| 1977 | MSC | NINOSHIMA | 440 | 5,234,636 | 4,359,857 | | 251,631 | 1,210,655 | 2,897,571 | |
| 1977 | MSC | MIYASHIRO | 440 | 5,047,900 | 4,208,844 | | 193,369 | 1,194,138 | 2,821,317 | |
| 1977 | ARC | MUROTO | 4,500 | 16,949,896 | 13,934,436 | | 1,839,620 | 5,165,812 | 6,928,804 | |
| 1978 | MSC | ENOSHIMA | 440 | 4,627,083 | 3,961,415 | | | 69,766 | 1,153,471 | 2,738,178 |
| 1978 | MSC | UKISHIMA | 440 | 4,443,615 | 3,805,172 | | | 52,323 | 1,114,081 | 2,638,768 |

APPENDIX L (cont'd)

| Fiscal Year | Type | SHIP NAME | TON (Standard) | Total Real Value FY1985 (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | Nominal Value | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1978 | 1979 | 1980 | 1981 | 1982 |
| 1979 | MSC | OOSHIMA | 440 | 4,583,425 | 4,075,190 | 90,268 | 1,536,967 | 2,446,015 | | |
| 1979 | MSC | NIIJIMA | 440 | 4,582,843 | 4,074,675 | 90,268 | 1,536,652 | 2,447,755 | | |
| 1979 | LSU | YURA | 500 | 2,227,294 | 1,913,014 | 208,982 | 1,704,032 | | | |
| 1979 | LSU | NOTO | 500 | 2,042,009 | 1,753,762 | 201,098 | 1,552,664 | | | |
| 1979 | AGS | SUMA | 1,100 | 5,523,701 | 4,887,654 | 600,546 | 1,660,188 | 2,626,920 | | |
| 1980 | MSC | YAKUSHIMA | 440 | 4,586,628 | 4,251,760 | | 99,446 | 1,529,382 | 2,622,932 | |
| 1980 | MSC | NARUSHIMA | 440 | 4,586,024 | 4,251,202 | | 99,446 | 1,529,106 | 2,622,650 | |
| 1981 | MSC | CHICHIJIMA | 440 | 4,831,576 | 4,575,304 | | | 6,611 | 1,353,803 | 3,214,890 |
| 1981 | MSC | TORISHIMA | 440 | 4,831,576 | 4,575,304 | | | 6,611 | 1,353,803 | 3,214,890 |
| | | | | | | 1980 | 1981 | 1982 | 1983 | 1984 |
| 1981 | AS | CHIYODA | 3,600 | 18,792,756 | 17,938,795 | 58,202 | 2,906,783 | 9,194,621 | 5,779,189 | |
| 1982 | MSC | HAHAJIMA | 440 | 4,723,656 | 4,554,980 | | 7,356 | 1,269,745 | 3,277,879 | |
| 1982 | MSC | TAKASHIMA | 440 | 4,723,656 | 4,554,980 | | 7,356 | 1,269,745 | 3,277,879 | |
| 1983 | MSC | IUWAJIMA | 440 | 4,510,432 | 4,543,109 | | | 7,621 | 1,013,527 | 3,521,961 |
| 1983 | | | 440 | 4,610,432 | 4,543,109 | | | 7,621 | 1,013,527 | 3,521,961 |
| 1983 | MSC | ETAJIMA | 440 | 4,610,432 | 4,543,109 | | | 7,621 | 1,013,527 | 3,521,961 |
| 1983 | AGS | WAKASA | 2,000 | 9,044,673 | 8,858,543 | | | 212,008 | 2,267,456 | 6,419,084 |
| | | | | | | 1983 | 1984 | 1985 | 1986 | 1987 |
| 1984 | MSC | KAMISHIMA | 440 | 4,441,814 | 4,431,920 | 7,753 | 955,756 | 3,468,411 | | |
| 1984 | MSC | HIMESHIMA | 440 | 4,441,814 | 4,431,920 | 7,753 | 955,756 | 3,468,411 | | |
| 1984 | AOE | TOWADA | 8,300 | 18,901,620 | 18,853,902 | 58,379 | 4,545,379 | 14,250,144 | | |
| 1985 | MSC | OGISHIMA | 440 | 4,755,414 | 4,827,602 | | 11,505 | 1,128,591 | 3,687,506 | |
| 1985 | MSC | MOROSHIMA | 440 | 4,755,414 | 4,827,602 | | 11,505 | 1,128,591 | 3,687,506 | |
| 1986 | MSC | YURISHIMA | 440 | 4,739,064 | 4,833,674 | | | 8,560 | 1,128,115 | 3,696,999 |
| 1986 | MSC | HIKOSHIMA | 440 | 4,736,569 | 4,831,129 | | | 8,560 | 1,125,579 | 3,696,990 |
| 1986 | LCU | NO-1 | 420 | 1,698,975 | 1,732,787 | | | 8,371 | 1,724,416 | |
| | | | | | | 1985 | 1986 | 1987 | 1988 | 1989 |
| 1986 | STS | KUROBE | 2,200 | 14,300,585 | 14,585,813 | 39,188 | 1,755,481 | 12,791,144 | | |
| 1987 | MSC | AWASHIMA | 490 | 5,070,284 | 5,171,690 | | 8,841 | 1,116,332 | 4,046,517 | |
| 1987 | MSC | SAKUSHIMA | 490 | 5,070,284 | 5,171,690 | | 8,841 | 1,116,332 | 4,046,517 | |
| 1987 | AOE | TOKIWA | 8,300 | 19,575,901 | 19,967,419 | | 52,197 | 4,160,888 | 15,754,334 | |
| 1987 | AOE | HAMANA | 8,300 | 18,909,806 | 19,288,002 | | 34,762 | 4,083,580 | 15,169,660 | |
| 1988 | MSC | UWASHIMA | 490 | 6,338,990 | 6,619,263 | | | 11,659 | 1,235,354 | 5,372,250 |
| 1988 | MSC | IESHIMA | 490 | 6,329,516 | 6,609,372 | | | 11,659 | 1,233,409 | 5,364,304 |

