Report of
Defense Science Board Task Force
on
INDUSTRY-TO-INDUSTRY INTERNATIONAL ARMAMENTS COOPERATION
PHASE II - JAPAN

June 1984

Office of the
Under Secretary of Defense
for Research & Engineering

Washington, D. C. 20301

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER: NA	2. GOVT ACCESSION NO.: NA
3. RECIPIENT'S CATALOG NUMBER: NA	
4. TITLE (and Subtitle): Report of DSB Task Force on INdustry-to-Industry International Armaments Cooperation - Phase II- Japan	5. TYPE OF REPORT & PERIOD COVERED: NA
	6. PERFORMING ORG. REPORT NUMBER: NA
7. AUTHOR(s): NA	8. CONTRACT OR GRANT NUMBER(s): NA
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Defense Science Board, OUSDRE Room 3D1020, The Pentagon Washington, D.C. 20301-3140	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: NA
11. CONTROLLING OFFICE NAME AND ADDRESS: Same as above	12. REPORT DATE: June 1984
	13. NUMBER OF PAGES: 149
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): Same as Above	15. SECURITY CLASS. (of this report): UNCLASSIFIED
	15a. DECLASSIFICATION DOWNGRADING SCHEDULE: NA

16. DISTRIBUTION STATEMENT (of this Report)

Cleared for open publication 19 July 1984 by OASD/PA.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

NA

18. SUPPLEMENTARY NOTES

NA

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

NA

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

NA

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Report of Defense Science Board Task Force

on

INDUSTRY-TO-INDUSTRY INTERNATIONAL ARMAMENTS COOPERATION PHASE II - JAPAN

June 1984

Office of the Under Secretary of Defense for Research and Engineering

Washington, D. C. 20301

OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

DEFENSE SCIENCE BOARD

26 June 1984

MEMORANDUM FOR SECRETARY OF DEFENSE

THROUGH: UNDER SECRETARY OF DEFENSE FOR RESEARCH & ENGINEERING

SUBJECT: Report of the Defense Science Board Task Force on Industry-to-Industry International Armaments Cooperation - Phase II - INFORMATION MEMORANDUM

This Defense Science Board report is the second and final report in response to a request from the Under Secretary of Defense for Research and Engineering for advice concerning the actions needed to increase industry-to-industry cooperation on defense programs with our Allies. The Phase I report, on cooperation within NATO, was submitted in August 1983. This Phase II report concerns industrial cooperation on defense programs with Japan. The study was conducted by the same DSB Task Force which performed the NATO study, chaired again by Dr. Malcolm Currie.

The Task Force objective was to derive pragmatic recommendations on industrial cooperation, especially with respect to technological cooperation. While the Task Force was able to develop suitable recommendations within the context of defense and defense industry, the lack of a cohesive overall national strategy toward Japan, integrating defense, economic, and political considerations, was a major concern and limitation.

The attached report recommends tentative and pragmatic expansion of technological cooperation with Japan on a strictly bilateral basis, in the belief that such cooperation could be in the best interest of both countries. A major portion of the report deals with Japan's potential for eventually becoming a competitor in the defense field as well as in civil fields. Dr. Currie's transmittal letter to me summarizes these and other major points made, concluding again with the Task Force's strong conviction that it is essential to our military and economic security to strengthen our technological base and preserve our technological leadership.

Some of the actions recommended will require Departmental policy statements and actions, as well as inter-Departmental participation on broad policy issues. I commend Dr. Currie's letter and the attached report to your consideration and strongly endorse the recommended actions outlined on page v-vii.

Charles A. Fowler

Charles A. Fowler
Chairman

Attachment

OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

DEFENSE SCIENCE
BOARD

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Report of the Task Force on Industry-to-Industry International Armaments Cooperation, Phase II

This Phase II report provides the findings and recommendations of the DSB Task Force on Industry-to-Industry International Armaments Cooperation between the U.S. and Japan. (The Phase I report, on cooperation with the NATO European countries, was published in June 1983.) The report is made up of reproductions of the viewgraphs used to brief the Defense Science Board and the Under Secretary of Defense for Research and Engineering, supplemented by amplifying text.

As with the Phase I report, the findings, judgments, and recommendations represent the consensus of the Task Force on all points. They are based primarily upon extensive briefings by members of the State, Defense, and Commerce Departments and meetings in Washington and in Japan with a number of Japan's leading companies and with key Japanese government agencies, added to the individual experience of the members in working with Japanese industry and government and the experiences of other U.S. companies on major licensed-production programs. We have incorporated the suggestions of the full Defense Science Board resulting from my briefing of the February meeting of the Board.

The points I would like to highlight are the following:

First, in contrast to the NATO case, in which there are long-standing and publicly-supported U.S. policies endorsing industrial and technological cooperation in armaments, there are not similar U.S. policies on cooperation with Japan. The Task Force felt strongly that, while it is feasible to consider increased industrial cooperation in armaments relative to U.S. defense and industrial interests, the subject should be considered in a broader context that encompasses other key factors of the U.S.-Japan relationship, particularly the economic and political. A cohesive overall strategy with respect to Japan does not exist and is urgently needed.

Second, before considering what the future industrial and technological relationships should be, it is important to realize what the relationships have been to date. Because of the critical importance of Japan to U.S. defense interests in the Western Pacific, we have been making available to Japan over the years our front-line weapons and, in many instances, the related defense technology, principally through licensed production programs. Japan has paid a very high premium for this technology in order to build up the self-sufficiency of its defense industry and to further its long-term commercial objectives in aerospace. Continued transfer of advanced and sensitive U.S. defense technology is important to Japan.

Third, a major goal of the Task Force was to determine the feasibility and ways of achieving bilateralism in technology flow, versus the unilateral situation that has existed to date. In the U.S., because of our large government investment in defense, much of our most advanced technology is militarily-derived and is imbedded in our defense systems. In Japan, most of their advanced technology is commercially-derived and is developed by industrial investment, with indirect government support. Much of this technology, however, is "dual-use" in nature, that is, applicable to both defense and civil products. The question became whether there are conceptual mechanisms to achieve a two-way exchange of technology or technological cooperation from this basically asymmetrical situation. Our conclusions are that such a relationship may now be feasible and could be in the best interests of both countries, if suitably implemented.

Fourth, while not an explicit objective of the study, the Task Force found it essential to appraise the general state of relevant Japanese technology. The Task Force was impressed with the Japanese "technological momentum"; already, Japanese technologies are equal to ours in many fields and, in some fields, superior, and with no evidence of slow-down. It looks likely that Japan will realize its high-priority national goal of achieving "basic technological innovation" and would have the potential to become a major competitor in defense technology and products. Additionally, it became clear how relatively little we know of the Japanese scientific and technical work, in contrast to the extensive knowledge of the Japanese about our work.

Fifth, it is the strong conviction of the Task Force that the most important actions the Government can take in order to enable both cooperation and competition with Japan would be to strengthen our technological base and preserve our technological leadership. If these are done, U.S. industry will have the ability and confidence to cooperate on technology with Japanese industry, to the benefit of both. Our explicitly stated national goal should be world leadership both in defense and commercial technology. This will be vital to maintaining our economic and military security.

This Phase II report concludes the work of the Task Force. On behalf of the members, I want to express our gratitude to the many Japanese people who so hospitably and generously cooperated with the Task Force, and, particularly, to Mr. Hiroo Kinoshita of the Japan Defense Agency, who organized the Japanese participation. Also, for both phases of the study, we are most appreciative of the guidance and support given by the members of the Defense, State, and Commerce Departments. I want also to personally thank my exceptionally thoughtful and able colleagues of the Task Force for their contributions, with special acknowledgment to Mr. Ronald M. Murray for his close collaboration and efforts in preparing the reports.

Hopefully these two reports will help in the development of new and more effective modes of industrial cooperation with our Allies.

Malcolm R. Currie, Chairman
Task Force on Industry-to-Industry
International Armaments Collaboration

ACTIONS REQUIRED FOR IMPLEMENTATION

This list summarizes the Defense Department actions required to implement the recommendations of the Task Force. If these recommendations are implemented, the feasibility of increased technological competition with Japan and the basis for reciprocity in technological exchange will be enhanced.

A. Initiation of Technological Cooperation

- Recommendation: Undertake to broaden, judiciously and reciprocally, our technological cooperation with Japan, based on the firm requirement of a mutually beneficial *two-way* flow of technology.

  Actions:

  1. DoD make a *Secretary-level policy statement* encouraging industry-to-industry technological cooperation and assuring government support and encourage the Japanese Government to do the same. DoD to be kept informed of all such arrangements.

  2. DoD make clear to the Japanese Government that the general prerequisite for continued transfer of technology from the U.S. is reciprocal technological transfer from Japan.

  3. USDRE prepare for SecDef a policy directive to the Chairman JCS, Service Secretaries, and relevant Defense Agencies endorsing increased technological cooperation with Japan and specifying the requirement for a balanced *two-way* flow of technology, along with a strong endorsement of interoperability between U.S. - Japan military systems.

  4. USDRE prepare SecDef transmittal of the DSB report to major Congressional committees with a cover letter explaining the thrust and DoD plans.

- Recommendation: Encourage industry-to-industry initiatives for technological cooperation that serve the national interests and meet the requirement of balanced two-way technology flow. Industry on both sides will need better access to their Government's requirements and plans to ensure that projects that will meet needs and have a real utility to proceed into production.

  Action: USDRE encourage industry-to-industry initiatives. USDRE guide technological cooperation to ensure suitable balance of technology flow and overall national benefit. USDRE develop means to assess balance of technology exchange.

B. Conduct of Technology Cooperation

- Recommendation: Define intergovernmental and government-industry roles and procedures for identifying, initiating, and conducting projects involving technological cooperation.

  Action: USDRE formulate the U.S. rules and procedures and request that the U.S. - Japan Systems and Technology Forum undertake intergovernmental aspects.

- Recommendation: Encourage the expansion of the mission area analyses done under the Systems and Technology Forum to develop specific mission requirements which can be translated into subsystem and technological areas of cooperation.

  Action: USDRE recommend to the Systems and Technology Forum an expansion of the mission area analyses.

- Recommendation: Provide guidance for U.S. and Japanese industry concerning additional U.S. defense technologies that could be released to Japan.

  Action: USDRE, in consultation with the Japan Defense Agency and through the Systems and Technology Forum, identify on a continuing basis defense technologies of potential interest to the Japanese Defense Agency which might be available for cooperative projects, if suitable industrial arrangements can be made.

- Recommendation: Initiate codevelopment of two significant defense subsystems as trial programs to gain knowledge about impediments and potential for codevelopment.

  Action: As soon as practical, USDRE, the Military Services, and the Japan Defense Agency identify subsystems of potential mutual development interest and establish ground rules for U.S. and Japanese companies to bid on codevelopments where it appears that Japanese technology has something unique to offer. U.S. and Japanese industry should be consulted to ensure realism in defining subsystems.

- Recommendation: Ensure that necessary approvals can be expeditiously obtained in trial programs.

  Action: USDP and USDRE (a) recognize the importance of expeditious approvals for the transmittal of data, visits, licensing, etc., to enable an early determination of the feasibility of cooperation envisaged, and (b) arrange for necessary DoD decisions to be made to facilitate trial programs.

C. Longer-Term Measures

- Recommendation: DoD initiate measure for improved understanding of status and momentum of Japanese technologies.

  Actions:

  1. Expand and speed up translation of Japanese technical and scientific documents.

  2. Establish reciprocal programs for exchange of scientists and engineers.

  3. Establish scientist-to-scientist channels of communication for real time coordination on projects of joint interest.

  4. Periodically assess the status and momentum of development of relevant Japanese technologies.

- Recommendation: Maintain surveillance over the progress of the U.S. - Japanese technological cooperation.

  Action: The Defense Science Board, in approximately one year, establish a group to make a preliminary evaluation of the progress and value of technological cooperation with Japan, and make a broader evaluation in approximately two years.

- Recommendation: Perform a high priority, comprehensive interagency study on overall trade/defense/economic trade-offs and strategy with respect to Japan to provide a broader policy context for technological cooperation.

  Action: DoD stimulate initiation of an appropriate interdepartmental study which, probably, should be lead by the State Department.

D. Most Important of All

- Recommendation: Strong Presidential and SecDef policy statements specifying that technological leadership is a firm national goal and a cornerstone of our military and economic security. Research and development funding and incentives in industry and universities should support this goal.*

  Action: USDRE and USDP prepare a statement for Presidential consideration. Continued emphasis from SecDef to Congress for strengthened long-range R&D budgets and incentive policies.

---

*NOTE: This is also the final recommendation of the NATO Phase I study, and applies equally to both NATO Europe and Japan.

DEFENSE SCIENCE BOARD TASK FORCE

IN[illegible]JSTRY-TO-INDUSTRY
INTERNATIONAL ARMAMENTS
COOPERATION

PAGE

INTRODUCTION

GENERAL CONCLUSIONS

BACKGROUND CONSIDERATIONS

MAJOR FINDINGS

SOME DSB JUDGMENTS

CONCLUSIONS AND RECOMMENDATIONS

APPENDICES

INTRODUCTION

846118 63

PHASE II REPORT OUTLINE

- INTRODUCTION
  - TERMS OF REFERENCE
  - TASK FORCE MEMBERSHIP
  - TASK FORCE ACTIVITIES
  - TASK FORCE APPROACH
- GENERAL CONCLUSIONS
- BACKGROUND CONSIDERATIONS
- MAJOR FINDINGS
- SOME DSB JUDGMENTS
- CONCLUSIONS AND RECOMMENDATIONS
- ACTIONS REQUIRED

846118 2

TERMS OF REFERENCE

- DEFENSE COOPERATION WITH JAPAN DIFFERENT THAN WITH NATO ALLIES; CONSIDER DIFFERENCES AND OPPORTUNITIES TO DEVELOP NEW ARRANGEMENTS WITH JAPAN
- DEFENSE DEPARTMENT'S BASIC OBJECTIVES TOWARD JAPAN:
  - SUPPORT JAPAN'S EFFORTS TO ACHIEVE CAPABILITIES FOR AGREED MISSIONS, COORDINATED U.S./JAPAN PLANNING, TECHNOLOGICAL SUPERIORITY OF FORCES, INTER-OPERABILITY WITH U.S. FORCES
  - ESTABLISH TWO-WAY FLOW OF DEFENSE-RELATED TECHNOLOGY, SO U.S. MAY BENEFIT FROM JAPAN'S R&D
  - SUPPORT JAPAN'S "NON-EXPORT OF WEAPONS" POLICY
  - ENCOURAGE JAPANESE COOPERATION IN COCOM
- IN DEVELOPING TWO-WAY TECHNOLOGY FLOW, INDUSTRY IS KEY SINCE MOST JAPANESE DEFENSE-RELATED TECHNOLOGIES DEVELOPED IN INDUSTRY

846118-3

The terms of reference for the Phase II—Japan Study were established in January 1983 in a memorandum from the Under Secretary of Defense (Research and Engineering) to the Chairman of the Defense Science Board (see Appendix A). These terms of reference somewhat modify the original terms of reference, which were drawn up primarily for the more structured and policy-supported cooperative effort with the NATO allies.

The many differences in context between the Japan Study and the NATO Study are described on pages 9-12. The terms of reference called out two major differences:

1. There is now an opportunity to develop new technological and industrial relationships between the two countries. This is appropriate because Japan has now come of age technologically, with technology equal or superior to ours in many areas.

2. The more significant Japanese defense-related technologies have been developed by Japanese industry as "dual-use" technology, primarily for commercial use but also applicable to military equipment.

TERMS OF REFERENCE (CONT)

SCOPE OF STUDY:

- IDENTIFY PROBLEMS IN EXPANDING COOPERATION AND SOLUTIONS THERETO
- EXPLORE FEASIBILITY OF COOPERATION BASED UPON U.S. DEFENSE TECHNOLOGY AND JAPANESE DEFENSE/DUAL-USE TECHNOLOGY
- DETERMINE SOME AREAS OF DEFENSE/DUAL-USE TECHNOLOGY USEFUL TO U.S. DEFENSE PROGRAMS
- IDENTIFY INDUSTRY-INDUSTRY COOPERATIVE PROGRAM INITIATIVES TO PROVIDE GREATER INTEROPERABILITY/ STANDARDIZATION BETWEEN U.S.-JAPANESE FORCES
- ASSESS IMPACT ON U.S. DEFENSE INDUSTRY OF GREATER TECHNOLOGICAL COOPERATION WITH JAPAN
- ADDRESS PROBLEMS OF TECHNOLOGY TRANSFER, TECHNOLOGY LEAKAGE, AND COMMERCIAL IMPACT OF EXPANDED INDUSTRY-INDUSTRY TECHNOLOGICAL COOPERATION
- DETERMINE APPROPRIATE COOPERATIVE MECHANISMS

846118-5

The scope of the study called for by the terms of reference, while restricted to various aspects of industrial cooperation, required a thorough exploration of the national policies and constraints on this cooperation from both sides, in addition to the specified assessments of feasibility and impact.

TASK FORCE MEMBERSHIP

MALCOLM R CURRIE, CHAIRMAN
EXECUTIVE VICE PRESIDENT,
HUGHES

GERALD SULLIVAN
INTERNATIONAL PROGRAMS,
USDRE

RICHARD BOWMAN
VICE PRESIDENT, RBI

DALE W CHURCH
PARTNER, SURREY AND MORSE

H K HEBELER
PRESIDENT, BOEING AEROSPACE

DONALD A HICKS
SENIOR VICE PRESIDENT,
NORTHROP

WILLIAM H HULSE
VICE PRESIDENT, WESTINGHOUSE

ROBERT N PARKER,
PRESIDENT,
MISSILES/ADVANCED PROGRAMS,
VOUGHT

HERBERT F ROGERS
VICE PRESIDENT,
GENERAL DYNAMICS

JOSEPH F SHEA
SENIOR VICE PRESIDENT,
RAYTHEON

ARTHUR STANZIANO
VICE PRESIDENT, HAZELTINE

MICHAEL I YARYMOVYCH
VICE PRESIDENT, ROCKWELL

8461186

The Task Force membership was essentially the same as for the Phase I study. It was comprised of eleven senior industry executives and the Defense Department's Assistant Deputy Under Secretary for International Programs. All members have extensive experience in the international defense business, and many served in the Defense Department as well as industry. Most members had previous dealings with the Japanese Government and industry.

TASK FORCE ACTIVITIES

- SIX MEETINGS IN U.S. (APR 83 – FEB 84)
- SENT QUESTIONS RE TECHNOLOGY COOPERATION TO JAPAN –
  - FOR JDA: INDUSTRIAL POLICIES, EXPORT POLICIES, R&D/ PROCUREMENT MANAGEMENT, EXPERIENCE IN COOPERATION, AREAS AND STRUCTURES FOR COOPERATION, SECURITY AND EXPORT CONTROLS, MILITARY CONSIDERATIONS
  - FOR INDUSTRY: PROBLEMS FORESEEN, PURPOSES AND ARRANGEMENTS FOR COOPERATION, FEASIBILITY OF DUAL-USE/MILITARY TECHNOLOGIES EXCHANGE, POTENTIAL TECHNOLOGIES FOR COOPERATION

846118-7

During meetings in Washington, the Departments of Defense, State, Commerce, and other government agencies provided the Task Force with extensive briefings on U.S. - Japan relations and Japan's defense posture and programs. Additionally, the Task Force invited presentation by U.S. contractors on their "lessons learned" in working on major licensed production programs with Japanese industry. Finally, a major Japanese manufacturer described the uncertainties of establishing a research center in the U.S. under U.S. laws and regulations, particularly those pertaining to export controls and the conduct of classified projects for DoD in a foreign-owned facility.

The major activity of the Task Force was a trip to Japan in November 1983. There was extensive prior preparation, including a discussion in Washington with a delegation from the Japan Defense Agency headed by Mr. Hiroo Kinoshita, Director General of the Equipment Bureau. The discussion focused on the background, policies, politics, and problems of arms technology cooperation. In accordance with the Japanese custom of sending detailed questions on the topics of interest in advance of a visit, the Task Force compiled and sent ahead a comprehensive set of questions on every aspect of industrial cooperation, including both policy issues and the practical problems of cooperation. These questions were not designed to elicit detailed answers, but rather to serve as a focus for our visit and create a climate for productive discussion. The question list served its purpose well; our Japanese hosts were very knowledgeable about the objectives of the visit and were exceedingly well prepared for the discussions.

TASK FORCE ACTIVITIES (CONT)

SPECIAL MEETINGS IN TOKYO 30 OCT – 5 NOV 83. COMPLEMENTED DOD NEGOTIATIONS ON AGREEMENT FOR TRANSFER OF JAPANESE DEFENSE-RELATED TECHNOLOGY

- AMBASSADOR MANSFIELD, EMBASSY STAFF, ONR
- MINISTRIES OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE AND INDUSTRY (MITI)
- JAPAN DEFENSE AGENCY (JDA)
- LDP MEMBERS OF DIET COMMITTEES ON DEFENSE, FOREIGN RELATIONS, SCIENCE, COMMERCE, AND TECHNOLOGY
- ELECTRONICS INDUSTRY: FUJITSU, HITACHI, MITSUBISHI (MELCO), NEC, TOSHIBA
- AEROSPACE INDUSTRY: ISHIKAWAJIMA-HARIMA (IHI), KAWASAKI (KHI), MITSUBISHI (MHI)
- KEIDANREN (FEDERATION OF ECONOMICS ORGANIZATIONS)

846118-8

The Task Force visit was arranged by the U.S. Embassy in Tokyo, primarily by the Mutual Defense Assistance Office (MDAO), in cooperation with the Japan Defense Agency (JDA). While time was limited, excellent planning, cooperation, and preparation by the Japanese hosts enabled the Task Force to learn much about the attitudes and interests of key Government agencies and major defense electronics and aerospace companies. It was a particular privilege to be able to meet with 19 Liberal Democratic Party members of the Diet interested in defense affairs and to exchange frank views on the possibilities and concerns of expanding U.S. - Japan cooperation in technology.

One segment of defense industry not contacted directly was comprised of smaller companies, the subsystem houses and the suppliers. Their interests were represented to some extent in a lengthy meeting with the Defense Production Committee of the Keidanren, which is a large and influential industrial/economic association that is made up of 819 companies of all sizes and 114 associations and economic organizations.

CONTEXT FOR THE JAPAN STUDY

- DSB NATO STUDY BASED ON ESTABLISHED POLICIES/RELATIONSHIPS
  - LONG-STANDING NATIONAL POLICY FOR INDUSTRIAL AND TECHNOLOGICAL COOPERATION
  - EXTENSIVE INDUSTRIAL COOPERATION ON ADVANCED TECHNOLOGIES
  - EUROPEAN DEFENSE TECHNOLOGY COMPARABLE TO OURS
- JAPAN STUDY BASED ON EVOLVING POLICIES/RELATIONSHIPS
  - NATIONAL POLICY FOR MILITARY COOPERATION BUT NONE FOR INDUSTRIAL/TECHNOLOGICAL COOPERATION
  - FOR MANY YEARS U.S. HAS LICENSED MUCH ADVANCED DEFENSE TECHNOLOGY TO JAPAN IN ORDER TO STRENGTHEN THEIR DEFENSE
  - JAPAN HAS PAID A PREMIUM FOR THIS TECHNOLOGY TO BUILD A MORE SELF-SUFFICIENT DEFENSE INDUSTRY, AND ALSO FURTHER LONG-TERM INDUSTRIAL OBJECTIVES IN AEROSPACE

846252-5

At the outset of the study, it became apparent that there would be a significant contextual difference between the Japan and NATO Studies. This arose from the difference in policy support for industrial cooperation in armaments. With the NATO allies, there have been formally enunciated, repeatedly endorsed, and widely accepted policies and governmental agreements for industrial cooperation since the 1950s. A 1981 statement by the Deputy Secretary of Defense to the DoD Components, on which the NATO study was based, provides a fitting summarization: "The Reagan Administration strongly supports U.S. and NATO arms cooperation programs and initiatives that are designed to better coordinate our use of research and development resources and provide greater interoperability and standardization of our forces so we can better fight as an Alliance."

There is no comparable statement for cooperation with Japan, although considerable cooperation has taken place in data exchange programs, licensed coproduction programs, and arms exports, which have required case-by-case Governmental approval. A consequence of the lack of policy support and public acceptance is that, despite growing interest in broader U.S. - Japan cooperation, there is much more skepticism regarding the wisdom and the limits of U.S. - Japan cooperation than U.S. - NATO cooperation. Many aspects of the relationship are still evolving.

CONTEXT FOR THE JAPAN STUDY (CONT)

EVOLVING POLICIES/RELATIONSHIPS (CONT)

- JAPAN'S PRODUCTION CAPABILITIES CONTRIBUTING TO GROWINC TRADE IMBALANCE
- THE LONG-RANGE SOVIET THREAT TO BOTH OUR INTERESTS IN THE WESTERN PACIFIC HAS INCREASED VASTLY
- JAPAN IS IMPROVING ITS DEFENSE CAPABILITIES, SO THAT CONTINUED ACCESS TO U.S. DEFENSE TECHNOLOGY IS AN IMPORTANT CONSIDERATION

• IT IS NOW APPROPRIATE TO REEXAMINE OUR POLICIES AND RELATIONSHIPS, PARTICULARLY WITH RESPECT TO TECHNOLOGICAL COOPERATION AND THE DIRECTION IT COULD TAKE FOR THE FUTURE

846252-6

In addition to technological/industrial aspects of defense, other key factors in the defense relationship need to be taken into account. Principal among these are economic and strategic considerations, such as the following:

1. The U.S. acknowledges the relationship with Japan as one of its most important bilateral relationships, and possibly the most important.

2. While trade and defense are two major areas for cooperation in the relationship, these two areas also provide the major sources of friction in the relationship.

3. In trade, Japan is our largest overseas trading partner with an annual trade volume in excess of $60 billion.

4. In defense, the U.S. primary interests in Japan lie not only in the capabilities of the Self-Defense Forces but also in the availability of Japanese bases and ports so that America's strategic and conventional forces may be forward deployed. Japan's budget allots slightly over $1 billion per year for the support of U.S. forces in Japan. Further, in times of emergency the great capabilities of Japan's industrial production base could be important in meeting the free world's logistic requirements.

5. Planning between U.S. Forces and the Japanese Self-Defense Forces is based on the assumption that U.S. and Japanese Forces will fight side-by-side in a military emergency involving Japan.

6. Major benefits of common-use defense systems between Japan and the U.S. are the capability for interoperability between forces, along with a capability for common-systems spare parts and logistic support.

7. Japan, like most countries, desires self-sufficiency in defense systems, and the logistic pipeline from the U.S. is long and vulnerable.

8. Japan has several options for acquisition of defense systems:

   a. FMS purchase of complete systems
   b. Direct commercial purchase of complete systems
   c. Licensed production of all or part
   d. Domestic development and production with U.S. technological assistance
   e. Complete domestic development and production
   f. Options b, c, and d with European rather than U.S. partners

9. Licensed production is usually a desirable option from the Japanese point of view and is frequently beneficial to the U.S; points to consider include:

   a. Licensed production encourages Japan to continue to look to the U.S. as a source of defense systems.

   b. When license production is denied, a local, and often less effective system is usually developed.

   c. Licensed production facilitates interoperability and logistical compatibility of U.S. and Japanese Self-Defense Forces defense.

   d. Political support for defense expenditures is essential, and licensed production provides local political support.

   e. It has been estimated that 30 to 40 percent of the cost of systems built under license goes to U.S. industry.

   f. Japan presently spends more than $500 million of its annual hardware budget in the U.S; for FY 1982, Japan spent $700 million, which was 20 percent of its total defense procurement.

CONTEXT FOR THE JAPAN STUDY (CONT)

- DSB IS CONCERNED THAT THERE IS NO COHESIVE OVERALL U.S. STRATEGY TOWARD JAPAN EMBRACING BOTH DEFENSE AND ECONOMIC OBJECTIVES
- SUCH STRATEGY COULD CONSIDER MANY POSSIBILITIES NOT CONFINED SOLELY TO TECHNOLOGICAL COOPERATION, SUCH AS:
  - SIGNIFICANTLY ENLARGED JAPAN DEFENSE BUDGET WITH FIRM COMMITMENTS AS AN ALLY IN THE PACIFIC
  - SIGNIFICANT REDUCTION OF AGGREGATE TRADE IMBALANCE
  - AGREEMENT FOR JAPAN TO BUY MOST DEFENSE EQUIPMENT FROM U.S., WHICH WOULD BE CHEAPER FOR JAPAN AND EASE TRADE IMBALANCE
  - OTHER POSSIBLE DEFENSE/ECONOMIC INITIATIVES, EACH BASED ON A COHESIVE POSITION AMONG DEFENSE, STATE, COMMERCE, AND THE SENIOR TRADE REPRESENTATIVE
  - AS ONE ELEMENT OF SUCH STRATEGY, ESTABLISH FEASIBILITY OF A TWO-WAY FLOW OF TECHNOLOGY BENEFITTING BOTH COUNTRIES

THIS DSB STUDY DEALS ONLY WITH THE TECHNOLOGY ISSUE. DSB RECOMMENDS THAT ITS FINDINGS BE MADE PART OF A LARGER CONCEPTUAL FRAMEWORK

846252-7

The Task Force was concerned that its study on industrial and technological cooperation in defense could not be based on a cohesive overall strategy toward Japan that considered both defense and economic issues. If there were such an overall strategy, and the Task Force believes strongly there should be, the findings of this study should be considered as pertaining to one element of such a strategy. Conclusions *should* be reached as part of a comprehensive economic/political/regional security posture. Our policies toward Japan and the Pacific Basin are, in the view of the Defense Science Board, fragmentary and often conflicting.

TASK FORCE APPROACH

WITHIN SPECIFIC TERMS OF REFERENCE FOR STUDY:

- EXPLORE FEASIBILITY, POSSIBLE OPPORTUNITIES, AND PROBLEMS OF ESTABLISHING TWO-WAY FLOW OF DEFENSE-RELATED TECHNOLOGIES BETWEEN U.S. INDUSTRY AND JAPANESE INDUSTRY
- START WITH POSITION THAT PREREQUISITE FOR CONTINUED TRANSFER OF U.S. ADVANCED DEFENSE TECHNOLOGIES WILL GENERALLY BE RECIPROCAL TRANSFER OF JAPAN'S DUAL-USE AND MILITARY TECHNOLOGIES
- RECOGNIZE LONGER-TERM INDUSTRIAL CONCERNS ON BOTH SIDES
  - U.S. INDUSTRY: SHARING OUR DEFENSE TECHNOLOGY MAY CREATE COMPETITION FOR DEFENSE EXPORTS
  - JAPAN INDUSTRY: SHARING THEIR DUAL-USE TECHNOLOGY MAY INCREASE U.S. COMPETITION IN COMMERCIAL FIELDS
- APPRAISE GENERAL STATUS AND RATE OF ADVANCE OF DEFENSE-RELATED TECHNOLOGY IN JAPAN BUT NOT DETAILS OF SPECIFIC TECHNOLOGIES
- CONCENTRATE ON SPECIFIC POLICIES, ATTITUDES, MECHANISMS AND PROBLEMS FOR TWO-WAY TECHNOLOGY FLOW, TO MAKE SPECIFIC AND PRAGMATIC RECOMMENDATIONS

846118-65A

While the context for the Japan Study was different from the NATO Study, the end objective, to derive specific and pragmatic recommendations for the DoD, was similar. Since there was less history of cooperation and communication than with NATO industry, as well as greater political uncertainties, the Task Force very clearly established the premises for dialogue in its dealings with Japanese Government and industry. These premises are as follows:

1. The long era of unilateral technology transfer from the United States is ending.

2. The discussion would be an *exploration* of the feasibility of a two-way technology flow.

While there were governmental and industrial concerns on both sides about a two-way flow (which were spelled out), there did appear to be sufficient potential benefits to both sides so as to warrant serious consideration. The Japanese representatives concurred.

GENERAL CONCLUSIONS

846118 31

GENERAL CONCLUSIONS

- JAPAN HAS CREATED "TECHNOLOGY MOMENTUM" THAT WILL BROADEN THEIR PRESENT DAY LEAD OVER U.S. IN SOME FIELDS AND WILL ENABLE THEIR LONG-TERM NATIONAL COMMITMENT TO TECHNOLOGY INNOVATION TO BE SUCCESSFUL
- JAPANESE INDUSTRY MAY EVENTUALLY NEED TO EXPAND ITS LIMITED DEFENSE PRODUCTION AND BECOME A COMPETITOR FOR DEFENSE EXPORTS
- HOWEVER, BECAUSE IT IS VITAL TO U.S. INTERESTS THAT DEFENSE AND ECONOMIC TIES BETWEEN U.S. AND JAPAN ENDURE, STRATEGIC VALUE OF CLOSER TECHNOLOGICAL COOPERATION OUTWEIGHS DRAWBACKS OF EVENTUAL COMPETITION
- JAPANESE GOVERNMENT AND INDUSTRY NOW APPEAR INTERESTED IN BROADER TECHNOLOGY COOPERATION, AND IT SHOULD BE UNDERTAKEN ON INDUSTRY-TO-INDUSTRY BASIS SELECTIVELY, JUDICIOUSLY, AND RECIPROCALLY, CONDITIONED ON: DEMONSTRATION OF MUTUALLY BENEFICIAL TWO-WAY FLOW OF TECHNOLOGY

The Task Force was impressed with the "technology momentum" in Japan. It has already carried Japan to the stage of technological equality in many fields and superiority in some, with no indication of a slowdown. This momentum, coupled with a deep national commitment to technological innovation, mandates that our considerations should be based upon where Japan will be at the end of this decade rather than where it is now.

Another necessary consideration is the anticipated need of Japanese industry to expand its limited defense production base, which could motivate the industry to become a competitor in export markets. This is still a future possibility and is prohibited by present government policies, but it is a significant concern of U.S. industry today.

After much discussion and consideration of the potential of downstream Japanese competition, which would be aided by technological cooperation with U.S. industry, the Task Force concluded that the vital importance that our military and economic alliance endure outweighs the drawbacks of downstream competition. Furthermore, the Task Force concluded that we should undertake industry-to-industry reciprocal technological cooperation on a pragmatic and tentative basis. The timing is right; the Japanese Government and industry appear to be interested, as are we.

BACKGROUND CONSIDERATIONS

846118 13

JAPAN'S DEFENSE PROGRAM

- NATIONAL DEFENSE CONCEPT
  - GOAL: EFFECTIVE SELF-DEFENSE FOR JAPAN'S TERRITORIES, SURROUNDING SEA AND AIRSPACE IN ACCORDANCE WITH ITS CONSTITUTION AND BASIC DEFENSE POLICY
  - PLANS: EXISTING PLANS WILL IMPROVE IMPLEMENTATION OF THIS GOAL

- SELF DEFENSE FORCE STRUCTURE
  - TOTAL PERSONNEL: 250,000
  - GROUND FORCES: 13 DIVS, 6 BRGDS, 8 LO-ALT SAM GRPS
  - MARITIME FORCES: 60 ANTI-SUB SHIPS, 16 SUBS, 220 ACFT
  - AIR FORCES: 430 COMBAT ACFT, 6 HI-ALT SAM GRPS

DEFENSE BUDGET GROWTH

	% OF GNP	IN '83 $	
1970	0.79	2.4B	AVG ANNUAL REAL
1983	0.98	11.8B	INCREASE – 6%

846118 73A

Japan's defense policy is based upon a Constitution which renounces war but is interpreted to permit self-defense. The "Basic Policy for National Defense," adopted in 1957, is as follows:

"The objective of national defense is to prevent direct and indirect aggression, but once invaded, to repel such aggression, 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 the 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 due 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 more effective functioning of the United Nations in the future in deterring and repelling such aggression."

To carry out this policy, Japan's Ground, Maritime, and Air Self-Defense Forces have the following missions:

1. Warning and surveillance
2. Countering indirect aggression and unlawful actions through the use of military power
3. Countering direct military aggression
4. Command communications and logistics support
5. Education and training
6. Disaster relief operations, etc.

The coordination of the U.S. and Japanese forces in the Western Pacific is performed under the aegis of the "Treaty of Mutual Cooperation and Security Between Japan and the United States of America," signed 23 June 1960 (see Appendix B). This Treaty states that, inter alia:

ARTICLE VI

"Each Party recognizes that an armed attack against either Party in the territories under the administration of Japan would be dangerous to its own peace and safety and declares that it would act to meet the common danger in accordance with its constitutional provisions and processes."

ARTICLE VI

"For the purpose of contributing to the security of Japan and the maintenance of international peace and security in the Far East, the United States of America is granted the use by its land, air and naval forces of facilities and areas in Japan."

The value of these bases to the U.S. and to its Western Pacific Forces is great.

Japan's defense budget has increased significantly every year since the early 1960s. While the ratio of defense budget to GNP was relatively constant (or occasinally declining) until the mid-1970s, Japan's great boom in GNP meant sizable real increases in its defense budget. Since 1970, Japan's average annual rate of real defense budget increase of approximately 6 percent has exceeded that of other Western countries.

INDUSTRIAL ASPECTS OF JAPAN'S DEFENSE

- JAPAN IS FREE WORLD'S SECOND-RANKING ECONOMIC POWER

1982 GNP	$B
U.S.	3,059
JAPAN	1,060
FRG	659

- JAPAN'S INDUSTRIAL GROWTH HAS BEEN STRONGLY INFLUENCED BY MITI WHICH PLAYS KEY AND PERVASIVE ROLE IN DEFINING NATIONAL PRIORITIES

- MITI'S INDUSTRIAL PRIORITIES:

  1950s TO 1960s: BASIC INDUSTRIES: STEEL, SHIPBUILDING, AUTOS

  1970s TO 1980s: KNOWLEDGE INDUSTRIES: COMMUNICATIONS, COMPUTERS, MICROELECTRONICS, SOFTWARE, SERVICES

846118 39A

In 1982, Japan ranked as the free world's second largest economic power, accounting for 10 percent of the world's GNP. From 1967 through 1983, Japan's industrial production increased 147 percent, which was more than any other Western country (the U.S. increase for the same period was 56 percent). Japan's GNP, which in 1960 was 8 percent that of the U.S., is now nearly 50 percent of the U.S.

The Ministry of International Trade and Industry (MITI) and the Ministry of Finance guide Japan's industrial policies. The flexibility of MITI's industrial policies has been credited as a prime component in Japan's growth. As far back as the 1950s, MITI directed its industrial priorities toward heavy industries. During the 1970s and 1980s, MITI has fostered knowledge-intensive industries. In each instance, MITI's goal was a specific international market share for specifically targeted Japanese industries.

Although its former trade and industrial controls have largely given way to consensus building and coordination, MITI retains the respect of and continues to exert considerable influence on the private sector. MITI maintains authority to oversee declining industries and promote other businesses which promise growth potential. MITI encourages some companies to merge, others to explore overseas opportunities, and helps still others form consortia and arrange financing for large projects not easily handled by an individual firm. Together with the Ministry of Finance, MITI plays a key and pervasive role in the selection of national priorities and in guiding Japan's industrial development.

INDUSTRIAL ASPECTS OF JAPAN'S DEFENSE (CONT)

"THE VISION OF MITI'S POLICIES IN 1980s"

TOWARD A TECHNOLOGY-BASED NATION:

- DEVELOPMENT OF CREATIVE TECHNOLOGIES (WITH EMPHASIS ON TECHNOLOGICAL INNOVATION)
- PRIORITY GOALS FOR TECHNOLOGICAL DEVELOPMENT
- "NATIONAL PROJECTS" FOR HIGH-COST DEVELOPMENTS
- INCREASED FUNDING FOR R&D
- COOPERATIVE BUSINESS/GOVERNMENT EFFORTS
- INTERNATIONAL COOPERATION IN TECHNOLOGICAL DEVELOPMENT

OBJECTIVE – "ECONOMIC SECURITY THROUGH TECHNOLOGICAL INNOVATION"

846118 15

Since 1963, MITI has directed its goals and policies within the general framework of its "Visions," reports, which are prepared every ten years by the Industrial Structure Council. The Industrial Structure Council is an advisory body to MITI which includes representatives from academia, industry, labor unions, and consumer groups. The 1980 MITI Vision (see Appendix C) delineates a strategy and the steps required for Japan's transition from its present mode of technology exploitation and product improvement to the more creative mode of technical innovation.

Japan's commitment to technical innovation is not transient; it is a long-term national policy that is not likely to be sidetracked by fluctuations in domestic or international economies. MITI expresses a deep conviction that Japan's future economic security is linked to the commercial success resulting from high technology innovation and basic research and development.

MITI encourages technological competition and independence among private industries, while simultaneously stating that the government should provide assistance to industry in specific circumstances. Such help would include increased R&D monies, especially in high-risk ventures where MITI proposes the Government "must take the initiative" to promote technological development. MITI, acknowledging the scarcity of Japan's national resources, points out the advantages of international technology cooperation.

MITI clearly states that the "establishment of economic security is one of the most important priorities for the 1980s." MITI considers mutual pursuit of innovative technology by both industry and government, coupled with participation in international joint projects, to be highly desirable means of ensuring Japan's economic growth and stability during the decade of the Eighties.

INDUSTRIAL ASPECTS OF JAPAN'S DEFENSE (CONT)

- JAPAN'S PRESENT DEFENSE BUSINESS SMALL; IN 1981 TOTAL PROCUREMENT $4.66B, OF WHICH $3.75B WENT TO INDUSTRY. 1981 DEFENSE PRODUCTION 0.38% OF TOTAL INDUSTRIAL OUTPUT

- JAPAN'S PRESENT POLICIES FOR DEFENSE PROCUREMENT:
  - ITS OWN INDUSTRIAL BASE FOR DEFENSIVE WEAPONS
  - EQUIPMENT TO COME FROM INDUSTRY
  - IF FEASIBLE, DEVELOPED AND PRODUCED IN JAPAN IF NOT, THEN COPRODUCED OR BOUGHT

BUT

- JAPAN'S OBJECTIVES FOR DEFENSE PROCUREMENT:

MAXIMUM SELF-SUFFICIENCY!

846118-19

Most Japanese manufacturing industries have viewed defense production as a hedge against recession and a means of acquiring technological and production skills for commercial applications. Defense production, for both the Japanese Self-Defense Forces and the "special procurements" by the U.S. Forces in Japan, as described by the Japan Defense Agency, is approximately the size of the bread industry or the auto tire industry. By product sector, defense production as a percent of total production for FY 1981 is as follows:

Product	Dollar Value, 1981	Percent of Production, Total Sector
Aircraft	1,008 million	77.8
Weapons/ammunition	605 million	99.8
Vessels	588 million	4.9
Electrical/communication Equipment	492 million	0.41
Vehicles	87 million	0.08
Total of all defense equipment	$2.46 billion	0.38

Japan's official policies for defense procurement are to "choose the best method of procurement" by considering options (1) "To make the best use of our country's superior industrial potential as the production base, in order to secure stable supply and maintenance of equipment...and also as the basis of technological R&D efforts," or (2) "To utilize the fruits of the advanced technologies of the U.S. and other countries of the West." Over time, Japan's long-term objective is to achieve maximum feasible self-sufficiency for defense procurement.