APPENDIX L (cont'd)

| Fiscal Year | Type | SHIP NAME | TON (Standard) | Total Real Value FY1985 (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | Nominal Value 1988 | 1989 | 1990 | 1991 | 1992 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1989 | MSO | | 1,000 | 15,168,060 | 16,295,726 | 192,055 | 2,549,857 | 6,802,057 | 6,751,757 | |
| 1989 | MSO | | 1,000 | 15,069,636 | 16,189,344 | 190,987 | 2,540,699 | 6,776,492 | 6,681,166 | |
| 1989 | AOS | HIBIKI | 2,800 | 13,590,775 | 14,285,962 | 169,323 | 13,013,039 | 1,103,601 | | |
| 1990 | MSO | | 1,000 | 15,996,747 | 17,428,480 | | 223,096 | 3,013,900 | 7,937,021 | 6,254,463 |
| 1990 | MSC | | 490 | 6,484,507 | 7,042,999 | | 10,909 | 1,321,350 | 5,710,740 | |
| 1990 | PG | | 50 | 9,012,726 | 9,755,883 | | 27,516 | 3,581,290 | 6,147,077 | |
| 1990 | PG | | 50 | 6,300,451 | 6,826,907 | | 7,320 | 2,156,337 | 4,663,250 | |
| 1990 | LCU | | 420 | 1,810,816 | 1,937,405 | | 8,828 | 1,928,577 | | |
| 1990 | AOS | | 2,800 | 13,451,779 | 14,412,639 | | 165,624 | 13,026,773 | 1,220,242 | |
| 1991 | MSC | | 490 | 7,046,032 | 7,736,274 | | | 13,053 | 1,525,495 | 6,197,726 |

## APPENDIX M

## JMSDF SHIPBUILDING COST (by Type)

| TYPE / FY | SHIP NAME | REAL COST (FY1985) (1000 Yen) | Cost/Ton (FY1985) (1000 Yen) | Cost/Ton/GNP |
|---|---|---|---|---|
| DE | | | | |
| FY1961 | KITAKAMI | 7,420,057 | 4,980 | 6.88E-08 |
| 1967 | CHIKUGO | 7,955,372 | 5,412 | 4.72E-08 |
| 1977 | ISHIKARI | 14,068,471 | 10,906 | 4.99E-08 |
| 1979 | YUBARI | 16,396,047 | 11,154 | 4.59E-08 |
| 1986 | ABUKUMA | 23,609,808 | 11,805 | 3.58E-08 |
| DD | | | | |
| FY1962 | YAMAGUMO | 10,110,612 | 4,932 | 6.87E-08 |
| 1963 | TAKATSUKI | 14,242,918 | 4,594 | 5.82E-08 |
| 1977 | HATSUYUKI | 32,894,496 | 11,151 | 5.23E-08 |
| 1983 | ASAGIRI | 40,359,168 | 11,531 | 4.08E-08 |
| DDG | | | | |
| FY1960 | AMATSUKAZE | 14,215,567 | 4,661 | 7.90E-08 |
| 1971 | TACHIKAZE | 31,198,660 | 8,104 | 5.80E-03 |
| 1981 | HATAKAZE | 62,670,571 | 13,624 | 5.11E-08 |
| 1988 | GONGO | 113,380,204 | 15,747 | 4.48E-08 |
| SS | | | | |
| FY1960 | HAYASHIO | 6,674,718 | 8,449 | 1.37E-07 |
| 1963 | OSHIO | 12,367,682 | 7,496 | 9.40E-08 |
| 1967 | UZUSHIO | 15,479,852 | 8,367 | 7.23E-08 |
| 1975 | YUSHIO | 28,987,971 | 13,176 | 7.08E-08 |
| 1986 | HAMASHIO | 31,724,905 | 14,100 | 5.25E-08 |

Source: Kaijojleitai Yosan Jimuteiyo (Kaijobakuryokanbu)

# APPENDIX N

## JMSDF AIRCRAFT INVENTORIES

Fixed Wing

| FY | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P2V-7 | | 6 | 6 | 10 | 16 | 19 | 29 | 42 | 56 | 56 | 59 | 60 | 59 | 59 | 58 | 55 | 50 | 43 | 37 | 30 | 26 |
| P-2J | | | | | | | | | | | | | 1 | 1 | 1 | 3 | 14 | 25 | 36 | 47 | 55 |
| S2F-1 | | | | 16 | 46 | 60 | 60 | 60 | 59 | 58 | 58 | 58 | 56 | 56 | 56 | 51 | 37 | 23 | 25 | 24 | 25 |
| PV-2 | 16 | 16 | 16 | 14 | 11 | 8 | 5 | | | | | | | | | | | | | | |
| PBY-6A | | 2 | 2 | 2 | 2 | 1 | | | | | | | | | | | | | | | |
| TBM | 10 | 14 | 20 | 16 | 15 | 7 | 7 | | | | | | | | | | | | | | |
| PS-1 | | | | | | | | | | | | | | | 2 | 2 | 2 | 4 | 9 | 14 | 15 |
| OTERS | 3 | 17 | 29 | 81 | 93 | 91 | 90 | 88 | 100 | 89 | 85 | 68 | 62 | 60 | 60 | 75 | 82 | 84 | 84 | 90 | 90 |
| TOTAL | 39 | 55 | 73 | 139 | 185 | 186 | 191 | 190 | 215 | 203 | 202 | 186 | 178 | 176 | 177 | 186 | 185 | 179 | 191 | 205 | 211 |

| FY | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P2V-7 | 20 | 15 | 12 | 9 | 4 | 2 | 1 | | | | | | | | | |
| P-2J | 62 | 70 | 76 | 80 | 80 | 80 | 79 | 78 | 78 | 76 | 61 | 48 | 39 | 28 | 18 | 10 |
| P-3C | | | | | | | 3 | 8 | 13 | 18 | 25 | 32 | 40 | 50 | 59 | 67 |
| S2F-1 | 24 | 24 | 24 | 25 | 22 | 17 | 13 | 10 | | | | | | | | |
| PS-1 | 15 | 17 | 17 | 18 | 19 | 19 | 19 | 17 | 15 | 13 | 9 | 5 | 3 | | | |
| OTERS | 93 | 90 | 86 | 85 | 83 | 87 | 85 | 91 | 87 | 87 | 81 | 79 | 79 | 80 | 82 | 85 |
| TOTAL | 214 | 216 | 215 | 217 | 208 | 205 | 200 | 204 | 193 | 194 | 176 | 164 | 161 | 158 | 159 | 162 |

Helicopter

| FY | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSS-2(A) | | | | | | | | | | 1 | 4 | 11 | 14 | 17 | 19 | 25 | 31 | 38 | 43 | 49 | 55 |
| HSS-1 | | | | | 1 | 4 | 7 | 7 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 3 | 3 | 1 | | | |
| HSS-1N | | | | | | | | 5 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 5 | 2 | |
| S-51 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | | | | | |
| OTHERS | 6 | 8 | 10 | 10 | 10 | 10 | 18 | 17 | 18 | 19 | 20 | 23 | 22 | 20 | 22 | 27 | 23 | 23 | 27 | 27 | 28 |
| TOTAL | 9 | 11 | 13 | 13 | 14 | 17 | 28 | 29 | 32 | 34 | 38 | 48 | 50 | 51 | 54 | 63 | 65 | 70 | 75 | 78 | 83 |

| FY | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSS-2(A) | 58 | 61 | 59 | 57 | 58 | 56 | 55 | 50 | 46 | 38 | 28 | 22 | 14 | 9 | 5 | 2 |
| HSS-2B | | | | | 4 | 8 | 16 | 17 | 23 | 30 | 34 | 42 | 51 | 62 | 79 | 76 |
| SH-60J | | | | | | | | | | | | | | | 2 | 2 |
| OTHERS | 30 | 30 | 32 | 31 | 33 | 33 | 34 | 32 | 32 | 32 | 29 | 29 | 27 | 28 | 28 | 31 |
| TOTAL | 88 | 91 | 91 | 88 | 95 | 97 | 105 | 99 | 101 | 100 | 91 | 93 | 92 | 99 | 114 | 111 |

Source: Kantei To Kokukisyu (Kajojleishinbunsya)

# APPENDIX O

## JMSDF AIRCRAFT PROCUREMENT COST

| Year | Aircraft | Amount | Total Real Value FY'98 (Unit:1000Yen) | Total Nominal Value (Unit:1000Yen) | Nominal Value 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1958 | P2V-7 | 4 | 56,924,512 | 14,801,798 | 178,944 | 2,168,602 | 3,320,303 | 4,905,903 | 4,228,046 | | | | |
| 1958 | HSS-1 | 1 | 1,233,375 | 291,174 | 111,228 | 179,946 | | | | | | | |
| 1958 | S-55A | 6 | 2,215,750 | 526,062 | 131,516 | 394,546 | | | | | | | |
| 1959 | HSS-1 | 4 | 2,343,200 | 576,656 | | 219,456 | 357,200 | | | | | | |
| 1959 | S-55A | 2 | 798,474 | 196,346 | | 78,538 | 117,808 | | | | | | |
| 1960 | HSS-1N | 6 | 3,746,741 | 996,492 | | | 189,102 | 807,390 | | | | | |
| 1961 | P2V-7 | 3 | 713,678 | 192,693 | | | | 52,695 | 139,998 | | | | |
| 1961 | KM-2 | 10 | 1,213,600 | 328,212 | | | | 15,382 | 312,830 | | | | |
| 1961 | HSS-1N | 3 | 1,973,100 | 522,737 | | | | 158,538 | 374,199 | | | | |
| 1961 | V-107 | 2 | 1,890,133 | 510,336 | | | | | 510,336 | | | | |
| 1961 | S-55A | 2 | 770,733 | 208,098 | | | | 71,818 | 136,280 | | | | |
| 1962 | P2V-7 | 6 | 13,140,922 | 4,074,917 | | | | | 88,526 | 937,486 | 1,745,397 | 1,303,508 | |
| 1962 | B-65 | 3 | 673,954 | 192,693 | | | | | 37,173 | 155,520 | | | |
| 1962 | KM-2 | 15 | 1,529,663 | 460,225 | | | | | 52,351 | 171,002 | 144,827 | 92,045 | |
| 1962 | HSS-2 | 11 | 12,263,173 | 3,804,889 | | | | | 137,046 | 842,692 | 1,476,686 | 1,348,465 | |
| 1963 | B-65 | 3 | 728,358 | 222,693 | | | | | | 44,919 | 177,774 | | |
| 1963 | S-62 | 2 | 1,199,999 | 363,810 | | | | | | 118,752 | 245,058 | | |
| 1964 | B-65 | 3 | 770,677 | 252,693 | | | | | | | 25,269 | 227,424 | |
| 1964 | HSS-2 | 4 | 4,280,883 | 1,455,936 | | | | | | | 39,461 | 615,144 | 801,331 |
| 1965 | PS-1M | 1 | 1,999,183 | 638,214 | | | | | | | | 189,750 | 498,464 |
| 1965 | B-65 | 6 | 1,396,010 | 485,508 | | | | | | | | 51,077 | 434,431 |

| Year | Aircraft | Amount | Total Real Value FY'98 (Unit:1000Yen) | Total Nominal Value (Unit:1000Yen) | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1965 | HSS-2 | 4 | 5,177,824 | 1,845,580 | 176,880 | 853,561 | 815,139 | | | | | | |
| 1965 | BELL-47 | 2 | 167,073 | 55,134 | 55,134 | | | | | | | | |
| 1966 | YS-11M-A | 1 | 1,930,116 | 710,885 | | 189,750 | 521,135 | | | | | | |
| 1966 | B-65 | 1 | 220,012 | 80,918 | | 8,513 | 72,405 | | | | | | |
| 1966 | HSS-2 | 4 | 5,495,216 | 2,050,698 | | 256,786 | 572,900 | 1,221,002 | | | | | |
| 1966 | S-62 | 1 | 539,526 | 196,010 | | 63,259 | 132,751 | | | | | | |
| 1967 | P-2J | 13 | 45,369,394 | 18,777,525 | | | 651,592 | 2,722,584 | 5,482,032 | 9,921,317 | | | |
| 1967 | YS-11T-A | 1 | 2,884,795 | 1,150,147 | | | 178,393 | 168,888 | 802,866 | | | | |
| 1967 | HSS-2 | 6 | 7,872,680 | 3,137,033 | | | 388,557 | 617,623 | 2,130,853 | | | | |
| 1967 | S-62 | 2 | 1,120,336 | 422,046 | | | 136,226 | 285,820 | | | | | |
| 1967 | BELL-47G-2A | 1 | 76,511 | 28,309 | | | 28,309 | | | | | | |
| 1968 | PS-1 | 2 | 9,165,725 | 4,013,640 | | | | 349,781 | 349,782 | 1,236,950 | 2,077,127 | | |
| 1968 | YS-11T-A | 2 | 5,758,575 | 2,402,996 | | | | 209,600 | 935,048 | 1,258,348 | | | |
| 1968 | B-65 | 2 | 517,172 | 209,712 | | | | 29,492 | 180,220 | | | | |
| 1968 | KM-2 | 3 | 286,268 | 115,258 | | | | 26,751 | 88,507 | | | | |
| 1968 | HSS-2 | 7 | 8,813,960 | 3,689,980 | | | | 478,703 | 759,228 | 2,452,049 | | | |
| 1968 | S-62 | 3 | 1,599,193 | 639,537 | | | | 204,339 | 435,198 | | | | |

Source : Kaijoiekitai Tosan Jimuteiyo (Kaijobakuryokanbu)