INDUSTRIAL ASPECTS OF JAPAN'S DEFENSE (CONT)

- DEFENSE IS MINOR BUSINESS FOR LARGE JAPAN COMPANIES. IN 1982, FOR COMPANIES VISITED:

	TOTAL SALES, $B	DEFENSE SALES, $M	DEFENSE SALES, %	DEFENSE MKT SHARE, %
MITSUBISHI HVY*	7.08	1250	16.9	24.6
KAWASAKI HVY	2.96	428	14.3	8.7
ISHIKAWAJIMA	3.40	362	10.6	7.4
MITSUBISHI ELEC	6.00	369	6.1	7.5
TOSHIBA	7.64	243	3.1	4.9
NEC	5.40	113	2.1	2.3
FUJITSU	3.48	49	1.4	1.0
HITACHI	10.06	40	0.4	0.8

*JAPAN'S LARGEST DEFENSE CONTRACTOR

846118-20

The defense industrial base for Japan in FY 1982 consisted of over 2,000 companies qualified for defense business by the Central Procurement Office. Of these companies, over 800 actually received contracts. The "Big 20" defense contractors received 71.3 percent of the total contracts value, much of which went to subcontractors and suppliers. Among the major defense suppliers, in no case was defense a predominant portion of the total business. All defense production is in industry-owned plants; there are no GO-GO or GO-CO plants and no arsenals.

COOPERATION IN DEFENSE EQUIPMENT

- BASED ON MUTUAL DEFENSE ASSISTANCE AGREEMENT OF 1954
- BEGAN UNDER MILITARY ASSISTANCE PROGRAM, TRANSITIONED TO FMS FOR BUYS OF E-2C, C-130H, HARPOON, TARTAR, TOW, PHALANX, ETC
- EXTENSIVE LICENSED PRODUCTION AND COPRODUCTION OF MAJOR WEAPONS SYSTEMS AND EQUIPMENTS (110 COPRO AGREEMENTS AUTHORIZED 1/1/76-6/15/80). MAJOR EXAMPLES: F-104, F-4J, F-15 P3C, HSS-2, AH1, AIM 7E-7F, AIM-9L, HAWK, I-HAWK, M110 A2 HWTZR MK46 TRPDO
- MOST DIRECT BUYS THROUGH TRADING COMPANIES
- TOTAL BUYS FROM U.S. (FY 1950 – FY 1983)
  FMS, $3.1B; DIRECT, $2.2B

846118-17A

Cooperation in defense equipment is based on the Mutual Defense Assistance Agreement of 1954 (see Appendix D), which was developed primarily to establish a legal basis for the U.S. to furnish military equipment and technology to Japan, and was written to allow, but not require, reciprocity on the part of Japan. The U.S. offer of equipment to Japan began with grant aid under the Military Assistance Program until that program's termination in 1967, at which point Japan changed over to a mix of Foreign Military Sales procurements, direct commercial procurements (usually via trading companies), and licensed production. A 1983 tabulation of the equipment currently being bought and license-produced, a summary of major domestic developments and procurements, and a breakdown of procurements by procurement method are presented in Appendix D. Of Japan's total weapons imports, 95 percent came from the U.S. and 3 percent from European countries.

In recent years, there has been increasing licensed production in Japan. Appendix E tabulates the coproduction authorized by the U.S. State Department during a period when the F-15 and P3C production programs were being put together.

COOPERATION IN DEFENSE TECHNOLOGY

- EXTENSIVE LICENSING OF U.S. SYSTEMS, SUBSYSTEMS, COMPONENTS SINCE THE 1950s
- EXTENSIVE DATA EXCHANGE AGREEMENTS SINCE 1962
- SYSTEMS AND TECHNOLOGY FORUM ESTABLISHED BY USDRE IN 1980 TO IMPROVE COOPERATION IN TECHNOLOGY AND EQUIPMENT (MEETS EVERY 6 MONTHS)
- U.S. BEGAN PROPOSING EXCHANGE OF DEFENSE TECHNOLOGIES IN 1981
- A MAJOR MILESTONE: THE "NAKASONE INITIATIVE". PRIME MINISTER NAKASONE ANNOUNCED JAN 1983 JAPAN WOULD RECIPROCATE AND TRANSFER MILITARY TECHNOLOGY TO U.S. (ONLY) (IMPORTANT SIDE BENEFIT: ALSO REMOVES INDUSTRY CONCERNS ABOUT APPROVAL OF TRANSFER OF DUAL-USE TECHNOLOGY FOR MILITARY APPLICATIONS)
- FORMAL AGREEMENT FOR TRANSFER OF JAPAN MILITARY TECHNOLOGY SIGNED NOV 8, 1983. ESTABLISHED JOINT MILITARY TECHNOLOGY COMMISSION

846118 18A

The early purchases of U.S. defense equipment by Japan were soon followed by licensing arrangements for a broadening spectrum of defense equipments. Examples of these were the F-104 and Mk-46 torpedos. Licensing has continued and expanded, and forms the contractual basis for most of the transfer of technology and know-how to Japan.

In 1980, a joint Systems and Technology Forum was established between USDRE and the JDA Equipment Bureau, with the following objectives:

1. Facilitate open and substantive dialogue and cooperation between JDA and DoD in the research, development, production, and procurement of military equipment.

2. Provide for identification and resolution of issues of mutual concern.

The most significant recent event in expanding technological cooperation was a policy statement of Prime Minister Nakasone in January 1983. Nakasone stated that, in response to U.S. requests, Japan would be allowed to export military technology to the United States (and only to the United States), based on the cooperative Japan - U.S. security system and the long history of Japan's obtaining technology from the U.S. This offer was formally consummated in an exchange of diplomatic notes between Japan and the U.S. on 8 November 1983. (The Nakasone statement, the diplomatic notes, and a press clipping describing the event are found in Appendix F.)

COOPERATION IN DEFENSE TECHNOLOGY (CONTINUED)

The agreement establishes (as the means of consultation between the two governments in identifying the specific technologies to be transferred) a Joint Military Technology Commission. For Japan, it is composed of one representative from each of the following: the Defense Agency, the Ministry of Foreign Affairs, and MITI. For the U.S., there is one representative from both the U.S. Embassy and the Mutual Defense Assistance Agency in Japan. The U.S. members will be representing State Department and USDRE.

JAPANESE MILITARY TECHNOLOGY

DEFINED IN U.S.-JAPAN AGREEMENT OF 8 NOV 83 AS BEING TECHNOLOGIES (AND ARTICLES NECESSARY FOR THEIR TRANSFER) WHICH ARE EXCLUSIVELY RELATED TO "ARMS," WHICH ARE:

- FIREARMS AND CARTRIDGES
- AMMUNITION AND LAUNCH EQUIPMENT
- EXPLOSIVES AND JET FUEL
- EXPLOSIVE STABILIZERS
- MILITARY VEHICLES (AND PARTS)
- MILITARY VESSELS (AND PARTS)
- MILITARY AIRCRAFT (AND PARTS/ACCESSORIES)
- ANTI-SUB AND ANTI-TORPEDO NETS, MINE-SWEEPING CABLE
- ARMOR PLATE, STEEL HELMETS, BULLET-PROOF JACKETS
- MILITARY SEARCHLIGHTS AND CONTROL EQUIPMENT
- CBR AGENTS AND RELATED EQUIPMENT

846118-72

In the agreement on the transfer of Japanese military technology, the technologies eligible for transfer are defined quite narrowly, and are of much less interest to the U.S. than defense-related dual-use technology. The definitions are:

> "(1) The term "military technologies" means such technologies as are exclusively concerned with the design, production and use of "arms" as defined in the Policy Guideline of the Government of Japan on Arms Export of February 27, 1976 (see the Annex of Appendix F).
>
> (2)(a) The term "arms" as referred to above is defined in the said Policy Guideline as "goods which are listed from Item No. 197 to Item No. 205 of Annexed List 1 of the Export Trade Control Order of Japan, and are to be used by military forces and directly employed in combat." The said Policy Guideline proclaims that equipment related to "arms" production will be treated in the same manner as 'arms.'"

On the other hand, the break point between dual-use (exportable) components or subsystems and military (nonexportable) systems is not so clearly defined. We expect that this break point will evolve through case-by-case review by the Joint Military Technology Commission.

R&D JAPAN AND U.S.

- JAPAN'S R&D MUCH LESS – BUT GROWING

TOTAL R&D EXPENDITURES

	1961		1971		1981	
	$B	%GNP	$B	%GNP	$B	%GNP
JAPAN	0.76	1.42	4.3	1.88	27.1	2.36
U.S.	14.43	2.73	26.7	2.48	72.1	2.46

- JAPAN R&D FUNDED MORE BY INDUSTRY (1981): JAPAN – 62% U.S. – 50%

- JAPAN DEVOTES MORE OF ITS GOVERNMENT R&D TO CIVIL SECTORS

% OF GOV'T R&D EXPENDITURES BY SECTOR – 1980

	DEFENSE	AEROSPACE	INDUSTRIAL GROWTH	ENERGY	AGRICULTURE	HEALTH
JAPAN	4.9	12.0	12.2	26.2	25.4	6.1
U.S.	47.3	16.4	0.3	11.4	2.7	12.1

Japan's investment in R&D has increased spectacularly in recent years and has increased at a greater rate than U.S. investment. Discounting inflation, between 1961 and 1981 Japan's R&D expenditures increased by a factor of 3.5, while the corresponding U.S. increase was a factor of 1.4. Japan's R&D expenditure in 1961 was 19 percent of that of the U.S., and in 1981 was 35 percent.

A higher proportion of total R&D is industry-funded in Japan than in the U.S. The highest industrially-funded sector in both countries is the electrical and electronics sector, which in 1979 received 23.4 percent of the total industrial funding in Japan and 17.6 percent in the U.S. The five electronics companies visited by the Task Force conducted R&D at an average level of 5.7 percent of sales, with one company at 10 percent of sales.

While the direct government funding of R&D is less in Japan, the Japanese Government does indirectly support and incentivize R&D in many ways. These include tax exemption for extensive R&D investments and income derived from technology export, as well as low interest loans for R&D investments. Another government stimulus for innovation is the sponsorship of research consortia which bring together public and private sector scientists (including researchers from rival companies) to concentrate on a particular high priority effort. An example is the VLSI project, which was undertaken between 1976 and 1980 at an estimated budget of about $360 million, 70 percent of which was financed by the government. The Government is said to place as much emphasis on the educational benefits of these large programs as on the products produced; by this criterion, the current "Fifth Generation Computer" project is already deemed a success.

Japan's direct government investment has been primarily in civil R&D. The most significant increase in percent of total expenditures from 1975 to 1980 was in the field of energy. There were slight decreases in the percent spent for defense and space. (These data are for "intramural expenditure only.")

One indicator of the results of the growing Japanese R&D activity might be the number of patents granted by the U.S. Patent Office. While the number of U.S.-origin patents declined from 55,958 in 1971 to 33,896 in 1982, in the same period Japan-origin patents rose from 5,522 to 8,149. This rate far exceeded that of all other Western countries.

JAPAN'S DEFENSE R&D

- DEFENSE R&D CARRIED OUT ONLY UNDER JDA, WITH LITTLE COOPERATION WITH MITI, SCIENCE AND TECHNOLOGY AGENCY, ETC.
- DEFENSE-RELATED DUAL-USE R&D SUPPORTED SUBSTANTIALLY BY MITI AND SCIENCE AND TECHNOLOGY AGENCY
- MUCH DEFENSE R&D SUPPORTED BY INDUSTRY WITH PREMISE THAT, IF SUCCESSFUL, THEY GET PRODUCTION
- ONLY GOVERNMENT DEFENSE R&D LAB IS TRDI (TECHNICAL R&D INSTITUTE) WITH ANNUAL BUDGETS AROUND $250M, MOSTLY FOR RESEARCH, DEVELOPMENT, AND PROTOTYPE PRODUCTION FOR SERVICES' TACTICAL NEEDS. THIS IS ABOUT 1.5% OF DEFENSE BUDGET

Japan's government-funded military R&D has been performed since 1975 at a level ranging from 1.24 to 1.4 percent of the total defense budget. In addition to this R&D, a significant but indeterminate amount of military R&D is performed by industry with its own funds in the expectation of receiving production awards if successful. While defense-unique R&D is supported and directed by JDA, the dual use R&D is under the jurisdiction and support of the civil agencies, MITI and the Science and Technology Agency.

The Defense Agency's only R&D laboratory is the Technical Research and Development Institute (TRDI), the mission of which is to "...conduct technical study and research, design, development and test, relating to equipment to be used in self defense forces, and for conducting such other scientific study and research as may be required in the accomplishment of their mission."

The Institute reports to the Director General of the Defense Agency. It is presently composed of 1208 personnel, of which 424 are administrative, 528 are civil service researchers, and 256 are uniformed Japanese Self-Defense Force. They are organized into a headquarters with land, air, sea, and guided missiles divisions; five research centers; and five test centers. The research centers are responsible for the following:

First research center—firearms, ammunition, naval vessels, marine engines, electrical and electronic equipments

Second research center—foods, uniforms, quartermaster type items

Third research center—aircraft, aircraft engines, rocket engines

Fourth research center—vehicles, construction equipment

Fifth research center—undersea weapons, sonar, magnetic devices

The budget and major research and development programs are described in Appendix G.

It is the judgment of some Japanese industrialists that the Institute suffers from a shortage of funds and a dearth of researchers, and that it is unlikely that the Institute can generate such innovative technology as to produce much of a spin-off effect on Japan's civilian industry.

MAJOR FINDINGS

846118 24

ATTITUDES ON TECHNOLOGY COOPERATION

JAPAN GOVERNMENT

- WANTS MORE DEFENSE COOPERATION WITH U.S. BUT MUST CONSIDER POLITICAL SENSITIVITIES
- WANTS TO BUILD UP SELF-SUFFICIENT DEFENSE INDUSTRIAL BASE
- APPRECIATES U.S. TECHNOLOGY AND WANTS MORE OF OUR ADVANCED, SENSITIVE TECHNOLOGY
- INTERESTED IN CODEVELOPMENTS FOR JAPAN SYSTEMS AND FOR JOINT SYSTEMS

846118 25

The Nakasone Government wants more defense cooperation with the United States across the board and has been making considerable progress toward that goal. There has been increasing cooperation in joint defense planning and in Japan's support for U.S. Forces. Also, as previously mentioned, the agreement for Japan to reciprocate in making its military technologies available to the U.S. adds another major dimension to this cooperation.

These steps toward a more effective defense relationship are not achieved easily or quickly, however, because of the political concerns in Japan about defense expansion, from the standpoints of domestic political opposition, budgets, and foreign policy repercussions. To respond to DoD's request for the exchange of military technology required nearly two years, many studies, and much preparation to arrive at the necessary consensus.

While the official policy of the Japan Defense Agency for defense procurement is, as described on page 21, "to choose the best method of procurement" for each case, the Task Force believes there is a real and understandable ambition to achieve self-sufficiency in defense to the extent possible. The Finance Ministry reportedly demurs on this because of the expense involved during a time of budget problems, but obviously has not prevailed and is unlikely to do so.

Continued access to U.S. technology and undertaking codevelopments with U.S. industry would further Japan's goals of self-sufficiency in defense and technological innovation. Much of this report deals with the trade-offs for the U.S. in so doing.

ATTITUDES ON TECHNOLOGY COOPERATION

Japan Government (Continued)

There was no question that the Defense Agency wants continued access to and utilization of U.S. advanced technology. One method, which is being increasingly implemented, is to have U.S. companies as subcontractors for critical portions of advanced developments. This is currently being done in the development of Japan's next generation air defense ground environment, the BADGE system.

ATTITUDES ON TECHNOLOGY COOPERATION

JAPAN GOVERNMENT (CONT)

- RECOGNIZES U.S. PRINCIPAL INTEREST IN "DEFENSE-RELATED" OR DUAL-USE TECHNOLOGIES AND INDUSTRIAL COOPERATION WILL BE ENCOURAGED
- WILL CONSIDER LICENSING GOVERNMENT-OWNED TECHNOLOGIES (BUT MOST ADVANCED TECHNOLOGIES SUPPORTED AND OWNED BY INDUSTRY)
- TECHNOLOGY COOPERATION WITH U.S. COULD ALLEVIATE IMPACT OF TRADE FRICTIONS AND WOULD INCREASE JAPAN'S RESOURCES

846118 26

The Task Force, in its discussions with government agencies, made clear that U.S. industry's principal interest is in Japan's advanced commercial technologies which have defense application. In addition, the Task Force requested that government agencies assure Japanese industry that cooperation with U.S. companies on these technologies would be acceptable. This was agreed to and furthermore, government officials stated that licensing of government-owned technology (primarily belonging to MITI and the Defense Agency) would be considered.

Both sides agreed that cooperation on the specific technologies would be initiated and carried out industry-to-industry. The objective of the Task Force was to ensure that there would be no governmental discouragement or bar to industry for exploration of or cooperation on these technologies.

Broader benefits of increased technological cooperation would include better mutual utilization of the technology resources of the alliance, and augmentation of a mutually beneficial and positive dimension of the relationship at a time when trade frictions between the two countries are troublesome.

ATTITUDES ON TECHNOLOGY COOPERATION

JAPAN INDUSTRY

- COMPANIES INTERESTED IN EXPANDING DEFENSE BUSINESS
- WILL CONSIDER EXCHANGING DUAL-USE TECHNOLOGY FOR DEFENSE TECHNOLOGY IF:
  - MUTUALLY BENEFICIAL
  - CONSIDERED CASE-BY-CASE
  - THEIR TECHNOLOGY PROTECTED FROM MISUSE
- CONCERNS ABOUT U.S. INDUSTRY
  - ADEQUATE COMPENSATION FOR THEIR TECHNOLOGY (NOT BEING ABLE TO PRODUCE FOR EXPORT)
  - POSSIBILITY OF APPLICATION OF THEIR TECHNOLOGY FOR PURPOSES OTHER THAN AGREED UPON
  - DIFFICULTIES OF UNDERSTANDING AND COMMUNICATION

846118 2

Japan's defense industry is in a state of transition. Although currently it represents only a small portion of total business, defense-related production is viewed by both government and industry as a field for significant future growth.

As to Japanese industry's interest in exchanging their dual-use technology for U.S. defense technology, most of the companies visited stated their interest in principle, conditioned on the prudent businessman's prerequisites that each case must be considered individually on its own merits, and that the proposition must be mutually beneficial. An additional prerequisite was for adequate assurance that Japanese technology being transferred for defense use not be directed to other uses. The electronics companies expressed more optimism than aerospace companies about having technology useful to U.S. industry.

The most fundamental concern at the industrial level, and one shared by the Task Force members, was whether a technologies cooperation as envisioned would be economically practical for Japanese industry. Since production to sufficiently recoup R&D costs might not be realized, they may be forced to ask prohibitive prices for their technology. Technological cooperation or exchange in kind could alleviate this particular concern.

In addition to these concerns, the Japanese industrialists were curious about the "low success rate" of NATO cooperative programs. The Task Force explained that there have been many successful cooperations in NATO as well as the more publicized failures.

ATTITUDES ON TECHNOLOGY COOPERATION (CONT)

JAPAN INDUSTRY (CONTINUED)

- CONCERNS ABOUT U.S. GOVERNMENT
  - ACCESS TO DOD REQUIREMENTS AND PLANNING
  - COMPLICATIONS OF DOING BUSINESS WITH DOD (MISMATCHES BETWEEN R&D SYSTEMS, PROCUREMENT SYSTEMS, SPECIFICATIONS, PATENT LAWS, ETC)
  - RESTRICTIVE U.S. LAWS AND POLICIES ON EXPORTS, TECHNICAL DATA, AND FOREIGN OWNERSHIP
- NEVERTHELESS, JAPANESE COMPANIES –
  - WANT TO EXPLORE FURTHER AND WILL DISCUSS SPECIFIC TECHNOLOGIES
  - AGREE WITH INDUSTRY-TO-INDUSTRY APPROACH

46561-1

Governmental complications are foreseen in obtaining sufficient access to U.S. requirements and planning data to enable effective participation in U.S. programs. The complexity of DoD's management systems and procurement requirements for contractors is cause for concern as to whether participation in U.S. programs would be economically worthwhile. Also, U.S. restrictions on technological transfer and foreign ownership cause doubts about the viability of Japanese participation in U.S. defense contracts.

Despite these concerns, the Japanese companies expressed interest in further exploratory discussions with U.S. firms. It was agreed that these contacts should be made at the initiative of individual companies and need not be handled on a government-to-government basis.

POTENTIAL FIELDS OF COOPERATION

- JAPANESE MILITARY TECHNOLOGIES OF LITTLE INTEREST TO U.S. INDUSTRY BUT DUAL-USE TECHNOLOGIES OF GREAT INTEREST

- SOME JAPANESE DUAL-USE TECHNOLOGIES OF CURRENT INTEREST:

GALLIUM-ARSENIDE DEVICES--- MICROWAVE, HIGH-SPEED LOGIC

MICROWAVE INTEG CIRCUITS

FIBER-OPTIC COMMUNICATIONS

MILLIMETER-WAVES

SUB-MICRON LITHOGRAPHY

IMAGE RECOGNITION

SPEECH RECOGNITION/TRANSLATION

ARTIFICIAL INTELLIGENCE (KNOWLEDGE-BASED COMPUTER ARCHITECTURE)

ELECTRO-OPTICAL DEVICES

FLAT DISPLAYS

CERAMICS (FOR ENGINES, ELECTRONICS)

COMPOSITE MATERIALS

HIGH-TEMPERATURE MAT'LS

ROCKET PROPULSION

COMPUTER-AIDED DESIGN

PRODUCTION TECHNOLOGY (INCLUDING ROBOTICS/ MECHATRONICS)

846118 29

The list of Japanese dual-use technologies that the Task Force generated as representative of those of immediate interest contains no surprises. These are technologies which are roughly comparable to the state of the art in the U.S., with some equivalent, some behind, and some ahead. Gallium arsenide devices, for example, were basically invented here but have been applied massively in Japan. Japanese ceramics are some of the best in the world, certainly those for electronics, which the U.S. electronics industry buys in quantity from the Japanese. Composite materials, high temperature materials, and most of the others are indeed comparable to U.S. state of the art, and could very possibly directly contribute to U.S. defense equipment.

POTENTIAL FIELDS OF COOPERATION (CONT)

- EXAMPLES OF U.S. TECHNOLOGIES OF INTEREST TO JAPAN:
  - SYSTEMS ENGINEERING AND SOFTWARE TECHNOLOGY
  - GUIDED MISSILE TECHNOLOGIES (PARTICULARLY GUIDANCE)
  - RADAR TECHNOLOGIES (PARTICULARLY SIGNAL PROCESSING)
  - AIRCRAFT AND JET ENGINE TECHNOLOGIES
- NO COMPREHENSIVE SURVEYS OF POTENTIAL TECHNOLOGIES FOR COOPERATION ON EITHER SIDE. COMPANIES HAVE AGREED CASE-BY-CASE ON SPECIFIC PROJECTS AND TECHNOLOGIES

846118 30

The U.S. technologies of most interest to Japanese industry are those relating to systems engineering and software. In both, Japanese experience has been limited. A specific frequently mentioned technology was programmable signal processing for airborne radar.

While the Task Force did not attempt a comprehensive survey of specific Japanese technologies, DoD, under the leadership of Dr. Edith Martin, Deputy Undersecretary of Research and Advanced Technology, is arranging with the Defense Agency for visits of teams of U.S. scientists, some from industry and some from government, to Japanese research centers. The purpose of their visit is to investigate some Japanese dual-use technologies, starting with electro-optics and millimeter wave sensors.

Of background interest is an extensive survey of the comparable levels of European, Japanese, and U.S. key technologies of 43 commercial product areas, commissioned by the Japanese Industrial Science and Technology Agency in 1981. For the U.S. - Japan comparison, this survey found Japanese technologies superior in nine fields and inferior in eleven. Japan was judged to be "strong in iron and electronics-related technologies and weak in military and aerospace-related technologies, which is to be expected."

POTENTIAL MODES OF COOPERATION

- JAPANESE COMPANIES GENERALLY EXPERIENCED AND INTERESTED IN ALL FORMS OF INDUSTRIAL COOPERATION:
  - — CODEVELOPMENT
  - — LICENSED PRODUCTION
  - — CROSS-LICENSING
  - — JOINT VENTURES
- JAPANESE COMPANIES INDICATE FLEXIBILITY, SPECIFYING ONLY THAT COOPERATION BE "MUTUALLY BENEFICIAL AND CASE-BY-CASE"

846118-32

Japanese companies, like their U.S. counterparts, are interested in all forms of industrial cooperation (if "mutually beneficial as determined case-by-case"). They appear to take a pragmatic view of the different forms of business return. When asked about the relative importance of royalties versus production, one electronics company executive replied, "They're both wheels of the same wagon."

POTENTIAL MODES OF COOPERATION (CONT)

- U.S. COMPANIES HAVE LIKEWISE HAD EXPERIENCE IN AND ARE GENERALLY AMENABLE TO ALL MODES OF COOPERATION

  CURRENT EXAMPLE: MARTIN MARIETTA (TACTICAL MISSILES)/ NISSAN (MANUFACTURING AND ROBOTICS)

- JAPANESE AND U.S. COMPANIES AGREE THAT:
  - PRIMARY RELATIONSHIP SHOULD BE INDUSTRY-TO-INDUSTRY
  - GOVERNMENTS SHOULD PROVIDE POLICY FRAMEWORK AND SUPPORT
  - NO FURTHER GENERAL GOVERNMENTAL AGREEMENTS NEEDED

- SUBCONTRACTING OF DEVELOPMENT FROM U.S. PRIMES COULD BE EFFECTIVE WAY FOR JAPANESE COMPANIES, BOTH LARGE AND SMALL, TO PARTICIPATE IN U.S. PROGRAMS

846118 13A

Both sides recognized that the concept of balancing dual-use technology versus military technologies, plus restrictions on exports for the Japanese companies, will necessitate different types of business arrangements. An excellent example of such a cooperation is one formed in 1982 between Martin Marietta and Nissan, summarized as follows:

"1. On 25 May 1982 Martin Marietta and Nissan concluded two agreements:
   - A general, umbrella agreement to seek areas of cooperation in defense and related activities.
   - An implementing agreement for possible cooperation in tactical missiles for the Japanese Defense Agency (JDA).

2. The general, umbrella agreement contains the following provisions:
   - Transfer of technology on a time-phased basis, plus training and equipment.
   - Agreement to pursue at least two major new programs through study, design, development and production.
   - Security to the same degree as the data receives in the country of its origin.
   - Protection of proprietary information.
   - Separate implementing agreements required for each program pursued.
   - Subject to required governmental licenses or approvals.

3. The first (and thus far the only) implementing agreement provides:
   - Joint study of anti-ship and anti-air missiles for production and deployment in Japan.
   - An option for Martin Marietta to obtain from Nissan manufacturing technology and robotics."

POTENTIAL FOR CREATING COMPETITION

- MAJOR CONCERN OF U.S. INDUSTRY ABOUT INCREASED TECHNOLOGY COOPERATION
  - SHOULD JAPAN RELAX ITS BAN ON ARMS EXPORTS, JAPANESE COMPANIES COULD THEN COMPETE FOR THIRD-COUNTRY MARKETS

BACKGROUND

- JAPAN CONSTITUTION SAYS NOTHING ABOUT ARMS EXPORTS
- EXPORT BAN STEMS FROM 1967 POLICY BASED ON "THREE PRINCIPLES OF ARMS EXPORTS," I.E., NO EXPORTS TO:
  - COMMUNIST BLOC MEMBERS
  - COUNTRIES UNDER U.N. SANCTIONS
  - COUNTRIES "INVOLVED, OR LIKELY TO BE INVOLVED" IN CONFLICTS

846118 34

The immediate and universal question asked by U.S. industry about increased technological cooperation with Japanese industry is whether in so doing we would be building a future major competitor. Since the industrial and export capabilities of Japan in the commercial field leave little doubt about Japanese industry's potential to compete in defense, the key consideration is whether the Japanese Government will allow defense exports. For the present, the answer is clear: defense exports have been and are tightly limited. The future is a matter of conjecture.

Contrary to popular assumption, Japan's Constitution says nothing on the subject of arms production or export. GOJ policy on arms transfers is based on *Three Principles of Arms Exports* and *Policy Guideline on Arms Exports*, which are described as follows:

- *Three Principles of Arms Exports*, issued as a policy statement in 1967, stipulates that arms exports will not be permitted to (a) members of the communist bloc, (b) countries under United Nations sanctions, or (c) countries "involved or likely to be involved" in international conflicts.

POTENTIAL FOR CREATING COMPETITION

BACKGROUND (CONT)

- 1976 POLICY GUIDELINES ON ARMS EXPORTS ELABORATE:
  - NO EXPORTS TO COUNTRIES OF "THREE PRINCIPLES"
  - EXPORTS TO OTHER AREAS WILL BE "RESTRAINED"
  - EQUIPMENT RELATED TO ARMS PRODUCTION TREATED SAME
- 1983 POLICY TO ALLOW EXCHANGE OF MILITARY TECHNOLOGY TO U.S. AN ALLOWABLE EXCEPTION TO PRINCIPLES AND GUIDELINES

346118.36

- *Policy Guideline on Arms Exports*, issued by the GOJ in 1976, elaborates on the *Three Principles* statements as follows: (a) arms exports to countries subject to the *Three Principles* restrictions will not be permitted, (b) such exports to other areas will be "restrained," and (c) exports of equipment related to arms production will be treated in the same manner as arms exports. Weapons technology is also defined in the *Three Principles* and *Policy Guideline* statements. (The GOJ's definition of "arms," as contained in its Export Trade Control Order, is cited in Appendix F.)

Prime Minister Nakasone's announcement in January 1983 to permit the export of defense-related technology to the U.S. is justified as an exception to the *Three Principles* and *Policy Guideline*, allowed within the framework of the U.S. - Japan Security Treaty of 1960 and the Mutual Defense Assistance Agreement of 1954. GOJ officials go to considerable length to emphasize that all other forms of arms exports, including the transfer of finished products to the U.S. still fall within the *Principles* and *Guideline*.

POTENTIAL FOR CREATING COMPETITION

CURRENT SITUATION

- DEFENSE PRODUCTION INCREASINGLY PERCEIVED BY JAPANESE INDUSTRY AS NOT ONLY SUPPLEMENT TO COMMERCIAL BUSINESS BUT ALSO FIELD FOR MAJOR FUTURE GROWTH

- WHILE DEFENSE EXPORTS COULD MAKE DEFENSE PRODUCTION ECONOMICALLY VIABLE, LITTLE POLITICAL PRESSURE TO CHANGE EXPORT POLICIES (WHICH HAVE POPULAR SUPPORT)

846118 37

While most of Japan's major industrial firms have an interest in defense production, none has relied on defense items for more than a small share of its income. Firms that are heavily dependent on defense contracts are limited to a handful of specialized munitions producers and some subcontractors that benefit from government incentives for small firms. However, though still a small portion of total business, defense-related production is increasingly perceived by Government and industry officials as not only a supplement to commercial industry, but also a field for significant future growth.

As evidenced by the activities of Keidanren's Defense Production Committee, representatives of Japan's defense industry keep in close touch with each other and their counterparts in MITI, the Japan Defense Agency, and the Diet. While exports obviously could become a major contributor to supporting an expanded defense production base, there is no evidence of serious pressure to significantly alter present government policy on arms exports. The *Three Principles* retain considerable popular support in Japan.

POTENTIAL FOR CREATING COMPETITION

PROJECTIONS

- PRESSURES FOR MORE EFFICIENT AND PROFITABLE DEFENSE PRODUCTION WILL GROW AND CREATE PRESSURES FOR RELAXATION OF LIMITATIONS ON DEFENSE EXPORTS
- LIKELY FIRST CHANGES WOULD BE TO BROADEN SCOPE OF COOPERATIVE ACTIVITIES WITH U.S., THEN TO CONSIDER COOPERATION WITH OTHER COUNTRIES
- JAPAN'S DEFENSE INDUSTRY WILL CONTINUE TO GROW, WITH OR WITHOUT U.S. TECHNOLOGY COOPERATION
- U.S. PARTNERSHIP WOULD HELP RETAIN U.S. PARTICIPATION AND INFLUENCE ON JAPAN'S NEW COURSES

846118-38A

Both government and industry officials state that current Japanese policy on arms exports (with the strictly limited exception of technological transfers to the U.S.) will remain in place for the indefinite future. Yet, it is equally clear that there could eventually be some changes. This would not happen quickly, nor would it take the form of a sweeping reversal of policy. Rather, Japan's approach to increased arms production and possibilities of export would be likely to follow the cautious, incremental path that has characterized the evolution of its security policy in general. While it is impossible to predict accurately, some potential developments within the next 10 to 20 years *could* be: the expansion of "technology transfer" to the U.S. to include hardware; the emergence of not only joint R&D, but joint production of defense systems with the U.S.; a concurrent increase in exports of dual-purpose technologies and equipment to third countries; and, eventually, transfer of nonlethal defense items to "selected" third countries. All of this could be interpreted to fall within the general framework of the *Three Principles* and the *Guideline*, and would not reflect any major departure from current trends in Japanese foreign and defense policies.

The continued development of Japan's defense industry, especially its implications for exports, will naturally be an issue of concern in the U.S. Future coproduction agreements and major transfers of defense-related technology will inevitably raise the question of whether the benefits of cooperation with Japanese industry justify the risks of increased competition. There is no simple answer; too much will depend on the circumstances of individual cases. However, there are some factors that should influence any consideration of future defense industrial relations with Japan. These are as follows:

POTENTIAL FOR CREATING COMPETITION

Projections (Continued)

1. The growth of Japan's defense industry is not simply a function of increased cooperation with the U.S. Continued development of Japan's defense production capability reflects not only industrial interests, but firm government policy based on political, economic, and military concerns common to all nations with substantial arms industries. As important as U.S. cooperation is to Japan's defense industry, it will grow with or without us.

2. In the long run, at least, there is thus no such thing as "cutting off" Japan. Japan's defense industry has already come too far, its domestic resources are too great, and its alternate sources of ideas and information are too many for a negative U.S. posture on technological cooperation to do more than delay its development.

POTENTIAL IMPACT OF INCREASED TECHNOLOGY COOPERATION

ON U.S. GOVERNMENT

BENEFITS

- IMPROVEMENT OF JAPAN'S DEFENSE CAPABILITIES FROM UTILIZATION OF U.S. MILITARY TECHNOLOGIES
- POSSIBLE SAVING OF U.S. R&D RESOURCES AND IMPROVEMENT OF U.S. DEFENSE SYSTEMS FROM UTILIZATION OF JAPAN'S TECHNOLOGIES
- DEVELOPMENT OF COMMON REQUIREMENTS, EQUIPMENTS, AND LOGISTIC SUPPORT
- ADDS ANOTHER DIMENSION OF DEFENSE COOPERATION BETWEEN U.S. AND JAPAN
- U.S. PARTNERSHIP WOULD HELP RETAIN U.S. PARTICIPATION IN AND INFLUENCE ON JAPAN'S NEW COURSES

846116-40A

Not only have Japan's defense equipment acquisitions risen steadily in recent years, but the proportion of acquisitions coming from domestic producers has also been high, averaging around 85 percent over the last 20 years. Whether their equipments would derive from cooperative R&D or licensed technology from U.S. companies, a further expansion of technological cooperation would put more U.S. advanced technology into the Self-Defense Forces.

The potential contribution of Japanese technologies to U.S. defense is difficult to evaluate but could be significant, as indicated on page 37, because of the number of Japanese technologies believed to be at least equivalent to those in the U.S.

Since 1978, the U.S. and Japan have been coordinating their defense planning and training according to formal "Guidelines for Japan - U.S. Defense Cooperation," which specify coordination on joint defense planning, intelligence exchange, and logistics. While not called out in the Guidelines, any further standardization in equipments and interoperability resulting from increased technology cooperation would facilitate joint operations and logistics. Lastly, technological cooperation is a bond which broadens the defense relationship and enables the U.S. to remain a participant in the growth of Japan's defense industry and the defense policies relevant to it.

POTENTIAL IMPACT OF INCREASED TECHNOLOGY COOPERATION

ON U.S. GOVERNMENT (CONT)

PROBLEMS

- ADDITIONAL EXPOSURE TO COMPROMISE OF U.S. TECHNOLOGIES INVOLVED
- POLITICAL CONCERNS ABOUT PROMOTING JAPAN'S DEFENSE BUILD-UP
- RELUCTANCE OF MILITARY SERVICES TO ENTER INTO INTERNATIONAL CODEVELOPMENT/COPRODUCTION PROGRAMS

846118-41A

The possibility of additional exposure to compromise of U.S. technologies is not unique with respect to Japan, but is the normal situation which applies to sharing advanced technology with any ally. It requires the tradeoff between enhanced mutual security gained from the ally's utilization of the technology versus whatever additional opportunity for compromise results from the technology being in another country.

Another consideration could be the political consequences of aiding Japan to increase its defense forces. At this time there is general support in Japan for the Self-Defense Forces, as demonstrated in a public survey conducted by the Prime Minister's Office in December 1981 with quite positive results, described as follows.

Issue	Percent Favorable
International situation surrounding Japan becoming serious	66
Maintenance of the present defense system based on Japan - U.S. security agreements and Japan's own defense capability	60
Defense capability should be strengthened	39
Defense capability should be kept at present level	37

POTENTIAL IMPACT OF INCREASED TECHNOLOGY COOPERATION
On U.S. Government (Continued)

Another problem not unique to Japan is the reluctance of the U.S. military services to complicate their programs by bringing in international participation. This was a major finding of the study on NATO industrial cooperation, where there has been a long history of cooperative international programs. The Task Force believes the same concerns of the Services could apply to Japan, and there is not as yet strong governmental policy for international sharing with Japan as there is and has been for the NATO countries. In the absence of governmental policy, positive considerations for the Services to accept industrial cooperation with Japan could be (1) the excellence of Japan's defense-related technologies, (2) the potential operational and logistic advantages that would accrue in the Western Pacific from weapons and industrial cooperation, and (3) potential cost savings in being able to utilize already developed Japanese technology.

POTENTIAL IMPACT OF INCREASED TECHNOLOGY COOPERATION

ON U.S. INDUSTRY

- BENEFITS
  - ACQUISITION OF USEFUL TECHNOLOGIES AT LESS COST AND TIME THAN DEVELOPING THEM
  - ESTABLISHMENT OF PRODUCTIVE LONG-TERM BUSINESS RELATIONSHIPS WITH JAPANESE COMPANIES
- PROBLEM
  - POSSIBILITY OF HELPING CREATE EVENTUAL COMPETITION FOR DEFENSE EXPORT MARKETS AND OF INCREASING COMPETITION FOR COMMERCIAL MARKETS

846118-42

U.S. industry could benefit from expanded technological cooperation with Japanese industry by gaining access to their excellent technologies and establishing business relationships which, if successful, often expand into areas beyond those originally agreed upon. These relationships have proven particularly valuable to U.S. companies in developing new business in host countries where the local industry plays a significant role, and in third country projects where the local company is better established than the U.S. company.

The main drawback to increased technological cooperation is the potential for helping to build future competition, as discussed in pages 43-45. Assessment of this risk, which is intrinsic in any industrial technology cooperation, would have to be performed case-by-case by the potential cooperators and an aggregate judgment would have to be made by the U.S. Government from time to time.

PROBLEMS IN IMPLEMENTATION

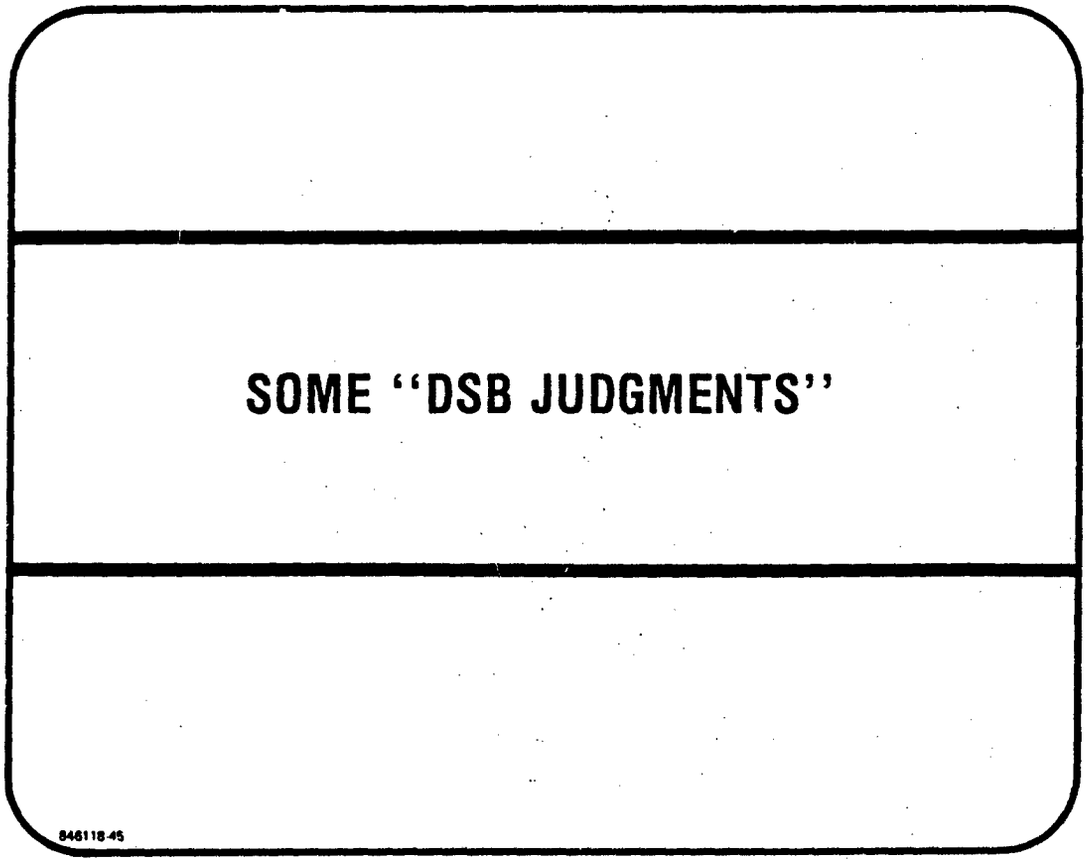
AS SEEN BY U.S. COMPANIES

- DIFFICULTY OF EVALUATING TECHNOLOGY EXCHANGES TO DEMONSTRATE TECHNOLOGY "QUID PRO QUO" OR EQUITABLE SHARING OF ADVANCED TECHNOLOGIES
- ACCEPTANCE BY U.S. SERVICES OF JAPANESE PARTICIPATION IN THEIR PROGRAMS?
- INDUSTRY DOES NOT WANT DoD IN MIDDLE OF DETAILS OF EVERY TRANSACTION AS TRAFFIC COP
- POTENTIAL HIGH COSTS OF JAPANESE TECHNOLOGY
- ACCEPTANCE BY JAPANESE COMPANIES OF U.S. PROCUREMENT SPECS?