APPENDIX 0 (cont'd)

| Fiscal Year | Aircraft | Amount | Total Real Value FY1985 (Unit:1000Yen) | Total Nominal Value (Unit:1000Yen) | Nominal Value 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1969 | P-2J | 11 | 36,293,809 | 16,185,976 | 1,035,733 | 5,487,766 | 9,662,477 | | | | | | |
| 1969 | YS-11T-A | 1 | 2,661,208 | 1,175,436 | 104,800 | 515,126 | 555,510 | | | | | | |
| 1969 | C-65 | 2 | 502,719 | 214,630 | 30,525 | 184,155 | | | | | | | |
| 1969 | HSS-2 | 7 | 8,615,864 | 3,828,360 | 505,902 | 1,049,804 | 2,272,654 | | | | | | |
| 1969 | S-62 | 1 | 539,016 | 228,208 | 73,166 | 155,042 | | | | | | | |
| 1969 | BELL-47G-2A | 50 | 285,493 | 116,232 | 116,232 | | | | | | | | |
| 1970 | P-2J | 11 | 35,087,004 | 16,671,138 | | 1,045,268 | 5,759,852 | 9,866,018 | | | | | |
| 1970 | PS-1 | 5 | 27,758,136 | 13,167,445 | | 946,900 | 4,629,380 | 7,591,165 | | | | | |
| 1970 | YS-11M-A | 1 | 1,729,357 | 778,059 | | 250,049 | 528,010 | | | | | | |
| 1970 | HSS-2 | 6 | 7,197,542 | 3,406,008 | | 438,566 | 913,750 | 2,053,692 | | | | | |
| 1970 | V-107 | 2 | 2,881,457 | 1,300,668 | | 355,496 | 945,172 | | | | | | |
| 1970 | BELL-47G-2A | 1 | 75,018 | 32,662 | | 32,662 | | | | | | | |
| 1971 | P-2J | 11 | 33,537,476 | 17,196,534 | | | 1,066,440 | 5,562,325 | 10,565,769 | | | | |
| 1971 | PS-1 | 5 | 26,471,542 | 13,913,514 | | | 997,236 | 4,856,314 | 6,059,964 | | | | |
| 1971 | HSS-2 | 6 | 7,263,791 | 3,852,056 | | | 303,454 | 1,045,929 | 2,502,673 | | | | |
| 1971 | V-107 | 2 | 2,881,485 | 1,393,008 | | | 290,105 | 1,102,903 | | | | | |
| 1972 | P-2J | 8 | 21,920,585 | 13,473,696 | | | | 849,926 | 4,586,289 | 8,037,481 | | | |
| 1972 | PS-1 | 1 | 5,032,022 | 3,098,154 | | | | 210,335 | 997,997 | 1,889,822 | | | |
| 1972 | US-1 | 1 | 4,944,595 | 3,050,130 | | | | 236,918 | 894,567 | 1,918,651 | | | |
| 1972 | YS-11M-A | 1 | 1,561,339 | 837,216 | | | | 259,937 | 577,279 | | | | |
| 1972 | TC-90 | 3 | 1,225,570 | 666,756 | | | | 136,941 | 529,815 | | | | |
| 1972 | YS-11T-A | 2 | 4,871,374 | 2,643,474 | | | | 591,468 | 2,052,006 | | | | |
| 1972 | HSS-2 | 6 | 7,810,891 | 4,791,420 | | | | 295,057 | 1,697,731 | 2,798,632 | | | |
| 1972 | V-107 | 1 | 1,330,366 | 723,765 | | | | 148,680 | 575,085 | | | | |
| 1972 | OH-6 | 2 | 365,327 | 179,010 | | | | 179,010 | | | | | |
| 1973 | P-2J | 8 | 22,011,248 | 15,066,391 | | | | | 955,225 | 5,120,997 | 8,390,169 | | |
| 1973 | PS-1 | 11 | 5,163,073 | 3,536,161 | | | | | 244,880 | 1,072,467 | 2,218,814 | | |
| 1973 | US-1 | 2 | 9,217,867 | 6,302,930 | | | | | 486,301 | 1,867,569 | 3,949,060 | | |
| 1973 | KM-2 | 3 | 343,308 | 221,697 | | | | | 42,354 | 179,343 | | | |
| 1973 | TC-90 | 1 | 413,526 | 266,472 | | | | | 53,914 | 212,558 | | | |
| 1973 | HSS-2 | 6 | 8,059,025 | 5,512,475 | | | | | 343,627 | 1,966,282 | 3,202,566 | | |
| 1973 | V-107 | 1 | 1,284,274 | 827,042 | | | | | 170,147 | 656,895 | | | |
| 1973 | S-61A | 1 | 1,218,048 | 834,371 | | | | | 60,056 | 237,119 | 537,396 | | |
| 1973 | OH-6 | 1 | 160,029 | 89,616 | | | | | 89,616 | | | | |
| 1974 | P-2J | 8 | 21,793,684 | 16,044,784 | | | | | | 1,026,327 | 5,425,193 | 9,593,264 | |
| 1974 | S- | 2 | 9,942,678 | 7,324,432 | | | | | | 503,875 | 2,333,324 | 4,487,233 | |
| 1974 | | 1 | 355,486 | 249,483 | | | | | | 48,779 | 200,704 | | |
| 1974 | KM-2 | 3 | 355,486 | 249,483 | | | | | | 48,779 | 200,704 | | |
| 1974 | TC-90 | 1 | 409,057 | 288,341 | | | | | | 35,002 | 253,339 | | |
| 1974 | HSS-2 | 6 | 7,991,347 | 5,888,820 | | | | | | 373,281 | 1,909,349 | 3,606,190 | |
| 1974 | V-107 | 1 | 1,227,635 | 906,448 | | | | | | 189,662 | 716,786 | | |
| 1974 | S-61A | 1 | 1,160,375 | 860,534 | | | | | | 61,781 | 185,343 | 613,410 | |

APPENDIX (cont'd)