846118-44A

U.S. companies, while generally interested in exploring the prospects for increased technology cooperation with Japan, have questions about some structural aspects of the proposed relationship. Possible impediments to implementation are described as follows:

1. From the standpoint of satisfying DoD requirements
   a. How will the technology exchange or sharing be measured so as to assure an equitable balance?
   b. Will the U.S. Services accept Japanese industrial participation in U.S. programs?
   c. Will DoD permit the relationships to be primarily industry-to-industry and not act as intermediary on a detailed basis in each case?
2. From the standpoint of making economic sense
   a. Will the costs of Japanese technology be excessive because the Japanese companies cannot produce for export?
   b. For participation in U.S. programs, would Japanese companies be willing to comply with U.S. procurement specs?
   c. Would an item manufactured in Japan to a military specification by definition be military hardware and therefore not exportable?



This section presents a series of "judgments" made by the Task Force on the key issues of the study. Those judgments are based on the aggregation of the extensive briefings received, outside reading on Japan, individual experience in working with Japanese industry and government, and the series of meetings and discussions held in Japan.

These judgments represent a best assessment of the issues and were reached with varying degrees of conviction, but in all cases with consensus within the Task Force. It is the Task Force's belief that its most valuable contribution is the rendering of collective judgment on the key issues.

SOME DSB JUDGMENTS

JAPAN'S POLICIES AND GOALS

- JAPAN WILL BE SUCCESSFUL IN ITS COMMITMENT TO TECHNOLOGICAL INNOVATION AS OUTLINED IN MITI'S "VISION OF THE 1980s." WE MUST VIEW JAPANESE TECHNOLOGY IN TERMS OF WHERE IT WILL BE IN 1990
- BY POLICY, JAPAN IS COMMITTED TO AND IS BUILDING SELF-SUFFICIENT DEFENSE INDUSTRIAL BASE. JAPAN WILL CONTINUE TO EXPAND ITS DEFENSE CAPABILITIES WITH OUR COOPERATION OR, LESS EFFICIENTLY, WITHOUT IT
- JAPAN INTENDS AND IS MOVING TO BECOME A MAJOR INTERNATIONAL COMPETITOR IN AEROSPACE (AIRCRAFT, SPACE, ASSOCIATED ELECTRONICS), TELECOMMUNICATIONS, AND ALL SUPPORTING TECHNOLOGIES AND COMPONENTS
- JAPAN IS EMBARKING ON SOME VERY AMBITIOUS PROGRAMS (NEXT-GENERATION FIGHTER AVIONICS, SPACE, MISSILES, JET ENGINES, ETC.) THAT WILL FORCE DEFENSE PROCUREMENT BUDGET INCREASES

846118 62 A

It is the Task Force's belief that Japan will be successful over time in its national drive for technological innovation. All the elements, which are technology momentum, resources, governmental commitment, and public support are in place.

Similarly, Japan is committed to, and has the industrial potential to build a self-sufficient defense industrial base. Since 1962, Japan has itself produced well over 80 percent of its defense materials and equipments, with the major exceptions being some aircraft and a number of missile systems. Japan will increasingly be able to develop these also, if it commits the additional resources. From this industrial base Japan would be able to become a major competitor in many fields.

Japan's near-term development goals are forecast by the 1984 budget of the Technical Research and Development Institute, which will fund 34 line items (see Appendix G). Its major systems include a trainer aircraft and ASW helicopter; a ground-based SSM; a new tank and MICV; a surveillance radar, surface ship sonar, moored sonar, artillery computer, and modular ECM; a surface effect ship and air-droppable mines.

Japanese industry certainly has the capability to develop these and other systems if the Government is willing to fund them. It appears doubtful to the Task Force that these programs, plus the foreign procurements in process, such as Phalanx, E-2C, C-130H, TOW, Tartar, and Harpoon, can be accomplished within the traditional Japanese procurement budgets, and we predict reasonably large and monotonically increasing defense budgets in the future.

SOME DSB JUDGMENTS

JAPAN'S TECHNOLOGY

- U.S. NOT VERY KNOWLEDGEABLE ABOUT JAPAN'S TECHNOLOGY. FEW AMERICAN SCIENTISTS IN JAPAN. ONLY 20% OF JAPANESE SCIENTIFIC/TECHNICAL PAPERS TRANSLATED, VERY LATE
- JAPAN'S CURRENTLY AND NARROWLY DEFINED LIST OF MILITARY TECHNOLOGIES APPEAR OF LITTLE INTEREST TO U.S.
- MUCH OF JAPAN'S CURRENT DUAL-USE TECHNOLOGY, PARTICULARLY IN PROCESSES AND MANUFACTURING, COULD CONTRIBUTE TO U.S. DEFENSE PROGRAMS
- JAPAN'S GREATEST NEED: SYSTEMS ENGINEERING AND SOFTWARE TECHNOLOGY FOR DEFENSE MACRO-SYSTEMS
- TO EVALUATE JAPANESE TECHNOLOGY, KEY CONSIDERATION IS MOMENTUM OF JAPAN'S TECHNOLOGY THRUST WHICH HAS CARRIED JAPAN TO FRONT RANK IN MANY DUAL-USE TECHNOLOGIES AND SHOWS NO SIGN OF ABATING. IN 10 YEARS, PROMISES TO BE BOTH MASSIVE AND INNOVATIVE

846118-46A

The contrast is great between the amount Japanese scientists and engineers know about U.S. activities in their fields of interest and the amount their U.S. counterparts know about Japanese activities. There are many Japanese in U.S. universities (in 1980 14,000 in undergraduate and 4,000 in graduate studies) and working in U.S. industrial laboratories. Equally significant, many Japanese scientists and engineers can and do read the U.S. technical papers in English, (Japan also has a large government translation service). In contrast, few Americans study or work in technology in Japan, and few can read Japanese technical papers. Yet, of the more than 10,000 scientific and technical papers published annually in Japan, at most only about 10 percent are originally published in English. A small portion are subsequently translated in the U.S., but only after a year or two time lag. Our Japanese colleagues keep abreast of our activities but the converse is not true.

Japanese industry's excellent commercial technology, particularly in processes and manufacturing, is of immediate interest to the U.S. defense industry and could readily be put to use in U.S. defense programs. Japanese industry is most interested in the systems engineering and software capabilities of U.S. defense contractors. Since these interests are complementary, a basis for mutually profitable exchange might exist.

Finally, the promise of Japan's technological future must be a prime factor in assessing increased cooperation. There are no indications at this time that Japan will not continue its march "toward a technology-based nation," with basic technological innovation as the main future thrust.

SOME DSB JUDGMENTS

JAPAN'S DEFENSE INDUSTRY

- JAPANESE DEFENSE EFFORTS NOW CONCENTRATED IN JUST A FEW COMPANIES—OTHERS EAGER TO BUILD THEIR DEFENSE BUSINESS
- NAKASONE INITIATIVE OF JANUARY 1983 ALLOWING MILITARY TECHNOLOGY EXPORT WAS KEY TO JAPANESE INDUSTRY'S APPARENT INCREASED INTEREST IN TECHNOLOGY COOPERATION
- INFRASTRUCTURE EXISTS FOR RAPID BUILD-UP AND EXPANSION OF DEFENSE INDUSTRY IN JAPAN
- WILL DEVELOP CAPABILITY TO BECOME MAJOR EXPORTER OF DEFENSE EQUIPMENT IN 10 TO 15 YEARS
- THE JAPANESE INDUSTRIES' ABILITIES FOR RAPID TRANSLATION OF R&D RESULTS INTO PRODUCTION AND FOR EFFICIENT PRODUCTION WOULD MAKE THEM FORMIDABLE COMPETITORS

8461'8 47A

The Nakasone initiative to allow Japan to transfer military technology to the U.S. had significance considerably beyond the face value of the official Japanese "military technologies." To Japanese industrialists, it was an official resolution of a long-standing and politically very sensitive issue. It not only opened the door for military technologies but, more importantly, it also removed any stigma about the export of dual-use technologies. Technically, dual-use technologies had always been exportable but there had been public controversies surrounding export in the past. Now the dual-use technologies are officially and positively in the clear.

The Task Force has little doubt about Japan's industry developing capabilities for a broad range of competitive defense exports in not too many years, with or without U.S. industry help. In many defense fields, such as naval ships, electronics, vehicles, and aerospace, they could now begin competitive exports. The unknown is whether Japanese Government policies will allow them to export.

SOME DSB JUDGMENTS

U.S. – JAPAN COOPERATION

- VITAL TO AMERICAN INTERESTS THAT MILITARY AND INDUSTRIAL TIES BETWEEN JAPAN AND U.S. REMAIN STRONG AND BE STRENGTHENED
- OVER NEXT 10 TO 15 YEARS, JAPAN OF NECESSITY WILL EXPAND SELF-DEFENSE CAPABILITIES; COULD BECOME EFFECTIVE PARTNER OF U.S. IN SECURITY OF WESTERN PACIFIC, GIVEN ENDURING AND CONSTRUCTIVE RELATIONSHIP WITH U.S.
- INDUSTRY-TO-INDUSTRY COLLABORATION COULD BE A KEY MECHANISM TO ACHIEVING STRONGER PARTNERSHIP
- FOR LONG TERM, CODEVELOPMENT OFFERS BEST MECHANISM FOR TECHNOLOGY COOPERATION, PROBABLY STARTING ON PRIME-SUBCONTRACTOR BASIS FOR SUBSYSTEMS, CAREFULLY SELECTED TO PROVIDE BALANCED TECHNOLOGY FLOW

846118 49A

The Task Force is convinced that Japan is the keystone of U.S. defense in the Western Pacific and that the strengthening of U.S. - Japan ties is vital to mutual economic and security interests of both countries. Technological cooperation between industries of the two countries could strengthen both defense forces and the overall relationship.

While there are many possible modes of technology cooperation, probably the best mode for the long term would be for companies in each country to become subcontractors to companies in the other country for their national programs. This has been occurring successfully where U.S. companies are subcontractors to Japanese companies on some of their large development programs; now the converse would be added. A principal advantage of this mode of cooperation would be that the "outsider" company would not have to compete independently in the procurement system of the other country. Instead, it could rely upon its prime to handle the politics and intricacies of the host government.

CONCLUSIONS AND RECOMMENDATIONS

846118 51

CONCLUSIONS ON COOPERATION

- JAPAN WILL INCREASE SIGNIFICANTLY ITS DEFENSE CAPABILITIES AND ITS DEFENSE INDUSTRIAL BASE
- JAPAN COULD IN TIME BECOME A COMPETITOR FOR DEFENSE EXPORTS

BUT

- VITAL TO U.S. INTERESTS THAT DEFENSE TIES BETWEEN JAPAN AND U.S. ENDURE AND BROADEN
- ON BALANCE, STRATEGIC VALUE OF CLOSER TECHNOLOGY COOPERATION WITH JAPAN OUTWEIGHS DRAWBACKS OF POTENTIAL COMPETITION

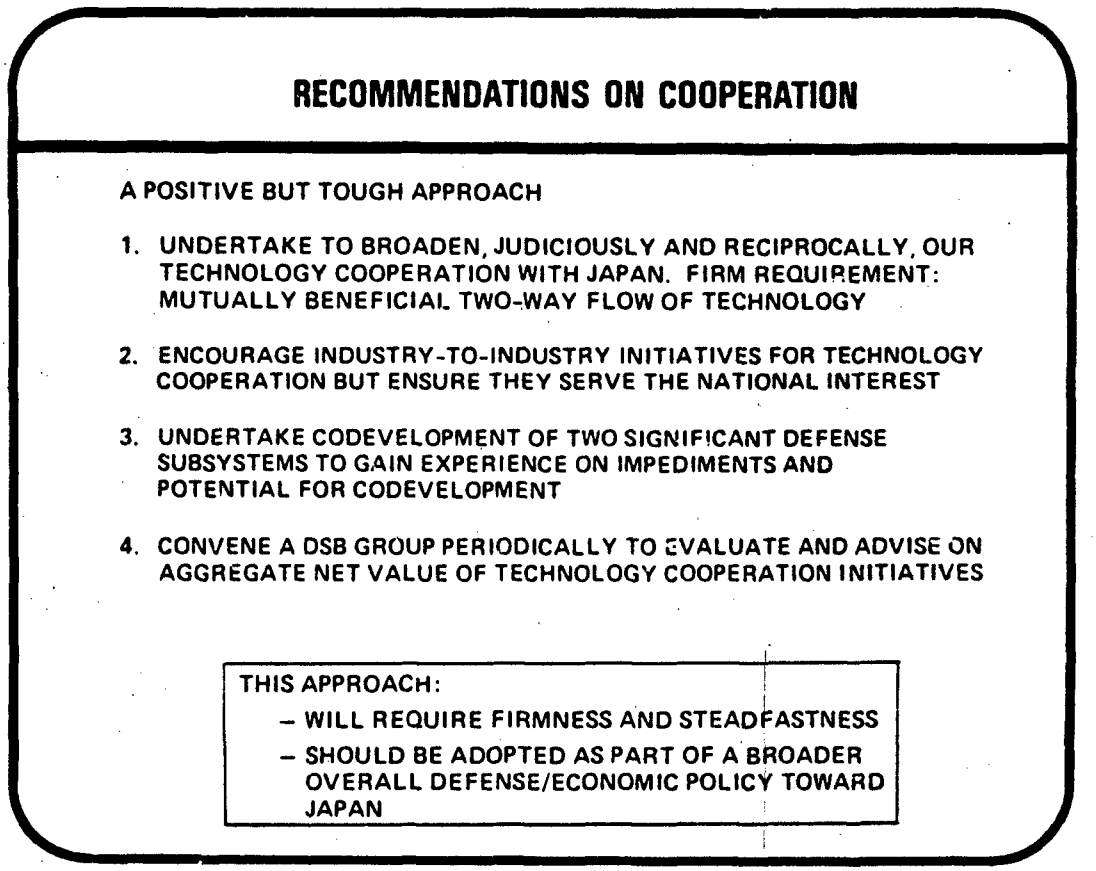
* *

- NAKASONE'S INITIATIVE FOR MILITARY TECHNOLOGY TRANSFER TO U.S. HAS CREATED ATMOSPHERE POTENTIALLY CONDUCIVE TO BROAD TECHNOLOGY COOPERATION
- INDUSTRY-TO-INDUSTRY COOPERATION IS BEST WAY TO IMPLEMENT THIS BROAD TECHNOLOGY COOPERATION AND JAPANESE INDUSTRY HAS STATED ITS INTEREST

846118 66 A

It was the Task Force's general conclusion that, despite the possibility of eventual competition from Japanese industry on defense exports, it would be in the overall best interests of the United States to increase technological cooperation in defense with Japan if it can be achieved on a truly bilateral basis. The strategic benefits of this cooperation should outweigh the risks; these risks, if the cooperation is allowed to be truly industry-to-industry, can be minimized for the companies involved by normal business prudence.

If increased technological cooperation is to be implemented, this is an auspicious time to undertake it. The Nakasone initiative for technological transfer and the Nakasone administration efforts to increase Japan's defense capabilities have created a favorable atmosphere and have attracted the interest of Japanese industry.



To increase our technological cooperation with Japan, the Task Force recommends that DoD and U.S. industry undertake a tentative, step-by-step, pragmatic, and reciprocal approach with a two-way flow of technology the sine qua non. The next steps would be industry-to-industry initiatives with the objective of agreeing on codevelopment of perhaps two subsystems as tests of the value and the difficulties of such cooperation. Due to the uncertainties inherent in the proposed cooperation, particularly the feasibility of evaluating the balance of the technology flow, the Task Force recommends that, periodically, the Defense Science Board convene a group to evaluate the feasibility and value.

The Task Force is compelled to put two reservations on its recommendations. First, firmness and steadfastness on the part of the industry involved and the government will be required for the U.S. to derive its just due from the cooperation. Second, because it is just one element of the whole matrix of defense and economic relationships, technological cooperation should be considered and adopted as part of a broad overall policy that integrates not only the various aspects of our relationship with Japan, but also our broader economic and security goals in the Pacific Basin.

CONCLUSIONS ON TECHNOLOGY

- JAPANESE TECHNOLOGIES IN MANY FIELDS EQUAL TO OURS AND, IN SOME, SUPERIOR – BUT NO COMPREHENSIVE ASSESSMENT HAS YET BEEN MADE
- ORGANIZATION, PLANNING, ZEAL, AND RESOURCES DEDICATED TO R&D IN JAPAN HAVE CREATED REAL TECHNOLOGY MOMENTUM THAT COULD CREATE BROAD LEAD
- JAPAN WILL PROBABLY BE SUCCESSFUL IN ITS LONG-TERM COMMITMENT TO TECHNOLOGY INNOVATION

846118-54A

The fact that no comprehensive assessment has yet been made of the relative status of Japanese and U.S. technologies does not, in the opinion of the Task Force, preclude the conclusion that many of their technologies are at least the equal of ours. This has become obvious from the publications of Japanese scientists and engineers, from the first hand knowledge of individual U.S. experts about Japanese progress in their fields of interest, and from the quality of the Japanese products utilizing the technologies.

The Task Force was impressed with the overall dedication, energy, and focus of the Japanese in their drive for technological excellence. Based on their technological resources, their high degree of cooperation between government and industry, and their national emphasis on technology, it seems likely to the Task Force that Japan will successfully make the transition from technological exploitation and product improvement to the higher ground of technological innovation.

RECOMMENDATIONS ON TECHNOLOGY

5. INITIATE COMPREHENSIVE PROGRAM OF RAPID TRANSLATION OF KEY JAPANESE SCIENTIFIC/TECHNICAL DOCUMENTS AND POLICY DOCUMENTS OF SCIENCE AND TECHNOLOGY AGENCY

6. EXPAND, ON RECIPROCAL BASIS, U.S.-JAPAN COOPERATION IN BASIC RESEARCH

7. ACT ON RECOMMENDATIONS FROM PHASE I (NATO) STUDY FOR:

   - HIGH-LEVEL POLICY DECLARATION THAT TECHNOLOGICAL LEADERSHIP IS OUR NATIONAL GOAL

   - INCREASED NATIONAL INVESTMENT IN BOTH DEFENSE AND CIVIL SCIENCE AND TECHNOLOGY NEEDED TO SUPPORT THIS GOAL

846118 50 A

An essential part of a national program of expanded technological cooperation would be learning more about Japanese work in science and technology. First steps could be greatly expanding and speeding up the translation of relevant Japanese documents and initiating wider cooperation in basic research.

The final sections of the Phase I (NATO) report dealt with the concerns of U.S. industry about its loss of technological preeminence and productivity leadership, concerns which exacerbate apprehensions about competition. These concerns are at least equally strong with respect to competition from Japanese industry, which has proven awesome in its competitive success in civil fields in recent years.

Since the recommendations from the NATO report have not been acted upon, and since they are equally pertinent to industrial cooperation with Japan, the verbatim text on this subject from the NATO study appears below:

> "United States industry is concerned about the loss of technological preeminence and productivity leadership which had established a crest of prosperity and security for our nation. This loss is obvious in all too many important sectors of commercial technology; furthermore, early manifestations of a similar diminution of clear leadership in defense technology are becoming increasingly apparent.

What then of the future? What is the combination of industrial initiative and governmental policy which can reverse these trends and restore to the United States the priceless position which had been achieved and which is being eroded by international competitors? These competitors have emulated our success, perhaps because they understand its foundations more clearly than we; they have implemented governmental/industrial/educational policies and mechanisms which may relegate us to second place in the future. What is the right formula for us? This is a burning national issue of the moment. All sectors—including Congress, labor, industry, and the public—are concerned and are searching for a path that will restore the foundations for an acceptable future for our posterity, in terms of both economy and security.

In the context of this particular study, the Defense Science Board Task Force has concluded that international industrial initiatives that involve sharing technology and accelerating the building of powerful technological competence abroad in the interest of alliance-wide military security will be facilitated if US industry is confident that an assured way exists of replenishing its own reservoir of technological capital to retain technological leadership.

In addition, the DSB Task Force concludes that, in this search for the survival of our national economic and military vitality for the future, understanding and direction from the highest governmental level must act as a vital catalyst. We also feel that the stage has been set for such a declaration of national policy, and that this policy will be embraced by all segments of our society as a result of the recent period of economic recession and national introspection. In short, the timing is right for immediate action.

What should this national policy or goal be? Simply stated, our goal should be to achieve and maintain clear superiority in advanced civil and defense technologies as a basic element of our strategy for our future. In the past, we have shied away from the term "technological superiority" for fear of offending our friends and perhaps inciting our adversaries. Perhaps, in the process, we have only confused ourselves and our own sense of purpose. We feel that it is time to state unambiguously a goal which can create the climate for increased investment in advanced research and development and technical education which can underpin the revival of our clear leadership and which, as a result, will alleviate most concerns about increased industrial collaboration with our allies.

The DSB Task Force therefore recommends that the goal be stated by *Presidential declaration* in much the same manner that the goal for major lunar exploration was established. From this declaration will flow the needed focus for coalescing the many elements of the nation's research and development programs, which will be the basis for assuring our future prosperity and security."

ACTIONS REQUIRED

ACTIONS REQUIRED

DOD:

- TOGETHER WITH JAPAN GOVERNMENT, MAKE HIGH-LEVEL POLICY STATEMENT ENCOURAGING INDUSTRY-TO-INDUSTRY TECHNOLOGY COOPERATION AND ASSURING GOVERNMENT SUPPORT
- MAKE UNAMBIGUOUSLY CLEAR TO JAPAN GOVERNMENT THAT THE GENERAL PREREQUISITE FOR CONTINUED TRANSFER OF TECHNOLOGY FROM U.S. IS RECIPROCAL TECHNOLOGY TRANSFER FROM JAPAN
- WORK WITH CONGRESS AND MILITARY SERVICES TO ALLOW JAPAN AND U.S. COMPANIES TO TEAM FOR SELECTED COOPERATIVE SUBSYSTEM DEVELOPMENTS
- STIMULATE INITIATION OF COMPREHENSIVE INTERAGENCY STUDY ON OVERALL DEFENSE/ECONOMIC STRATEGY

846118 59 A

Because of the lack of formal policy endorsement of technological cooperation with Japan, it is even more important that there be high-level policy procurements to encourage and mobilize support for cooperation than it is in the NATO case.

The combination of Japanese industry's spectacular commercial success, the trade balance problems, and the unemployment in U.S. industry gives rise to much doubt about the wisdom of adding to Japan's technology store. The importance of Japan to our security interests in the Western Pacific is not broadly known, and the strategic benefits which motivate the Task Force to recommend cooperation are generally not appreciated. While high level policy statements of endorsement will not alone create broad acceptance of the cooperation, they can lay the policy foundation from which the individual problems can be attacked.

One of the problems that will need immediate attention to enable implementation is to convince the Congress and the Military Services to allow Japanese participation in U.S. programs, similar to the participation presently allowed for NATO countries. The process will take some time, but it should be achievable.

Because the technological relationship with Japan has been so one-way, the Task Force stresses the absolute necessity for an unambiguous statement from the government stipulating that cooperation is absolutely based on a two-way technological flow. The Task Force made this point repeatedly in its meetings with the Japanese and it was accepted for discussion purposes, but it must be stated formally to avoid any subsequent misunderstandings.

The last action recommended, to initiate a comprehensive interagency study on the overall defense/economic strategy, would not only provide a broader policy context for the program of technological cooperation but should also go far toward answering the questions of those skeptical about the program. The participation of the other interested agencies would be essential to the proper governmental support for this program.

ACTIONS REQUIRED (CONT)

USDRE:

- DEVELOP MEANS FOR ASSESSING BALANCE OF TECHNOLOGY EXCHANGE AND OVERALL NATIONAL BENEFIT
- PROVIDE GUIDANCE AS TO WHICH ADDITIONAL U.S. DEFENSE TECHNOLOGIES COULD BE RELEASED TO JAPAN
- ENSURE THAT NECESSARY APPROVALS CAN BE OBTAINED EXPEDITIOUSLY
- GREATLY EXPAND AND SPEED UP TRANSLATION OF JAPAN TECHNICAL DOCUMENTS AND STIMULATE RECIPROCAL PLACEMENT OF AMERICAN SCIENTISTS/ENGINEERS IN JAPAN
- DSB: IN A YEAR, ESTABLISH A DSB GROUP TO MAKE QUICK EVALUATION OF AND ADVISE ON THE TECHNOLOGY EXCHANGE AND MAKE BROADER EVALUATION A YEAR LATER

846118-60A

One unanswered question from the study is how to measure the relative value of various technologies involved in nonsymmetrical exchanges. This topic was not addressed by the Task Group, which recommends it be undertaken as a priority action by USDRE. One suggestion is that a competent technical/economic analysis organization be tasked to develop appropriate measures of merit.

The technology release approval process is a matter of concern to both sides. The cooperation could get off to a much better start if some sort of guidance could be provided as to what additional technologies might be releasable, in order to facilitate the exploration of specific projects. Likewise, assurance that decisions on specific cases can be obtained expeditiously would encourage exploration.

Steps should be taken to close the information gap as soon as practical, regardless of the fate of the proposals presented herein for increased cooperation. The Task Force believes it to be a false economy not to translate Japanese technical documents or send scientists and engineers to Japan. Japan is now investing more money in R&D than any of our other allies, and 50 percent more than the next leader, West Germany (yet U.S. researchers coauthor only a third as many technical papers with Japanese researchers as with West Germans).

The Task Force recommends that the Defense Science Board exercise its surveillance over the technological exchange with Japan by establishing a special group to make a preliminary evaluation of the results and to advise on any actions needed, after about a year. After a second year, the group should make a broader evaluation.

ACTIONS REQUIRED (CONT)

MOST IMPORTANT OF ALL

U.S. GOVERNMENT SHOULD:

- DECLARE NATIONAL GOAL TO MAINTAIN TECHNICAL PREEMINENCE IN CIVIL AND MILITARY TECHNOLOGY
- INVEST IN IR&D, RESEARCH, AND EXPLORATORY AND ADVANCED DEVELOPMENTS TO ACHIEVE THIS GOAL

846118-61A

The Task Force feels strongly that the most important actions to enable technological cooperation with Japan would be those that strengthen our national technological base and preserve our technological leadership. U.S. industry will then have the ability and confidence to cooperate on technology with Japanese industry, to the benefit of both countries.

The U.S. Government should take steps to create a national climate for technological leadership, and to invest sufficiently in research and development to achieve and maintain it. The President should declare technological superiority a national goal, and the Defense Department should fund IR&D, research, and exploratory and advanced development accordingly.

FINAL COMMENT

U.S. BASE OF TECHNOLOGICAL INNOVATION IS VITAL NATIONAL ASSET, FUNDAMENTAL TO OUR MILITARY SECURITY AND ECONOMIC WELL-BEING

WE CANNOT MAINTAIN OUR LEAD BY CONSERVATION AND PROTECTION ALONE

WE MUST RUN FASTER!

846118 70

APPENDICES

APPENDIX A:
TERMS OF REFERENCE

THE UNDER SECRETARY OF DEFENSE

WASHINGTON, D C 20301

RESEARCH AND
ENGINEERING

6 JAN 1984

(DSB)

MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Defense Science Board (DSB) Task Force on International Industry-to-Industry Armaments Cooperation - Phase II

Our armaments cooperation experiences and current activities with Japan are clearly different than those with our NATO Allies. Thus, while essentially the same purposes apply as in your Phase I (NATO) effort, Phase II of your industry-to-industry study which will address Japan, should account for these differences and should address the opportunity afforded to develop new arrangements with Japan.

Our basic objective toward Japan include:

- Support Japan's efforts to achieve credible capabilities for agreed missions, coordinated U.S./Japan planning, technological superiority of forces and interoperability with U.S. forces.
- Establish effective two-way flow of technology applicable to defense so that we may also benefit from their R&D.
- Support Japan's policy of non-export of weapons.
- Encourage Japan to fully cooperate within COCOM.

Prime Minister Nagasone has stated his government's agreement to the two-way flow of military and defense-related technology. This is an opportunity to develop new relationships of benefit to both nations. The role of industry can be critical in this regard since the significant Japanese technologies applicable to military equipments is usually developed by their commercially oriented industry. Most of these technologies are identified there as dual-use technology, the transfer of which will be encouraged by their government in addition to the more limited list of military technologies.

The scope of your Phase II effort, as modified from the Phase I effort, should include but not be limited to:

1. Identify policies, procedures and generic approaches which can facilitate the desired aims of expanded cooperation. Identify problems and recommend appropriate resolutions thereto.

2. Explore the feasibility of cooperation based upon U.S. defense technology and Japanese defense/dual-use technology. Determine optimum use of existing cooperative mechanisms, e.g., co-development, co-production, joint ventures.

3. Determine some of the areas of defense/dual-use technology useful to U.S. defense programs.

4. Identify some industry-to-industry cooperative program initiatives which would provide greater inter-operability and standardization among U.S./Japan forces.

5. Access the impact on U.S. defense industry in expansion of technological cooperation with Japan.

6. Address the issue of technology transfer among the Allies and the deleterious effects of leakage of critical technology to the East in terms of how effective controls can be maintained with increased industry-to-industry contacts and yet assure that needed military technology is made available among the Allies. Commercial impacts of technology transfer are, of course, also factors requiring consideration.

The findings and recommendations for this Phase II effort will be presented as an interim report by 1 March 1984, and in a final report by July 1984. This Task Force will remain sponsored by the Deputy Under Secretary of Defense (International Programs and Technology). Dr. Malcolm R. Currie, Senior Vice President & Group Executive, Hughes Aircraft Company, will remain as Chairman of the Task Force and Mr. Gerald D. Sullivan, Assistant Deputy Under Secretary for International Programs, will be the Executive Secretary. Col. Joseph Briggs, USA, will be the DSB Secretariat representative to the Task Force. It is not anticipated that your inquiry will need to go into any "particular matters" within the meaning of Section 208 of title 18, U.S. Code.

THE UNDER SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

RESEARCH AND
ENGINEERING

27 APR 1982

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Defense Science Board Task Force on International Industry-to-Industry Armaments Cooperation

You are requested to form a Defense Science Board Task Force on International Industry-to-Industry Armaments Cooperation. The DoD policy to enhance armaments cooperation is reflected in Deputy Secretary of Defense memorandum dated June 3, 1981 (Enclosure). This Administration's policy is to achieve the implementation of this cooperation through direct industry-to-industry arrangements whenever possible. This is a change in policy from that of the previous Administration which was assisted in formulating its implementing direction by prior Defense Science Board studies.

The purpose of the Task Force is to identify U.S. and allied government procedures and policies that will provide incentives to enable U.S. industry to work more effectively with the industries of our allies in armaments cooperation programs. The scope of the effort should include, but should not be limited to:

1. Identifying policies, procedures and generic problems which are impeding or might impede such cooperation from taking place. Recommend appropriate resolutions thereto.

2. Determining optimum use of existing cooperation mechanisms, e.g., general MOUs, co- and dual production, families of weapons, and codevelopment.

3. Identifying industry-to-industry cooperative program initiatives which would provide greater interoperability and standardization among our forces and those of our allies.

4. Determining how to build and maintain a viable U.S. industrial base and to provide a suitable mobilization capacity as well as to move toward an alliance-wide industrial base.

5. Addressing the issue of technology transfer among the allies and the deleterious effects of leakage of critical technology to the East in terms of how effective controls can be maintained with increased industry-to-industry contacts and yet assure that needed military technology is made available among the allies. Commercial impacts of technology transfer are, of course, also factors requiring consideration.

6. Determining more effective organizational approaches within OSD.

The findings and recommendations will be presented as an interim report by 1 December 1982, and in a final report by February 1983. This Task Force will be sponsored by the Deputy Under Secretary of Defense (International Programs and Technology), Mr. Michael Lorenzo. Dr. Malcolm R. Currie, Senior Vice President & Group Executive, Hughes Aircraft Company, has agreed to serve as Chairman of the Task Force and Mr. Everett D. Greinke, Director, NATO/European Affairs, USDRE, will be the Executive Secretary. Colonel Wayne B. Davis, USA, will be the Defense Science Board point of contact on the Task Force.

Enclosure:
3 June 1981 DepSecDef Memo, Subject: Armaments Cooperation with out NATO Allies

THE DEPUTY SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

ENCLOSURE

JUN 3 1981

MEMORANDUM FOR THE SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
ASSISTANT SECRETARIES OF DEFENSE
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Armaments Cooperation with our NATO Allies

In the face of the sustained Soviet build-up of arms and the pressures on the defense budgets of Allied Nations, more effective cooperation in armaments is now an imperative. The Reagan Administration strongly supports U.S. and NATO arms cooperative programs and initiatives that are designed to better coordinate our use of research and development resources and provide greater interoperability and standardization of our forces so we can better fight as an Alliance.

Our strategy for dealing with the Warsaw Pact challenge is critically dependent on the exploitation of our technological edge and effective application of the industrial base on an Alliance basis. The Defense Department will continue to stress our existing general MOU's with each of our Allies calling for close cooperation on policy, support dual production of weapons on both sides of the Atlantic, and our family of weapons approach to conducting development tasks. We will strive for cost effective cooperative programs, wherever possible, which can meet U.S. and NATO Alliance requirements.

The time has come for industry to take a more active role in the arms cooperation process. They can help to establish cooperative relationships on a sound business basis to the mutual advantage of the industrial base of the Alliance and NATO's military forces.

Frank C. Carlucci

APPENDIX B:
1960 TREATY OF MUTUAL COOPERATION AND SECURITY

Reference 9. Treaty of Mutual Cooperation and Security Between Japan and the United States of America*

June 23, 1960 Treaty No. 6

Japan and the United States of America,

Desiring to strengthen the bonds of peace and friendship traditionally existing between them, and to uphold the principles of democracy, individual liberty, and the rule of law,

Desiring further to encourage closer economic cooperation between them and to promote conditions of economic stability and well-being in their countries.

Reaffirming their faith in the purposes and principles of the Charter of the United Nations. and their desire to live in peace with all peoples and all governments,

Recognizing that they have the inherent right of individual or collective self-defense as affirmed in the Charter of the United Nations.

Considering that they have a common concern in the maintenance of international peace and security in the Far East.

Having resolved to conclude a treaty of mutual cooperation and security.

Therefore agree as follows:

ARTICLE I

The Parties undertake, as set forth in the Charter of the United Nations. to settle any international disputes in which they may be involved by peaceful means in such a manner that international peace and security and justice are not endangered and to refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the purposes of the United Nations.

The Parties will endeavor in concert with other peace-loving countries to strengthen the United Nations so that its mission of maintaining international peace and security may be discharged more effectively.

ARTICLE II

The Parties will contribute toward the further development of peaceful and friendly international relations by strengthening their free institutions. by bringing about a better understanding of the principles upon which these institutions are founded, and by promoting conditions of stability and well-being. They will seek to eliminate conflict in their international economic policies and will encourage economic collaboration between them.

ARTICLE III

The Parties, individually and in cooperation with each other, by means of continuous and effective self-help and mutual aid will maintain and develop, subject to their constitutional provisions, their capacities to resist armed attack.

---

*Defense of Japan 1983, translated by Japan Times, Ltd., from White Paper, Defense Agency, Japan, August 1983.

ARTICLE IV

The Parties will consult together from time to time regarding the implementation of this Treaty, and, at the request of either Party, whenever the security of Japan or international peace and security in the Far East is threatened.

ARTICLE V

Each Party recognizes that an armed attack against either Party in the territories under the administration of Japan would be dangerous to its own peace and safety and declares that it would act to meet the common danger in accordance with its constitutional provisions and processes.

Any such armed attack and all measures taken as a result thereof shall be immediately reported to the Security Council of the United Nations in accordance with the provisions of Article 51 of the Charter. Such measures shall be terminated when the Security Council has taken the measures necessary to restore and maintain international peace and security.

ARTICLE VI

For the purpose of contributing to the security of Japan and the maintenance of international peace and security in the Far East, the United States of America is granted the use by its land, air and naval forces of facilities and areas in Japan.

The use of these facilities and areas as well as the status of United States armed forces in Japan shall be governed by a separate agreement, replacing the Administrative Agreement under Article III of the Security Treaty between Japan and the United States of America, signed at Tokyo on February 28, 1952, as amended, and by such other arrangements as may be agreed upon.

ARTICLE VII

This Treaty does not affect and shall not be interpreted as affecting in any way the rights and obligations of the Parties under the Charter of the United Nations or the responsibility of the United Nations for the maintenance of international peace and security.

ARTICLE VIII

This Treaty shall be ratified by Japan and the United States of America in accordance with their respective constitutional processes and will enter into force on the date on which the instruments of ratification thereof have been exchanged by them in Tokyo (June 23, 1960).

ARTICLE IX

The Security Treaty between Japan and the United States of America signed at the city of San Francisco on September 8, 1951 shall expire upon the entering into force of this Treaty.

ARTICLE X

This Treaty shall remain in force until in the opinion of the Governments of Japan and the United States of America there shall have come into

force such United Nations arrangements as will satisfactorily provide for the maintenance of international peace and security in the Japan area.

However, after the Treaty has been in force for ten years, either Party may give notice to the other Party of its intention to terminate the Treaty, in which case the Treaty shall terminate one year after such notice has been given.

APPENDIX C:
THE VISION OF MITI'S POLICIES IN THE 1980s

An Age of Vitalized Human Potential

The Vision of MITI's Policies in The 1980s*

Over the past two decades the Ministry of International Trade and Industry (MITI) has directed its policies "in conformity" with two reports submitted to it by the Industrial Structure Council, an advisory organ that discusses and deliberates on the direction of MITI's policies. Composed of representatives from academic and industrial circles, labor unions and consumers, the Council's two previous reports (the Industrial Structure in Japan, 1963, and The Vision of MITI's Policies in the 1970s, 1971), laid out the broad economic strategy Japan followed in the 1960s and 1970s. This latest report is the blueprint for the economic transition (already underway) Japan must pass through successfully if she is to remain a vital, and important member of the world community.

In the 1980s Japan will be increasingly called upon to contribute to the harmonious development of the international community as positively as is comparable to its international status. Japan will also have to cope with the problem of the growing scarcity of energy resources. Appropriate policy is needed to deal with these tasks and problems. It will be more difficult for Japan to fix its course in the '80s, yet it will be essential to select the right course.

The essential task for the Ministry of International Trade and Industry is to set up guidelines that the people, the business sector, and the government can follow in their concerted efforts to overcome the difficulties of the present decade and to open the way for a new age.

MITI has directed its policies in the past in conformity with two previous reports submitted by the Industrial Structure Council:[1] "The Industrial Structure in Japan" in 1963, and "The Vision of MITI's Policies in the 1970s" in 1971. The council has now submitted its latest report entitled, "The Vision of MITI Policies in the 1980s," whose outline follows.

[1] The Industrial Structure Council is an advisory organ to discuss and deliberate on the direction of MITI policies. It is composed of representatives from academic and industrial circles, consumers, interests, and labor unions.

The 1980s — The World's Turning Point

The 1980s will mark a historic turning point in the energy situation, and the political and economic environment. The manner in which we handle worldwide problems in the coming decade will be the key in determining whether we can engineer a promising future.

Energy

The major sources of energy supporting our economic activities have shifted from firewood to coal, and then to oil. In the 21st century the world economy may be able to derive its energy mainly from the sun and the atom. However, during the long period needed for transition from conventional energy sources to new ones, we must face an unstable oil supply situation. During these decades in the transition, starting from the 1980s, various energy sources, conventional, alternative and new, must be sought simultaneously to the utmost extent possible.

Political and Economic Multipolarization

The political and economic stability of the world throughout the most part of this century has been rhetorically called Pax Americana in an analogy to Pax Britanica referring to the Peace of Europe in the 19th century. Although the U. S. remains the

"An Age of Vitalized Human Potential," The Journal of the ACCJ (American Chamber of Commerce · Japan), April 1980, pp. 25-40.

pre-eminent world power, its relative status is declining. Militarily, the bipolarization of the two superpower blocs — the U. S. and Soviet Union — will continue, while politically and economically, the world will experience further transition toward a multipolar and multifaceted structure, causing an intensification of political and economic instability.

The 1980s should be a period of cooperation among developed nations, while developing nations will have a stronger voice in the operation of international politics and economics. In addition, the oil producing countries of the Middle East are expected to be more influential, controlling, the supply and price of oil. The politics and economics of China, now appearing to gradually liberalize its society, and the East-West relationship may also contribute to the further multipolarization and complication, depending upon their evolutions.

On the other hand, interdependence among nations is expected to deepen further in the coming decade. Politics and economics will become more closely related with each other, making the world even more complex.

Current State of the Japanese Economy

After successfully rebuilding its war-torn economy in the '50s, Japan developed heavy and chemical industries in the '60s, and added new dimensions and leverage to its economy by developing knowledge-intensive industries in the '70s. Today, Japan accounts for 10% of GNP of the world, even though Japan has only 3% of the world's population and 0.3% of the world's land. Though on a stock basis Japan is still behind industrialized countries, on a flow basis, its per-capita national income has reached 90% of that of the United States, exceeding the average of the EC countries. On the other hand, in view of unstable world energy situation, the heavy dependence on foreign supplies of energy — 89% of its total energy requirements — now casts serious problems upon the future Japanese economy.

Since the Meiji Era, Japan has struggled to achieve a level comparable to that of Western countries by modernizing and developing an industrial society. Japan today has achieved the goal it set for itself. Yet immediately after the fulfillment of that goal comes the turning point. Japan in the 1980s will have to seek new directions and face new challenges.

The Japanese economy has attained the national goal of the past hundred years, reaching the level of Western industrial nations.

The Japanese economy has attained the national goal of the past hundred years, reaching the level of Western industrial nations. It is time for Japan to establish new national long-term goals and to envisage the course to reach them. We propose the following three national long-term policy goals:

(1) Contributing positively to the international community;

(2) Overcoming the limitations of natural resources and energy;

(3) Attaining co-existence of dynamism of the society and the improved quality and comfort of life.

Building a Reputation for Trustworthiness

Japan now has a strong influence in the international economy. In the 1980s and beyond, Japan must contribute as much as possible to laying the foundations for the maintenance of world peace and the development of the world economy. Japan should, for example, play its part in the maintenance of the free trade system, play a larger role in the concerted efforts by developed nations in the technological research and development, and continue steadily the economic cooperation for developing countries. The general populace must be willing to accept these responsibilities.

Economic Security Through Technological Innovation

In order to secure the welfare and economic security of the nation, Japan must endeavor to overcome its vulnerability as a nation with scarce natural resources. To this end, the following measures will be implemented to prevent the development of crises, as well as to formulate a system for crises management.

(1) The degree of mutual dependence

with both advanced and developing nations will be heightened.

(2) Japan must seek to diversify sources of oil supply as well as to develop alternative and new energy sources, to increase stockpile and to step up energy conservation efforts.

(3) The development of innovative and original technology will be promoted to help Japan stabilize its economic foundation.

Maintaining the Vitality of Society along with an Improved Quality and Comfort of Life

(1) The nation's vitality must be sufficient for the sustenance of its economy in order to fulfill its international responsibilities and overcome its lack of natural resources.

(2) Japan must improve the quality of life, through a better living environment and increased leisure time.

(3) Strengthened wisdom cannot be found in a society lacking vitality, and a new vitality cannot be attained by a society without flexible thought and action. In the 1980s, vitality and flexibility must co-exist to achieve our goals.

Japan's unique problem-solving capability is supported by the industriousness of its people, the high standard of education, the narrow income differentials, and relatively stable labor-management relations. Therefore, we believe that these long-term national goals, encompassing the 1980s and beyond, are attainable with the people's efforts.