| Type of Year Aircraft | Amount | Total Real Value FY1985 (Unit 1000Yen) | Total Nominal Value (Unit 1000Yen) | Nominal Value 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1975 P-3C | 6 | 20,729,602 | 16,277,838 | 1,041,696 | 5,569,616 | 9,666,526 | | | | | | |
| 1975 PS-1 | 2 | 11,796,423 | 9,364,496 | 635,216 | 1,512,694 | 7,216,586 | | | | | | |
| 1975 KM-2 | 4 | 581,903 | 435,936 | 89,605 | 346,331 | | | | | | | |
| 1975 HSS-2 | 4 | 6,349,440 | 4,392,208 | 324,905 | 1,597,175 | 3,070,128 | | | | | | |
| 1976 P-3C | 6 | 19,788,955 | 16,534,284 | | 691,077 | 4,140,910 | 11,702,297 | | | | | |
| 1976 PS-1 | 2 | 11,713,333 | 9,794,298 | | 416,238 | 2,283,056 | 7,095,004 | | | | | |
| 1976 KM-2 | 8 | 1,180,669 | 948,128 | | 124,856 | 823,272 | | | | | | |
| 1976 HSS-2 | 6 | 10,276,618 | 8,589,950 | | 320,329 | 2,171,651 | 6,097,970 | | | | | |
| 1976 S-61A | 1 | 1,608,161 | 1,343,390 | | 56,331 | 341,745 | 945,314 | | | | | |
| 1977 PS-1 | 1 | 6,197,174 | 5,300,179 | | | 221,485 | 1,336,077 | 3,742,617 | | | | |
| 1977 US-1 | 1 | 6,305,290 | 5,388,612 | | | 253,046 | 1,557,000 | 3,578,566 | | | | |
| 1977 KM-2 | 5 | 791,829 | 670,845 | | | 44,706 | 626,107 | | | | | |
| 1977 TC-90 | 1 | 478,080 | 403,932 | | | 49,333 | 354,599 | | | | | |
| 1977 HSS-2A | 4 | 8,776,854 | 7,502,168 | | | 270,029 | 2,486,902 | 4,745,237 | | | | |
| 1977 S-61A | 1 | 1,783,776 | 1,525,317 | | | 53,308 | 409,906 | 1,052,103 | | | | |
| 1978 P-3C | 8 | 65,330,310 | 59,895,262 | | | | 1,254,607 | 13,044,036 | 13,060,820 | 7,685,096 | 24,850,703 | |
| 1978 US-1 | 2 | 12,056,085 | 10,772,869 | | | | 507,390 | 2,792,458 | 7,473,021 | | | |
| 1978 KM-2 | 5 | 837,262 | 719,473 | | | | 48,635 | 670,838 | | | | |
| 1978 TC-90 | 1 | 469,515 | 403,232 | | | | 46,822 | 356,410 | | | | |
| 1978 HSS-2A | 4 | 9,675,731 | 8,649,084 | | | | 264,881 | 2,334,423 | 6,029,780 | | | |
| 1979 US-1 | 1 | 6,137,966 | 5,695,667 | | | | | 271,871 | 1,478,167 | 3,945,629 | | |
| 1979 KM-2 | 3 | 433,349 | 392,803 | | | | | 26,568 | 366,235 | | | |
| 1979 TC-90 | 2 | 774,484 | 700,674 | | | | | 70,638 | 630,036 | | | |
| 1979 HSS-2B | 8 | 21,979,244 | 20,394,073 | | | | | 685,716 | 6,146,401 | 13,561,956 | | |
| 1979 S-61A | 2 | 3,612,646 | 3,354,928 | | | | | 139,234 | 849,552 | 2,366,142 | | |

| | | | | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1980 P-3C | 10 | 99,635,352 | 96,123,030 | 1,396,077 | 11,774,999 | 24,802,698 | 35,045,234 | 23,104,022 | | | | |
| 1980 US-1 | 1 | 6,211,311 | 5,972,080 | 283,424 | 1,523,511 | 4,065,145 | | | | | | |
| 1980 TC-90 | 2 | 841,270 | 788,136 | 80,612 | 707,524 | | | | | | | |
| 1980 HSS-2B | 2 | 5,560,360 | 5,262,694 | 177,816 | 1,112,157 | 3,972,721 | | | | | | |
| 1981 KM-2 | 1 | 172,120 | 163,396 | | 11,074 | 152,322 | | | | | | |
| 1981 TC-90 | 4 | 1,829,212 | 1,735,768 | | 186,463 | 1,549,305 | | | | | | |
| 1981 HSS-2B | 6 | 16,971,852 | 16,368,965 | | 365,344 | 3,898,390 | 12,105,231 | | | | | |
| 1981 S-61A | 1 | 1,871,115 | 1,806,086 | | 51,741 | 344,123 | 1,410,222 | | | | | |
| 1982 P-3C | 7 | 81,179,792 | 80,547,418 | | | 916,394 | 6,532,934 | 37,827,203 | 35,270,887 | | | |
| 1982 KM-2 | 2 | 326,933 | 316,628 | | | 23,585 | 293,043 | | | | | |
| 1982 TC-90 | 3 | 1,595,600 | 1,544,031 | | | 175,775 | 1,368,256 | | | | | |
| 1982 HSS-2B | 8 | 21,696,555 | 21,332,508 | | | 484,493 | 6,144,086 | 14,703,929 | | | | |
| 1982 S-61A | 4 | 7,084,450 | 6,968,848 | | | 190,773 | 1,781,165 | 4,996,910 | | | | |
| 1983 TC-90 | 2 | 425,277 | 411,984 | | | 25,412 | 386,572 | | | | | |

APPENDIX (cont'd)

| | | Total Amount Real Value For 1985 (Unit: 1000Yen) | Total Nominal Value (Unit: 1000Yen) | Nominal Value 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | 7 | 78,161,103 | 79,001,965 | 705,119 | 3,554,857 | 28,914,524 | 45,827,465 | | | | | |
| [illegible] | 1 | 5,104,435 | 5,086,035 | 119,992 | 1,451,260 | 3,514,783 | | | | | | |
| [illegible] | 2 | 1,186,537 | 1,171,672 | 145,506 | 1,026,166 | | | | | | | |
| [illegible] | 5 | 13,088,272 | 13,046,284 | 229,711 | 3,453,427 | 9,363,146 | | | | | | |
| [illegible] | 1 | 260,801 | 258,193 | | 258,193 | | | | | | | |
| [illegible] | 1 | 4,464,523 | 4,446,448 | 139,920 | 1,361,059 | 2,945,469 | | | | | | |
| [illegible] | 8 | 88,610,107 | 90,338,480 | | 293,270 | 1,747,120 | 34,325,521 | 53,972,569 | | | | |
| [illegible] | 1 | 5,199,249 | 5,298,617 | | 42,100 | 167,057 | 5,089,460 | | | | | |
| [illegible] | | 602,406 | 601,640 | | 75,800 | 525,840 | | | | | | |
| [illegible] | 2 | 3,735,075 | 3,771,009 | | 56,407 | 1,852,920 | 1,861,682 | | | | | |
| [illegible] | 7 | 15,269,675 | 15,519,973 | | 107,591 | 2,591,755 | 12,820,627 | | | | | |
| [illegible] | 1 | 1,852,564 | 1,888,037 | | 14,427 | 57,038 | 1,816,572 | | | | | |
| [illegible] | 2 | 461,732 | 461,732 | | | 461,732 | | | | | | |
| [illegible] | 1 | 3,867,387 | 3,920,558 | | 141,842 | 992,898 | 2,785,818 | | | | | |
| [illegible] | 8 | 112,567,755 | 114,819,112 | | | | 2,663,674 | 52,030,368 | 60,125,070 | | | |
| [illegible] | 1 | 3,918,357 | 3,995,466 | | | 62,918 | 1,662,588 | 2,269,960 | | | | |
| [illegible] | 10 | 24,288,286 | 22,731,031 | | | 147,967 | 3,790,049 | 18,793,015 | | | | |
| [illegible] | 1 | 1,873,175 | 1,910,349 | | | 14,499 | 57,315 | 1,838,535 | | | | |
| [illegible] | 10 | 103,862,025 | 107,531,280 | | | | | 2,510,653 | 49,321,644 | 55,698,983 | | |
| [illegible] | 1 | 5,523,479 | 5,633,949 | | | | 44,624 | 177,105 | 5,412,220 | | | |
| [illegible] | 1 | 585,912 | 597,630 | | | | 74,829 | 522,801 | | | | |
| [illegible] | 1 | 353,125 | 360,188 | | | | 22,827 | 94,717 | 242,644 | | | |
| [illegible] | 13 | 28,315,079 | 28,881,381 | | | | 184,530 | 4,282,227 | 24,414,562 | | | |
| [illegible] | 4 | 19,484,030 | 20,023,040 | | | | 153,108 | 1,608,934 | 13,034,460 | 5,226,538 | | |
| [illegible] | 9 | 84,359,523 | 89,236,710 | | | | | | 1,938,901 | 40,137,158 | 47,322,651 | |
| [illegible] | 1 | 2,723,[illegible] | 2,817,494 | | | | | 47,899 | 1,287,151 | 1,482,444 | | |
| [illegible] | 1 | 523,946 | 534,425 | | | | | 59,579 | 474,846 | | | |
| [illegible] | 2 | 688,413 | 702,181 | | | | | 43,032 | 659,149 | | | |
| [illegible] | 1 | 11,927,578 | 12,430,376 | | | | | | 118,374 | 5,897,319 | 6,414,683 | |
| [illegible] | 17 | 36,111,414 | 37,748,564 | | | | | 230,049 | 5,495,566 | 32,022,969 | | |
| [illegible] | 2 | 455,542 | 464,653 | | | | | | 464,653 | | | |
| [illegible] | 2 | 8,709,257 | 9,174,199 | | | | | 69,520 | 692,539 | 5,641,507 | 2,770,633 | |
| [illegible] | 9 | 81,741,348 | 88,262,253 | | | | | | 0 | 1,858,021 | 40,917,696 | 45,486,536 |
| [illegible] | 1 | 5,614,311 | 6,001,481 | | | | | | 46,794 | 185,742 | 5,768,945 | |
| [illegible] | 1 | 2,627,122 | 2,787,912 | | | | | | 41,656 | 1,105,939 | 1,640,257 | |
| [illegible] | 2 | 961,788 | 1,028,301 | | | | | | 66,470 | 962,431 | | |
| [illegible] | 1 | 10,550,401 | 11,392,879 | | | | | | 0 | 113,356 | 5,496,596 | 5,782,927 |
| [illegible] | 13 | 52,124,538 | 56,401,[illegible]2 | | | | | | 277,233 | 1,383,130 | 18,109,655 | 36,631,514 |