Economic Management

ECONOMIC GROWTH POLICY

(1) An objective of economic growth is an improved standard of living to be maintained for a long period. Coping with possible constraints of economic growth, such as the energy problem, trade friction, future uncertainties, and diminishing social vitality, we should seek an appropriate rate of growth. Without an appropriate rate of growth, it would be difficult to realize various structural changes and avoid friction among interest groups.

(2) Growth constraints in the 1980s will become more complex than previous years and political alternatives will be more limited.

(3) Since the establishment of economic security is one of the most important priorities for the 1980s, Japan's economic growth must be sufficient to meet the following requirements:

i) Japan must emphasize investment in energy measures and technological development;

ii) Japan must stimulate investment by the private sector in equipment for energy conservation, improved productivity, and international division of labor.

(4) To improve living environments, investments in private housing and related social overhead capital must be emphasized and increased.

IMPROVING EMPLOYMENT OPPORTUNITIES

(1) Increased employment of old workers, female workers and college graduates will change Japanese-style employment practices.

The share of people over 65 in Japan's population was 9% in 1978 . . . and will be . . . in 2020, 19%; the highest in the world.

---

(2) The share of people over 65 years old in Japan's total population was 9% in 1978, and will be 11% in 1990, 14% in 2000, and in 2020, 19%; the highest in the world. We should provide appropriate social security and form a new national consensus to share the additional burden. Proper handling of the aging population problem will be vital in the decades ahead.

PRICE POLICY

Price stabilization measures must aim at improving supply conditions in such areas as productivity and energy, in addition to managing effective demand.

VITALITY OF THE PRIVATE SECTOR AND THE ROLE OF GOVERNMENT

(1) Japan's economic system is based on free market mechanisms, and the vitality of the private sector is essential to its maintenance. Realizing

the increased public needs, we should avoid excessive reliance on government administration by the private sector and should encourage their competitive activities.

(2) Government action will be required mainly in the following areas: technological development demanding large amounts of funds, incurring high-risks, and needing long lead times; protection of public safety; realization of social justice; and government-level negotiations.

(3) In the 1980's, as a stronger inclination towards trade protectionism and the advancement of developing countries is anticipated, efforts must be made to maintain open markets. As a result of these efforts, reduced employment and other impacts may cause social frictions. Accordingly administrative action will be required more often than in the past to alleviate such frictions.

(4) Better understanding must be promoted between the Japanese government and foreign governments, the government and the people, and the central and local governments.

External Policies in the Age of Interdependence

TREND OF THE WORLD ECONOMY

(1) The overall economic growth of the world is anticipated to be slightly below 4% recorded in the 1970s. While the average growth rate of the industrialized nations will be only 3% (Japan anticipates growth of a little more than 5%), that of developing nations will be comparatively high, in particular, the Newly Industrializing Countries (NIC's) and ASEAN nations. The growth rates of the Soviet Union and Eastern European nations are expected to be almost equal to the overall world growth rate.

(2) As industrialized nations are expected to increasingly focus their efforts on their own domestic problems, future international cooperation may encounter difficulties.

(3) Among the developing nations, the disparity between oil-producing nations, NIC's, and less-developed nations will expand, thus intensifying the trend toward polarization.

(4) To soundly sustain the world's economic system during the 1980s, we need to effectively cope with energy problems, to continue to promote international trade, to endeavor to narrow North-South disparity in income and to stabilize international monetary situations.

(5) Every nation must strive to attain progress and security for itself with a spirit of international cooperation. Endeavoring to maintain the principle of freedom and equality, Japan must formulate a respectable national image in the international community and strengthen its relationships of mutual dependence with foreign countries.

(6) As the Pacific Basin has great potential for progress, that potential needs to be realized. In the Basin there are many countries of different historical, cultural and economic background. Japan must promote international exchanges of human resources, culture and information in this Basin. In addition, in the context of global considerations we need to promote economic cooperation and international division of labor, as well as joint development of resources, energy, and the ocean.

MAINTENANCE OF THE FREE TRADE SYSTEM

(1) In dealing with industrialized nations, Japan needs to increase imports of manufactured goods and the production of goods with larger added value, specializing in sectors with a comparative advantage. Furthermore, "industrial cooperation" among industrialized nations will become prevalent.

(2) In dealing with the newly industrializing countries, Japan needs to encourage domestic industries to switch into new lines of upgraded products.

(3) In dealing with developing countries, Japan needs to increase imports of labor-intensive products, processed primary products and raw materials.

Promotion of Comprehensive Economic Cooperation

Concerning economic cooperation with developing countries, emphasis will be placed on "comprehensive economic cooperation" combining official development as-

sistance, direct investment and trade. In this context we propose the adoption of a comprehensive economic cooperation index consisting of the imports of manufactured goods, official development assistance, export credits and direct overseas investment. We aim at increasing the overall amount of comprehensive economic cooperation to a level of about six times the current value in nominal terms by the end of the '80s. When achieved, the ratio of comprehensive economic cooperation to GNP will increase from 1.6% in 1978 to 3% at the end of the 1980s. (At present, this ratio of the European countries stands at 2.0% to 2.5% while that of the U. S. is 1.3%.)

Promotion of Direct Investment in Overseas Market

Direct overseas investment, which is expected to expand further in the coming decade is valuable for the following requirements:

(1) to sophisticate the domestic industrial structure and to promote international division of labor,

(2) to promote international communication through exchanges of people and transfer of particular corporate activities to foreign countries,

(3) to promote the transfer of management resources and job opportunities,

(4) to secure stable supply of energy and resources, and

(5) to consolidate the management of Japanese firms.

Increased International Use of the Yen

We need to make positive efforts to enlarge the role of the yen in international transactions, and to promote liberalization and flexibility in financial markets in order to establish a Tokyo International Financial Market. These efforts will help stabilize the international monetary system and encourage international activities of industries.

Deepening International Communication

Given the increasing tendency toward interdependence among the countries of the world, the problems requiring international adjustments, bilateral or multilateral, are expected to increase in the coming years. To avoid such problems resulting in international emotional friction, the Japanese people and societies need to become more internationally-oriented, taking into account more fully the international consequences and implications in every occasion, making its institutions and their procedures more accessible to foreigners, and developing better channels for international communications.

Overcoming Energy Problems and Preparing for the New Age

ENERGY PROBLEM

The oil crisis of 1973 brought to an end the age of abundant, cheap oil. Worse yet, the revolution in Iran starting toward the end of 1978 and OPEC's oil strategy have made the oil supply outlook increasingly pessimistic.

Until we can prepare other energy sources, the instability of the world's oil supply will cast a dark cloud over the world economy. Our energy supply structure is far more fragile than those of the Western industrial nations for the following reasons: (a) Japan depends on foreign countries for about 90% of its primary energy requirements, (b) 75% of Japan's primary energy comes from imported oil, and (c) the oil producing areas supplying to Japan are concentrated in a few countries with limited transportation routes.

For these reasons, our greatest national priority is to establish long-term energy security. For that purpose, diversification of energy sources and the conservation of energy are essential.

IMPORTANCE OF WORLDWIDE PERSPECTIVES

Energy measures need to be formulated on the basis of worldwide perspectives covering the political aspects of the energy problem, cooperation among the advanced nations, cooperation with the oil-producing countries, and stabilization of the international financial situation. In addition, a system for collection, compilation, analysis, and distribution of information must be consolidated.

ENERGY SUPPLY AND DEMAND IN JAPAN

Assuming that Japan's economy will grow at an average rate of more than 5% annually in the '80s, and that the structure of energy consumption will remain unchanged, we will need, in 1990, twice as much energy as the amount consumed in 1977. The most important need in the coming decade is to conserve energy. As a result of our efforts to curb energy consumption by 15%, energy consumption in

1990 will remain 1.7 times that of 1977. Our second objective is to reduce the nation's dependence on oil from the current 75% to 50% of total energy requirements by 1990. We will have to vigorously promote development and introduction of alternative sources to a level of more than triple the current level in order to raise them from 25% at present to 50% of the total energy mix in 1990.

heat, methane produced by fermenting waste, wave power, wind power, tidal power, and biomass.

SECURING STABLE SUPPLY OF OIL

Despite efforts for the conservation of energy and the development of alternative energy sources, Japan will have to depend on oil from foreign countries for more than 50% of its energy requirements. Therefore, we must continue our efforts to secure the stable supply of oil through the following activities: (1) vigorous expansion of economic and technological cooperation with producing countries; (2) promotion of better mutual understanding with oil producing countries; (3) active participation in oil exploration, and; (4) diversification of sources of oil supply by increasing the imports of oil from Asia, Mexico and other countries; and (5) the development of cracking facilities for heavy oil.

Despite efforts for the conservation of energy and the development of alternative energy sources, Japan will have to depend on oil from foreign countries for more than 50% of its energy requirements.

DEVELOPMENT OF ALTERNATIVE ENERGY SOURCES

The best method to achieve more stability in the face of the energy crisis is to diversify energy sources. The government will vigorously accelerate the development of the following various energy sources.

(1) Nuclear power:
Nuclear power stations must be sited with greater attention to their safety and reliability. Efforts should also be made for the establishment of our own nuclear fuel cycle and for the development and introduction of new types of reactors.

(2) Coal:
Because of the abundance of its reserves and the relative variety of its deposits locations, coal has great expectations as a source of energy. We will promote coal-fired power stations and switch from oil to coal for fuel in other industries. The coal technologies to be developed are liquefaction and gasification, and we must spread the results of their technological development for commercial uses.

(3) Liquefied natural gas and liquefied petroleum gas.

(4) Solar energy, hydraulic power, geothermal energy an dother new types of synthetic fuel.

LOCAL ENERGY SYSTEMS

We need to develop and introduce local energy sources including solar energy, geothermal energy, small and medium-scale hydroelectric oper wplants, factory waste

ENERGY PRICES

(1) The oil producing countries are likely to make efforts to use their limited natural resources more sparingly, curtailing oil production to a level adequate to steadily develop their domestic economy. We must realize that such moves spell an age of high energy prices.

(2) The cost of stable energy supply must be shouldered by the national economy as a whole. Specifically, this would mean a shifting of the cost to consumers in terms of prices through the market mechanism, and entrepreneurs' efforts for rationalization. However, for some energy-related investment full transfer of cost to price is difficult, and policy measures are therefore required.

CRISIS MANAGEMENT

Should the supply of oil be reduced to a level that may threaten economic security, we would need to establish a system of crisis management to minimize any possible damage and ensure swift recovery.

Towards a Technology-based Nation

PHILOSOPHY

(1) Technological innovation is a source of progress for Japan as well as the world. Great expectations are therefore placed on technological innovation providing the key to the solution of various problems in the 1980s. Japan must strive to develop its creative capacity and contribute, as an innovator, to world progress.

(2) As technological development is a means of attaining economic security by strengthening a country's bargaining power, Japan must stand on the ground of technology.

(3) The now prevalent apprehension is that technological progress is about to stagnate. In the 1980s, however, the following types of technological efforts will be made: (a) new application and combination of existing technologies, (b) flowering of new technology resulting from a new application of science and technology, and (c) the preparation for the next generation's epoch-making technological innovations expected in the years after 1990. If these efforts are successful, the economy and society are expected to move into a new, prosperous stage.

OBJECTIVES OF TECHNOLOGICAL DEVELOPMENT IN THE '80s

The principal tasks for technological development to be stimulated by economic and social necessities in the '80s are the following:

(1) *Energy*

(a) Energy-saving technologies such as magneto-hydrodynamics (MHD) power generation, highly efficient gas turbines, fuel cells and a waste heat recovery system.

(b) Alternative energy technologies such as nuclear power, coal, solar energy and geothermal energy.

(c) New energy technologies such as nuclear fusion for commercial application in the 21st century.

(2) *Improving the Quality of Life and Community Facilities*

(a) Social systems related to personal and community life including a medical information system.

(b) New energy-saving housing systems and artificial ground for intensive use of land.

(3) *Knowledg 'ntensive and Innovative Technologies*

(a) Knowledge-intensive production systems equipped with microcomputers, and upgraded resource-saving and energy-saving technologies.

(b) Innovative technologies such as new materials, optical communication, VLSI (very large scale integrated circuit) and laser beam technology.

(4) *The Next-Generation Technologies*

(a) In the field of life sciences: treatment of cancer, genetic manipulation, investigation into a photosynthesis process and its application for food production.

(b) In the field of energy: nuclear fusion and MHD power generation.

(c) In the field of data processing: applying newly discovered principles such as the Josephson effect.

(5) *Among the above themes, particular emphasis must be placed on three areas:*

(a) Development of technologies inventing new materials,

(b) Development of technologies, applying a large-scale system including those for alternative energy sources.

(c) Development of technologies related to a social system, including that in the field of personal and community activities.

In the '80s . . . it will be essential for Japan to develop technologies of her own.

New Phase in Policy on Technology

The principal role of the government policy for the development of technology is to encourage development efforts in the private sector. In the past, the Japanese industry achieved brilliant results in improving and applying imported technologies. In the '80s, however, it will be essential for Japan to develop technologies of its own. For this purpose, it is necessary to systematically pursue policies with an emphasis on the following three points.

(1) *Development of Creative Technologies*

(a) Switchover to "forward engineering": Now that it has become increasingly difficult to find specific goals of development of imported technologies, Japan needs to press ahead with projects for the research and development of original technologies through trial and error and the accumulation of basic data.

(b) Training of personnel capable of achieving technological breakthroughs.

(c) Establishment of a system to encourage taking risks and squarely facing new challenges.

(2) *Systematic Promotion of Technology*

(a) Technological developments must be promoted by presenting a "Long-term Vision for Technological Development", which identifies the priority goals for technological developments, as well as systems for development and funding.

(b) In the area of energy-related technologies and in other pressing areas requiring a large amount of development funds, the government must launch national projects on its own initiatives.

(3) *Increased Allocation of Research and Development Funds*

(a) Efforts must be made to increase the budget available for research and development of technologies.

(b) The share of government expenditures for R & D in total R & D expenditures is in the order of one-third in Japan, compared with around one-half in Western industrialized countries. This share should be raised in spite of the expected deficit in the national budget.

(c) Recognizing that research and development of technologies are in the nation's best interest, the government must make every effort to find a new source of funds for financing such projects.

International Cooperation in Technological Development

In the 1980s, cooperation among industrialized nations in research and development will be vital to the progress of the world's economy.

Joint research projects, in which all participating countries contribute their achievements, will be most effective for technological development to solve universal problems (e.g., energy and food problems) and for the development of large-scale technologies (e.g., aircraft and marine exploitation); Japan is willing to participate in such joint projects. Moreover, Japan will contribute by opening its facilities for research and development to foreign nations, including the establishment of a research institute inviting world-renowned researchers in the fields of life science and energy.

The transfer of technology to developing countries is one of the most important fields for Japan to contribute for the purpose of international cooperation.

Improving the Quality of Life

(1) Efforts must be made to improve residential conditions, particularly to increase comfort and spaciousness, on the basis of a comprehensive and systematic plan covering improvements in housing, housing lots, and social overhead capital related to personal and community life.

(2) Efforts must be made to study the possibilities of establishing a system of bonds whose value is designed to slide with a land price as a means of marketing financial assets rather than land in order to promote its transactions. In addition, efforts must made to create new housing lots through the use of artificial grounds.

(3) Among industrialized nations, Japan is the only country yet to establish a five-day work system. At the early stage of the 1980s, the five-day work week should be fully established and a long vacation system should be introduced gradually and set in full practice by the mid '80s.

(4) Efforts will be made to provide diverse educational opportunities, and sports and cultural facilities, in order to elevate the quality of lengthening leisure-time.

(5) Consolidation of the consumer credit industry and the establishment of a method of providing information on consumption will be effected to allow for more individuality in consumers'

life styles. In order to meet more individual and sophisticated consumer needs, automation in the production of a larger variety of goods in smaller quantities will be promoted.

New Development in Local Societies

INTERDEPENDENCE BETWEEN REGION AND INDUSTRY

(1) In recent years, the narrowing of the income gaps between major cities and local communities, as well as other factors, has begun to attract more and more people to local areas. As a result, the increased local population is enlarging the possibility of progress in these regions.

However, since Japan anticipates a population growth of 20 million by the year 2000, the problems to be caused by overconcentration in large cities cannot be ignored.

(2) For this reason, each local area must construct an attractive economic society for the promotion of appropriate relocation of industries. In order for each region to provide diverse employment opportunities and stable economy, efforts are needed for the following purposes:

(a) A multi-layered local industrial structure and systematic inter-regional cooperation.

(b) Cultivation and promotion of local industries based on characteristics of each local community.

(3) Appropriate relocation of industries must be promoted, based on the following viewpoints:

(a) Incentives must be provided for construction of industries in local areas and burdens must be given to industries situated in large urban areas.

(b) Comprehensive development of industries, including tertiary industries, must be carried out.

(c) Industries utilizing local resources must be developed and promoted.

(d) The potential for regional development will be increased by securing industrial sites and water resources, and improving traffic conditions and transportation facilities.

(e) Redevelopment programs in big cities will be encouraged.

(f) Investment for social overhead facilities must be promoted preceding industrial development in local cities.

FORMULATING LOCAL VISIONS

(1) For the promotion of local economy, each area needs to implement its own original measures. It must formulate a vision for the promotion of its local economy in harmony with the industrial economy of the nation, and must implement appropriate measures in conformity with this vision.

(2) The vision for the promotion of local economy needs to cover improvement of traffic conditions and transportation facilities, taking into account a long-term plan on the country's main transportation network. Moreover, each region must seek progress presupposing the internationalization of Japan's economy. Local areas need to promote exchanges of information with urban centers or international communication on its own.

(3) A specific example is a scheme for an international trade city focusing on improvement of its international airport, and a scheme for a techno-polis aiming at the achievement of creative knowledge-intensive local industries and a new local culture.

(4) Attractive local communities must also maintain harmony with environment.

(5) A manual needed at the time of natural disasters such as earthquakes must be compiled after identifying all possible events that may occur during a disaster. Moreover, disaster prevention and safety measures must be further strengthened through an improvement of refuge roads and parks, and construction of fire-proof or inflammable houses.

Development of a Creative Industrial Structure

OBJECTIVES AND CRITERIA OF INDUSTRIAL STRUCTURE

(1) The following needs must be considered concerning the ideal industrial

structure in the 1980s.

(a) Contribution to the harmony and development of the world economy — criteria for dynamic comparative advantage.

(b) Satisfaction of people's needs to improve quality of life — criteria for satisfaction of the people's needs.

(c) Surmounting of the unstable energy situation: criteria for energy and resource conservation.

(d) Construction of a foundation for long-term economic development and economic security: security criteria.

It is preferable to rely on the technology, funds, and efficiency of the private sector for the development, programming, building and management of social systems.

KNOWLEDGE INTENSIFICATION EMPHASIZING CREATIVITY

The knowledge-intensive industrial structure aimed at in the 1970s must be promoted further in the 1980s with an emphasis on creativity.

(1) A creative, more knowledge-intensive industrial structure needs to be promoted, based on the capability for original technological development.

(2) Specifically, production of higher value added products will be encouraged through an enhancement of technology focusing on software and knowledge intensification.

APPLICATION OF THREE "S's" AND THREE "F's," INDUSTRY BY INDUSTRY

For many-pronged knowledge intensification, the folowing areas must be emphasized. (Three "S's" and three "F's")

(1) In addition to the development of selected knowledge-intensive industries in Japan, knowledge-intensive products and production processes must be promoted even within other industries.

(2) The following efforts are needed for each industry:

a. *Basic material industry*

i) With the application of computer control systems in the production processes, energy saving efforts will be pursued; quality, performance and reliability, be improved; and comprehensive technological ability, be enhanced. (Large-scale Systematization)

ii) New materials with better performance and sophisticated functions will be developed. (Speciality)

b. *Processing and assembly industries*

i) Application of electronics and information systems in various fields such as industrial production, clerical work, a social system and private households will be advanced greatly.

New types of products will be developed by incorporating software information processing functions. (Software Application)

ii) Production methods enabling flexible and automated assembly and processing of various types of products will be developed. (Introduction of Flexibility)

c. *Industries related to personal and community life*

i) Products must meet the increased sophistication of people's tastes and the changes in their lifestyle (Fashion)

ii) Products that emphasize such functions as durability, safety, and energy conservation will be developed to meet steady consumer demand.

iii) Systematic linkage of the upstream, intermediate, and downstream sectors must be promoted in planning a new product or developing new technology. (Feedback)

d. *Energy industries*

i) An industrial structure that will promote development and in-

troduction of alternative and new energy sources must be established and strengthened.

ii) Regarding petroleum, Japan must secure its own sources of supply, develop and introduce heavy decomposition facilities, and accumulate stockpiles.

iii) Equipment industries related to alternative or new sources of energy and conservation of energy are anticipated to progress.

e. *Social system industries*

i) Social service demand, among other things, for medical, educational, waste processing, and traffic services are expected to be efficiently met through systematization. (Systematization)

ii) It is preferable to rely on the technology, funds, and efficiency of the private sector for the development, programming, building and management of social systems. For this purpose, consolidation of government financial assistance and an improvement of a legislative framework are required.

f. *Technology-leading industries*

i) Extremely large-scale technologies — new energy, development of sources, aviation and space, and information processing — form the basis for long-term economic progress.

ii) The ability to develop original technology must be fostered through the cooperative efforts of the government and private sector, and international joint projects.

Realization of an Ideal Industrial Structure

In order to achieve an ideal industrial structure, the following measures will be implemented as a measure complementary to the efforts to be primarily made by the private setcor.

(1) Proposing the vision;
By disseminating the vision of the industrial structure and sufficient information to the people, the formulation of concensus and smoother distribution of resources need to be achieved. Concurrently, vigorous progress in the private sector must be maintained and promoted.

The government must take the initiative in development and basic experimental research in high-risks fields.