APPENDIX 0 (cont'd)

| Fiscal Year Aircraft | Amount | Total Real Value (Fy1985) (Unit:1000Yen) | Total Nominal Value (Unit:1000Yen) | Nominal Value 1989 | 1990 | 1991 | 1992 | 1993 | 1994 |
|---|---|---|---|---|---|---|---|---|---|
| 1989 F-3C | 10 | 88,412,210 | 96,776,936 | 0 | 2,056,056 | 45,654,531 | 49,066,349 | | |
| 1989 [illegible]36A | 1 | 2,3,1,682 | 2,552,255 | 40,610 | 1,093,069 | 1,418,576 | | | |
| 1989 LC-90 | 2 | 898,862 | 959,645 | 101,695 | 858,150 | | | | |
| 1989 KM-2 | 2 | 693,093 | 740,722 | 46,620 | 694,102 | | | | |
| 1989 OH-6D | 2 | 388,757 | 415,970 | 0 | 415,970 | | | | |
| 1989 MH-53E | 4 | 16,226,389 | 17,704,022 | 135,719 | 1,351,771 | 10,970,141 | 5,246,391 | | |
| 1989 SH-60J | 12 | 52,443,026 | 57,466,176 | 272,822 | 1,384,666 | 18,457,909 | 37,350,779 | | |
| 1989 UH-60J | 3 | 8,674,900 | 9,441,162 | 0 | 774,640 | 8,666,522 | | | |
| 1990 F-3C | 8 | 76,827,167 | 84,080,608 | | 0 | 1,771,611 | 40,154,434 | 42,954,563 | |
| 1990 LC-90 | 2 | 991,116 | 1,073,040 | | 121,804 | 956,236 | | | |
| 1990 T-5 | 7 | 2,664,563 | 2,900,947 | | 183,306 | 2,717,641 | | | |
| 1990 SH-60J | 11 | 49,952,544 | 55,251,647 | | 264,06[illegible] | 1,417,649 | 17,577,197 | 35,992,732 | |
| 1991 F-3C | 2 | 18,296,122 | 20,423,792 | | | 0 | 359,338 | 6,807,724 | 13,256,730 |
| 1991 US-1A | 1 | 6,350,332 | 7,046,016 | | | 52,129 | 208,515 | 6,785,372 | |
| 1991 T-5 | 9 | 3,579,192 | 3,934,737 | | | 258,798 | 3,675,939 | | |
| 1991 [illegible] | 1 | 7,631,391 | 8,513,173 | | | 0 | 104,010 | 3,562,375 | 4,846,788 |
| 1991 SH-60J | 5 | 23,055,027 | 25,725,830 | | | 130,065 | 718,444 | 8,786,535 | 16,090,786 |
| 1991 UH-60J | 3 | 11,107,004 | 12,320,176 | | | 0 | 945,813 | 11,374,363 | |
| 1991 MH-53E | 1 | 5,214,284 | 5,794,117 | | | 46,199 | 461,992 | 4,019,332 | 1,266,594 |

## APPENDIX P

## JMSDF SHIPBUILDING COST (by DEFENSE PROGRAM)

| DEFENSE PROGRAM | TERM (Fiscal Year) | Tons/Year | Real Value/Year (10^3 Yen) | Nominal Value/Year (10^3 Yen) | Nominal GNP/Year (10^8Yen) | Cost/GNP/Year |
|---|---|---|---|---|---|---|
| 3rd DBP | 1967-1971 | 10,982 | 6.03E+07 | 2.83E+07 | 6.48E+05 | 4.36E-04 |
| 4th DBP | 1972-1976 | 9,812 | 6.90E+07 | 5.13E+07 | 1.35E+06 | 3.80E-04 |
| Post 4th DBP | 1977-1979 | 12,433 | 7.62E+07 | 6.89E+07 | 1.25E+06 | 5.52E-04 |
| MTDPE | 1980-1982 | 13,403 | 9.44E+07 | 9.20E+07 | 1.56E+06 | 5.91E-04 |
| MTDPE | 1983-1985 | 16,330 | 9.59E+07 | 9.73E+07 | 1.83E+06 | 5.31E-04 |
| MTDP | 1986-1990 | 14,724 | 1.54E+08 | 1.65E+08 | 3.83E+06 | 4.30E-04 |

Source: Kaijoijeitai Yosan Jimutelyo (Kaijobakuryokanbu)

# APPENDIX Q

## JAPAN'S GNP DATA

| Fiscal Year | Nominal GNP (Unit:10^8 Yen) | Real GNP (Unit:10^8 Yen) |
|---|---|---|
| 1955 | 86,278 | 437,487 |
| 1960 | 166,620 | 667,688 |
| 1961 | 199,000 * | 735,610 * |
| 1962 | 217,000 * | 792,252 * |
| 1963 | 256,000 * | 872,270 * |
| 1964 | 297,000 * | 958,625 * |
| 1965 | 336,730 | 1,027,023 |
| 1966 | 395,000 * | 1,138,294 * |
| 1967 | 462,000 * | 1,262,368 * |
| 1968 | 547,926 | 1,428,570 |
| 1969 | 648,907 | 1,601,010 |
| 1970 | 751,520 | 1,730,287 |
| 1971 | 828,063 | 1,819,459 |
| 1972 | 965,391 | 1,983,252 |
| 1973 | 1,166,792 | 2,077,445 |
| 1974 | 1,381,558 | 2,072,992 |
| 1975 | 1,522,094 | 2,156,318 |
| 1976 | 1,711,525 | 2,243,215 |
| 1977 | 1,900,348 | 2,350,044 |
| 1978 | 2,087,809 | 2,470,612 |
| 1979 | 2,254,018 | 2,606,053 |
| 1980 | 2,453,600 | 2,688,179 |
| 1981 | 2,603,343 | 2,773,674 |
| 1982 | 2,734,615 | 2,871,843 |
| 1983 | 2,859,973 | 2,957,881 |
| 1984 | 3,057,253 | 3,090,860 |
| 1985 | 3,253,705 | 3,239,592 |
| 1986 | 3,396,853 | 3,333,099 |
| 1987 | 3,562,636 | 3,497,698 |
| 1988 | 3,792,300 | 3,706,417 |
| 1989 | 4,058,039 | 3,874,782 |
| 1990 | 4,352,543 | 4,071,364 |
| 1991 | 4,585,991 | 4,208,448 |

Source: Enonomic Planning Agency (Except *)

* : Zusetsu Nihon no Zaisei (Toyokeizaishinposya)

## APPENDIX R

## JMSDF SHIP INVENTORIES DATA

| | RUSSIA | | U.S. | | US(PACIFIC) | | FRANCE | |
|---|---|---|---|---|---|---|---|---|
| | QTY | DISPLACEMENT (FULL TON) | QTY | DISPLACEMENT (FULL TON) | QTY | DISPLACEMENT (FULL TON) | QTY | DISPLACEMENT (FULL TON) |
| SSBN | 59 | 731,150 | 25 | 332,250 | 8 | 150,000 | 5 | 44,600 |
| SSGN | 38 | 286,200 | | | | | 5 | 13,350 |
| SSG | 12 | 46,200 | | | | | | |
| SSN | 62 | 393,839 | 83 | 504,613 | 28 | 166,945 | | |
| SS | 77 | 225,844 | | | | | 8 | 11,192 |
| CARRIER | 5 | 229,500 | 12 | 1,057,784 | 6 | 526,863 | 2 | 65,560 |
| CRUISER | 29 | 313,650 | 49 | 457,044 | 28 | 262,650 | 1 | 13,270 |
| DESTROYER | 38 | 266,450 | 40 | 319,126 | 18 | 144,573 | 15 | 75,056 |
| FRIGATE | 150 | 278,720 | 56 | 224,917 | 25 | 99,824 | 26 | 46,500 |
| MINE WAREFARE FORCE | 263 | 103,522 | 8 | 10,496 | 3 | 3,936 | 21 | 12,265 |
| AMPHIBIOUS FORCE | 76 | 233,810 | 60 | 1,019,719 | 30 | 517,427 | 9 | 40,650 |
| TOTAL | 809 | 3,108,884 | 333 | 3,925,949 | 146 | 1,872,228 | 92 | 322,393 |

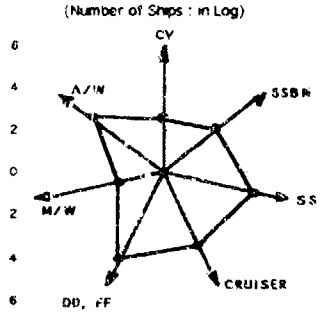
| | U.K. | | JAPAN | | U.S Ships Homeported in Japan | |
|---|---|---|---|---|---|---|
| | QTY | DISPLACEMENT (FULL TON) | QTY | DISPLACEMENT (FULL TON) | QTY | DISPLACEMENT (FULL TON) |
| SSBN | 4 | 34,000 | | | | |
| SSGN | | | | | | |
| SSG | | | | | | |
| SSN | 13 | 85,756 | | | | |
| SS | 6 | 14,595 | 14 | 35,180 | | |
| CARRIER | 2 | 39,000 | | | 1 | 80,643 |
| CRUISER | | | | | 2 | 18,932 |
| DESTROYER | 12 | 51,900 | 39 | 162,660 | 3 | 24,120 |
| FRIGATE | 30 | 125,124 | 18 | 35,405 | 3 | 12,300 |
| MINE WAREFARE FORCE | 31 | 22,302 | 37 | 7,442 | | |
| AMPHIBIOUS FORCE | 6 | 13,401 | 6 | 13,220 | 5 | 99,015 |
| TOTAL | 104 | 396,078 | 114 | 253,907 | 14 | |

SOURCE: JANE'S FIGHTING SHIP 1992-93

# APPENDIX S
# FLEET COMPOSITION
# (Number of Ships in Natural Log.)

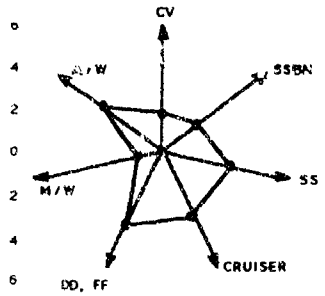
U.S

(Number of Ships : in Log)



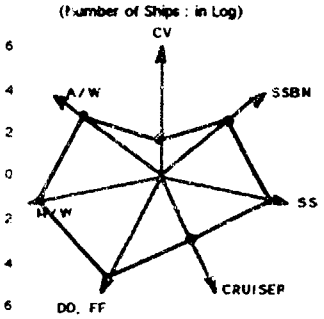

U.S Pacific

(Number of Ships : in Log)



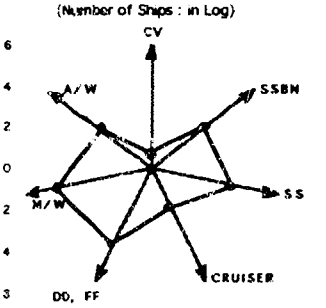

RUSSIA

(Number of Ships : in Log)



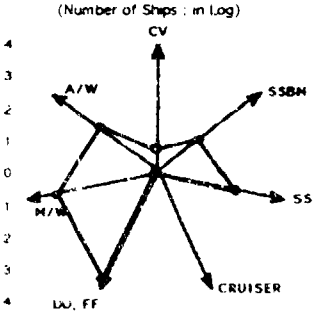

RUSSIA Pacific

(Number of Ships : in Log)



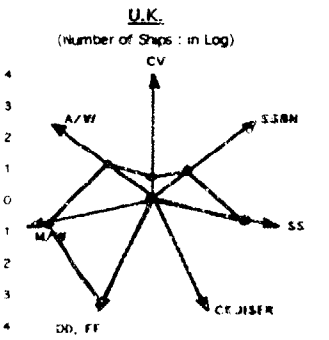

FRANCE

(Number of Ships : in Log)



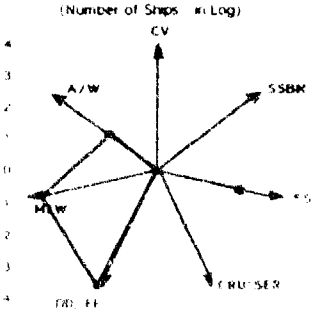

U.K.

(Number of Ships : in Log)




JAPAN

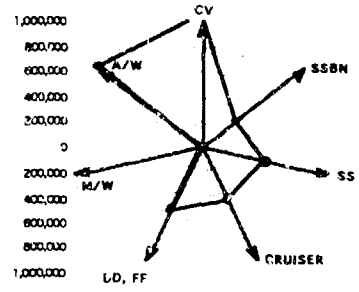
(Number of Ships : in Log)



# APPENDIX T
# FLEET COMPOSITION (Full Load Ton)

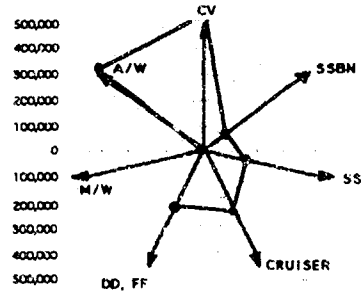
U.S.

(Displacement : full load Ton)



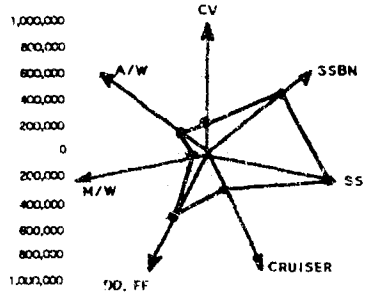

U.S. pacific

(Displacement-full load Ton)



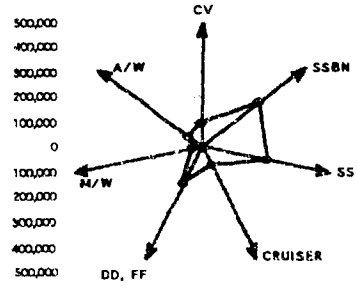

RUSSIA

(Displacement : full load Ton)



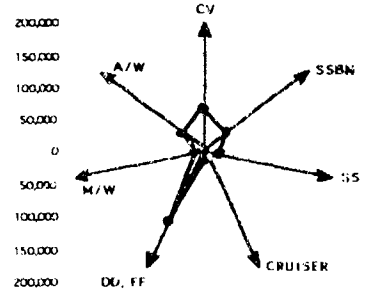

RUSSIA Pacific

(Displacement : full load Ton)



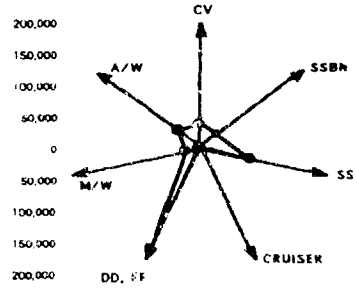

FRANCE

(Displacement : full load Ton)



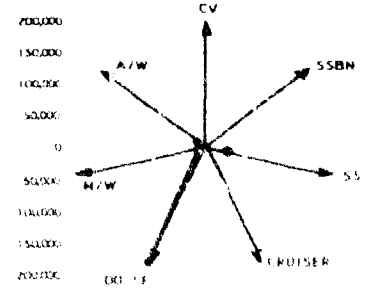

U.K.

(Displacement-full load Ton)



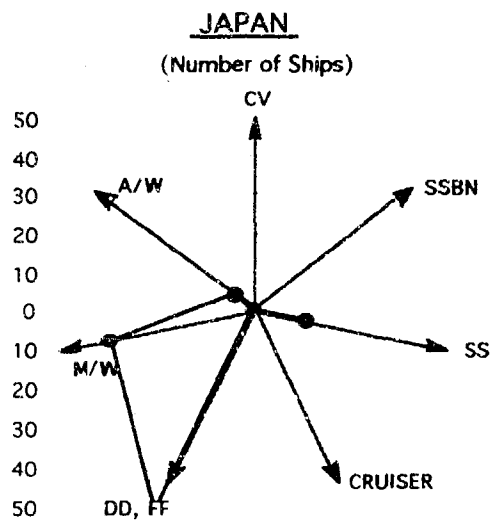

JAPAN

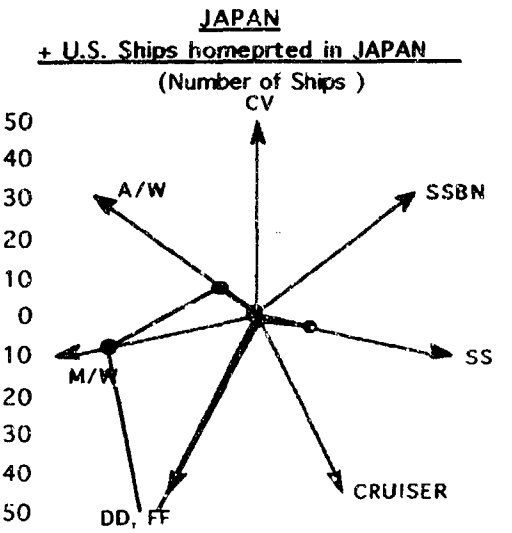
(Displacement-full load Ton)

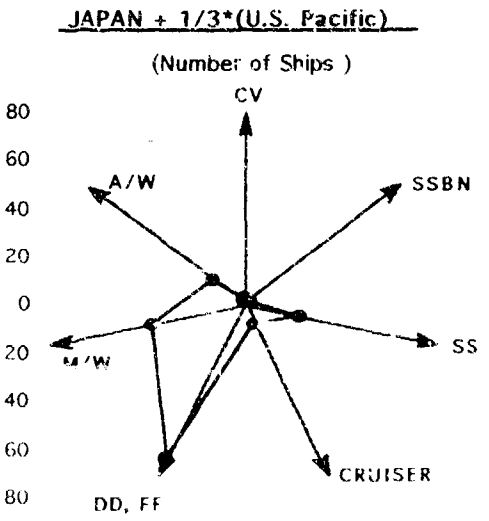


## APPENDIX U

### Fleet Combination Between Japan and U.S.
### (Number of Ships)



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