---

(2) Promotion of technological development;
The government must take the initiative in development and basic experimental research in high-risk fields. It must also provide strong assistance to large-scale private research and development projects that may contribute to social progress.

(3) Promotion of industrial labor policy;
In promoting the potential, creativity, and flexibility of human resources, the employment structure must be converted smoothly to facilitate knowledge intensification of the industrial structure.

Smooth Implementation of Industrial Adjustment

(1) Industrial adjustment measures based on active responses of the private sector must be promoted. Such adjustments must have the following properties:

a) Economical efficiency from a medium and long-term point of view,

b) Complementarity to changes in the market structure,

c) Temporary nature,

d) Limited scope with clear-cut objectives.

(2) Adequate economic growth must be sustained, and the following measures must be taken in order to promote smooth industrial adjustment:

a) The economic outlook of each industry must be clarified.

b) Assistance must be rendered for a location and reemployment of workers.

c) Excess equipment must be promptly scrapped.

... measures must be implemented in such a way that modernization and advancement of distribution is induced and reinforced.

d) Switch to more advantageous business must be facilitated.

e) Measures must be taken to achieve more efficient industrial organization.

f) Steps must be taken to moderate the impact on local economy.

Progress in the Service Sector

(1) In the service sector, progress is particularly expected in the following areas:

a) Service industries supplementing the secondary industries.

b) Service industries progressing in conjunction with the secondary industries.

c) Service industries improving the quality of life.

d) Service industries facilitating social activity.

(2) The following steps will be taken to achieve progress in the service sector:

a) Productivity (supply of services) and quality will be improved.

b) Technological development will be promoted.

c) Some public services will be carried out by the private sector applying its efficient, industrialized methods.

Rationalization of Distribution Systems

The distribution industry will experience vigorous competition within the industry, in particular, competition among different channels, firms with different degrees of integration and firms with different size. Maintenance of this competitive nature, on the basis of the private sector's originality, will bring about a more desirable distribution industry that can meet diverse consumer demand.

As a result, measures must be implemented in such a way that modernization and advancement of distribution is induced and reinforced. Specifically, this refers to guiding measures complementary to the private initiatives embracing various industries. These include the following measures: diffusion of the POS (Point of Sales) system, which controls information at the point of sales; increasing efficiency in intra-city transport; measures that promote modernization of the distribution system of each industry, in accordance with its characteristics; and a policy-mix of promotional measures and adjustment measures that will promote medium and small-scale distribution industries enabling them to take advantage of their smallness and flexibility.

INDUSTRIAL VITALITY AND MARKET FUNCTIONS

In order to maintain market functions and enable a fulfillment of its role, efforts must be made to strengthen the activities for comprehensively monitoring the major industries, for grasping and evaluating the actual situations, for improving competitive environments, and for properly guiding enterprises behavior.

In those fields where the market mechanism does not function effectively, the government will attempt to make positive adjustments. In doing so, however, care must be taken not to hinder the long-term vitality of the economy or the industry.

ENLIVENING SMALL AND MEDIUM ENTERPRISES

(1) The scope of activity for medium and small enterprises will further expand due to a progressing shift of economic activities to local areas and expansion of the service sector.

(2) However, the environment surrounding these enterprises will become more severe with the progress of internationalization and changes in the distribution channels.

(3) Under these circumstances, measures need to be implemented so that medium and small enterprises can maintain vitality and spirit of entrepreneurship with originality and individuality. At the same time, in order to cope with newly arising tasks, measures for small and medium en-

terprises are desired to be strengthened to enable more effective utilization.

The Age of Vitalized Human Potential

Progress is hindered by external and internal constraints: external constraints concern energy, the environment and international relations; internal ones, human wisdom and attitudes, and social systems. Although we need considerable efforts to overcome the difficulties anticipated in the 1980s and to achieve the promise of the future, we are convinced that the nature of the Japanese people will bring success.

Education has played a vital part in the process of Japan's modernization. In order to foster the qualities needed in the 1980s and beyond — creativity, individuality, and internationalism — education is expected to play an even more important role. The period when we made progress by applying and improving existing ideas has already come to an end, and a period of creativity and initiative will begin. Japan must formulate an industrial civilization based on its own culture and the creative knowledge to be applied for industrial uses. It must protect the security of the nation's welfare, improve the quality of life, and provide respectable image in the world community.

The period when we made progress by applying and improving exisiting ideas has already come to an end, and a period of creativity and initiative will begin.

Japan overcame many difficulties in the 1970s through an intensified use of knowledge. While this will continue to be important, penetrating insight and good judgement are essential to cope with the problems of the 1980s crowded with uncertainty. The 1980s must become an "Age of Vitalized Human Potential," that is, the age when obstacles and problems are to be overcome through full utilization of creative knowledge.

APPENDIX D:
1954 MUTUAL DEFENSE ASSISTANCE AGREEMENT
MAJOR DEFENSE PROCUREMENTS

Reference 37. Mutual Defense Assistance Agreement Between Japan and the United States of America (Excerpts)*

Entered into force, May 1, 1954

ARTICLE I

1. Each Government, consistently with the principle that economic stability is essential to international peace and security, will make available to the other and to such other governments as the two Governments signatory to the present Agreement may in each case agree upon, such equipment, materials, services, or other assistance as the Government furnishing such assistance may authorize, in accordance with such detailed arrangements as may be made between them. The furnishing and use of any such assistance as may be authorized by either Government shall be consistent with the Charter of the United Nations. Such assistance as may be made available by the Government of the United States of America pursuant to present Agreement will be furnished under those provisions, and subject to all of those terms, conditions and termination provisions of the Mutual Defense Assistance Act of 1949, the Mutual Security Act of 1951, acts amendatory and supplementary thereto, and appropriation acts thereunder which may affect the furnishing of such assistance.

2. Each Government will make effective use of assistance received pursuant to the present Agreement for the purposes of promoting peace and security in a manner that is satisfactory to both Governments, and neither Government, without the prior consent of the other, will devote such assistance to any other purpose.

3. Each Government will offer for return to the other, in accordance with terms, conditions and procedures mutually agreed upon, equipment or materials furnished under the present Agreement, except equipment and materials furnished on terms requiring reimbursement, and no longer required for the purposes for which it was originally made available.

4. In the interest of common security, each Government undertakes not to transfer to any person not an officer or agent of such Government, or to any other government, title to or possession of any equipment, materials, or services received pursuant to the present Agreement, without the prior consent of the Government which furnished such assistance.

*Defense of Japan 1983, translated by Japan Times, Ltd., from White Paper, Defense Agency, Japan, August 1983.

MAJOR DEFENSE PROCUREMENTS*

Table 3-2. Major Domestically Developed Systems and Equipment

Category	Item	Primary Contractor	Required for R & D (Fiscal Year)
Ground Systems	Type-73 Armored Personnel Carrier	Mitsubishi Heavy Industries Ltd Komatsu Ltd	1967 71
	Type-74 Tank	Mitsubishi Heavy Industries Ltd	1964 72
	Type-75 155 mm Self-Propelled Howitzer	Mitsubishi Heavy Industries Ltd The Japan Steel Works Ltd	1969 74
	Type-75 130 mm Self-Propelled Multiple-Rocket Launcher	Nissan Motor Co Ltd Komatsu Ltd	1969 73
	Type-82 Command and Communication Vehicle	Komatsu Ltd	1978 81
Aircraft	Anti-Submarine Patrol Flying Boat (PS-1)	Shin Meiwa Industry Co Ltd	1960 69
	Transport Aircraft (C-1)	Nihon Aeroplane Manufacturing Co	1966 72
	Advanced Trainer (T-2)	Mitsubishi Heavy Industries Ltd	1967 73
	Support Fighter (F-1)	Mitsubishi Heavy Industries Ltd	1972 75
Guided Missiles	Type-79 Anti-Ship, Anti-Tank Missile and Launcher	Kawasaki Heavy Industries Ltd	1966 77
	Type-80 Air-to-Ship Missile	Mitsubishi Heavy Industries Ltd	1973 79
	Type-81 Short-range Surface-to-Air Guided Missile	Toshiba Corporation	1966 79

Table 3-3. Major Systems and Equipment Being License-Produced

Category	Item	Licenser	Main Domestic Manufacturer
Ground Systems	203 mm Self-Propelled Howitzer (except cannon)	BMY Co (USA)	Komatsu Ltd The Japan Steel Works Ltd
Ship-board Systems	76/62 OTO Compact Gun Mount	OTO Melara S P A (Italy)	The Japan Steel Works Ltd
	Gas-turbine Engine (Olympus, Tyne, Spey)	Rolls Royce Ltd (UK)	Kawasaki Heavy Industries, Ltd
Aircraft	Interceptor Fighter (F-15J)	McDonnel Douglas Corporation (USA)	Mitsubishi Heavy Industries Ltd
	Fixed-wing Anti-Submarine Patrol Aircraft (P-3C)	Lockheed Corporation (USA)	Kawasaki Heavy Industries, Ltd.
	Anti-Tank Helicopter (AH-1S)	Bell Helicopter Textron (USA)	Fuji Heavy Industries Ltd
Guided Missiles	Surface-to-Air Missile Improved Hawk	Raytheon Corporation (USA)	Mitsubishi Electronics
	Ship-to-Air Missile Sea Sparrow (missile)	Raytheon Corporation (USA)	Mitsubishi Electronics
	Ship-to-Air Missile Sea Sparrow (launcher)	OTO Melara S P A (Italy)	The Japan Steel Works, Ltd
	Air-to-Air Missile Sparrow	Raytheon Corporation (USA)	Mitsubishi Electronics
	Air-to-Air Missile Sidewinder	Raytheon Corporation (USA)	Mitsubishi Heavy Industries Ltd

Table 3-4. Major Systems and Equipment Being Imported (FMS/Commercial Imports)*

Category	Item	FMS/Commercial Imports	Foreign Manufacturer
Ground Systems	84mm Recoilless Gun Cannon	Commercial Import	FFV Ordnance Division (Sweden)
	203mm Self-propelled Howitzer	FMS	Rock Island Arsenal (USA)
Ship-board Systems	Phalanx Close-in Weapon System	FMS	General Dynamics Pomona Division
Aircraft	Airborne Early-warning Aircraft (E-2C)	FMS	Grumman Aerospace Corporation (USA)
	Transport Aircraft (C-130H)	FMS	Lockheed Georgia Company (USA)
Guided Missiles	Man-portable Surface-to-air Missile Stinger	FMS	General Dynamics Corporation (USA)
	Anti-tank Missile Tow	FMS	Hughes Aircraft Corporation (USA)
	Ship-to-air Missile Tartar	FMS	General Dynamics Corporation (USA)
	Anti-ship Missile Harpoon	FMS	McDonnel Douglass Astronautics (USA)

*Defense of Japan 1983, translated by Japan Times, Ltd., from White Paper, Defense Agency, Japan, August 1983.

Reference 18. Changes in Volume of Equipment Procurements by Procurement Method (Unit: $100 million)

Classification / Year	Domestic Procurements (A)	Commercial Imports (B)	Foreign Military Sales (FMS) (C)	Military Assistance Program (MAP) (D)	Total (E = A + B + C + D)	Ratio of Domestic Procurements (%) (A/E)
1950-57	2,415	95	25	3,569	6,104	39.6
1st Defense Buildup Plan (1962-66)	2,789	109	168	1,405	4,471	62.4
1961	702	63	60	261	1,086	64.6
2nd Defense Build-up Plan (1962-66)	5,781	424	382	497	7,084	81.6
3rd Defense Buildup Plan (1967-71)	12,829	662	478	33	14,002	91.6
4th Defense Buildup Plan (1972-76)	21,588	1,001	617	0	23,206	93.0
1977	5,846	222	194	0	6,261	93.4
1978	7,126	209	1,014	0	8,349	85.4
1979	7,373	394	885	0	8,652	85.2
1980	10,506	567	801	0	11,875	88.5
1981	8,158	604	1,368	0	10,130	80.5

Notes: 1. "Domestic Procurements," "Procurement by Commercial Imports" and "Procurement by FMS" show the total amount of contracts through "central procurement" and "local procurement." "Procurement by MAP" refers to the amount of such assistance received (including the lend-lease ships).

2. Numerical values do not tally, in some cases, with their total because they are rounded off.

APPENDIX E:
COPRODUCTION AUTHORIZED
JANUARY 1, 1976 - JUNE 30, 1980

Coproduction Authorized With Japan Since January 1, 1976 (As of June 15, 1980)*

U.S. Company	Foreign Entity	Date Approved	Date Expires	Commodity
Kollmorgen	Nippon Kogaku	3/20/80	12/31/90	Submarine Periscope
McDonnell Douglas	Shimadzu Seisakusho of Japan	12-12-78	12-11-93	Head Up Display for F-15 Aircraft
EG&G	Eagle Industry Co., Ltd.	10-2-79	9-30-80	F-100 Engine for F-15 Aircraft
Kaiser	Shimadzu Seisakusho Ltd.	3-4-79	3-3-95	Head Up Display
McDonnell Douglas	Shimadzu Seisakusho Ltd.	3-3-80	3-1-95	Overspeed Detection Unit for F-15-Aircraft
A-T-O Inc.	Shinko Electric Co., Inc.	3-5-80	3-4-2000	Relays for P-3C Aircraft
United Technologies	Hoskushin Electric of Japan	2-25-80	2-2-90	Electronic Air Inlet Controller for F-15 Aircraft
Honeywell	Japan Aviation Electronics Ind., Ltd.	1-14-80	1-14-90	AN/APN-194 (V) Radar Altimeter System
Plessey Dynamics	Mitsubishi Electronic of Japan	12-18-79	1-31-80	Oil Cooler Duct Actuator for P3C Aircraft
Sun Chemical Corp.	Tokyo Kokukeiki Kabushiki Kaisha of Japan	11-14-79	11-13-86	Altimeters, Cabin Rate Indicators & Airspeed Indicators
United Technologies	Sumitomo of Japan	11-14-79	11-5-89	Propeller

*U.S. Government Accounting Office Report on Military Coproduction Programs, Appendix 2, I.D. No. 82-23, March 18, 1982.

Coproduction Authorized with Japan Since January 1, 1976 (As of June 15, 1980)

U.S. Company	Foreign Entity	Date Approved	Date Expires	Commodity
Bendix	Shinko Electric Co.,	10-16-79	10-3-90	Regulators, Generators
Rohr Industries, Inc.	MI of Japan	10-3-79	10-2-94	F-100 Forward Ducts for F-15 Aircraft
McDonnell Douglas	Daicel Ltd.	10-1-79	9-30-94	F-15-Aircraft Assemblies
Parker-Hannifin Corp.	Teijin-Seiki of Japan	9-12-79	9-10-89	P-3C Parts
Hazeltine	Tokyo Communication Equipment Co., Ltd.	9-24-79	9-30-94	AN/GPA-124 IFF Coder Decoder; AN/GPM-64 Coder Decoder
West Electronics	Nippon Aircraft of Japan	8-30-79	12-31-91	Sidewinder Power Supply
Ragen Data Systems, Inc.	Tokyo Kokukeiki Kabyshiki Kaisha of Japan	8-21-79	8-20-89	Various Indicators for F-15 Aircraft
Goodyear Aerospace	Mitsubishi Precision Co., Ltd.	8-22-79	8-20-94	F-15J Simulators for Flight Training
Bendix	Ishikawajima Harima Heavy Industries	8-17-79	8-15-89	Parts for T-56 Engine on the P-3C Aircraft
B. F. Goodrich	Kayaba Industry Co., Ltd.	8-17-79	8-16-90	Wheel & Brakes for P-3C Aircraft
TRW	Ishikawajima Harima Heavy Indistries	7-19-79	7-18-94	Electrochemically Machined Parts for F-15 Aircraft
Texas Instruments	Mitsubishi Electric of Japan	6-22-79	6-30-81	Magnetic Detecting System

Coproduction Authorized With Japan Since January 1, 1976 (As of June 15, 1980)

U.S. Company	Foreign Entity	Date Approved	Date Expires	Commodity
TRW	Nittoku Metal Industry Co., Ltd.	6-28-79	6-28-89	Airfoils for F-15 Aircraft
Rockwell	Tokyo Aircraft of Japan	6-5-79	6-5-89	Horizontal Situation Indicator for F-15 Aircraft
Rockwell	Nippon Electric of Japan	6-6-79	6-5-89	Adapter Mounts for F-15 Aircraft
Sargent-Fletcher	Shin Maiwa Ind. of Japan	6-6-79	3-31-89	Fuel Tank for F-15 Aircraft
Litton Guidance Systems	Toshiba Corp. of Japan	5-17-79	5-16-94	AN/ASN-109 (LTN-31) INS for F-15 Aircraft
Teledyne Ryan	Mitsubishi of Japan	5-23-79	5-30-89	AN/APN-217 Doppler Navigation Set
TRW	Mitsubishi of Japan	5-21-79	5-18-94	Fuel Transfer & Booster Pumps for F-15 Aircrafts
Bendix	Hokushin Electric Works	5-23-79	10-3-85	Instruments & Transceivers for F-15 Aircraft
Bendix	Kayaba Industry Co., Ind.	5-23-79	10-17-80	Wheel & Brake Components for F-15 Aircraft
EPSCO	Shimadzu Seisakusho	5-1-79	4-26-89	Signal Data Converter
Bendix	Tokyo Aircraft Instrument Co., Ltd.	5-3-79	6-2-89	Instruments for P-3C Aircraft

Coproduction Authorized With Japan Since January 1, 1976 (as of June 15, 1988)

U.S. Company	Foreign Entity	Date Approved	Date Expires	Commodity
Datron Systems	Sumitomo Precision Products	4-24-79	4-23-84	Flap Actuator Devices for F-104 Aircraft
Abex	Denison Hydraulics Japan Ltd.	4-24-79	4-23-89	Hydraulic Products
Lear Siegler	Kanto Koku Keiki K.K. of Japan	4-25-79	4-23-89	Automatic Flight Control System for P-3C Aircraft
Rockwell	Mitsubishi Electric of Japan	4-20-79	4-18-89	Direction Finder for F-15 Aircraft
Ex-Cell-O	Ishikawajima Harima Heavy Ind.	4-18-79	3-1-94	Augmentor Spray Manifold for F-100 Engine for F-15 Aircraft
Magnavox	Nippon Electric	4-13-79	4-30-89	AN/ASA-76 Signal Generator Transmitter Group
Simmonds Precision	Nokushin Electric Works Ltd.	4-18-79	4-16-86	Fuel Oil Quantity Gaging System & Torque Measurement Systems for P-3C Aircraft
Aircraft Porous Media, Inc.	Daikin Kogyo Co.,	4-3-79	4-3-86	Filtration Equipment for F-100 Engine for F-15 Aircraft
McDonnell Douglas	Mitsubishi Electric of Japan	4-4-79	4-3-94	Components for F-15 Aircraft
General Electric	Toshiba Corp.	3-26-79	3-26-94	Gyro Systems for F-15 Aircraft
Swedflow, Inc.	Mitsubishi Rayon Co., Ltd. of Japan	3-29-79	3-28-97	Transparent Stretched Acrylic Sheet for F-15 Aircraft

Gull Airborne Instruments	Tokyo Aircraft Instrument Co.	3-29-79	3-28-89	Fan Turbine Inlet Temperature Indicator for F-15 Aircraft
Garrett Corp.	Mitsubishi Heavy Ind.	3-21-79	3-20-91	Components for F-15 Aircraft
United Technologies	Hokushin Electic	4-30-79	4-27-89	Temperature Control for P-3C Aircraft
Datagraphix, Inc.	Fujitsu of Japan	3-13-79	12-31-89	Tactical Data Display Group for P-3C Aircraft
Teledyne	Shinko Electric	3-13-79	3-12-89	Evan History Recorder for F-15 Aircraft
Itek	Tokyo Keiki Co. Ltd.	1-10-79	1-9-89	Radar Warning System Computer Cards for F-15 Aircraft
Lockheed	Nippon Electric Co., Ltd.	2-15-79	2-14-89	Tactical Data Display Group for P-3C Aircraft
General Electric	Goshiba Corp.	2-12-79	2-9-94	AN/AYA-8B for P-3C Aircraft
MOOG, Inc.	Mitsubishi Heavy Ind.	2-12-79	2-8-89	Control Stick Boost & Pitch Compensator for F-15 Aircraft
Garrett Corp.	Shimadzu Seisakusho Ltd.	2-5-79	1-31-94	Components for F-15 Aircraft
McDonnell Douglas	Mitsubishi Precision	2-8-79	2-6-94	Interference Blanker for F-15 Aircraft
Teledyne	Toyo Communications	2-1-79	12-31-87	RT-1063B/APX-101 (V) IFF Transponder for F-15 Aircraft

Coproduction Authorized With Japan Since January 1, 1976 (as of June 15, 1989)

U.S. Company	Foreign Entity	Date Approved	Date Expires	Commodity
Lextron, Inc.	Teijin Seiki Co., Ltd. of Japan	10-4-78	10-2-88	Servo Valves and Helicopter Parts
General Electric	Nittoku Metal Industries of Japan	10-27-78	10-31-93	Ammunition Handling System - F-15
Pneumo Corporation	Mitsubishi Heavy	10-27-78	10-31-88	Stabilator for F-15
Pneumo Corporation	Sumitomo Precision	10-27-78	10-31-88	Main Gear, Less Actuator & Nose Cone
Pneumo Corporation	Sumitomo Precision Products of Japan	10-27-78	10-31-88	Aileron for F-15
Sundstrand	Mitsubishi of Japan	7-23-76	7-22-86	Q-Flex Accelerometers
Pneumo Corporation	Kayaba Industries of Japan	10-27-78	10-31-88	Bypass, First-Pump & Diffuser for F-15
ATO, Inc.	Shinko Electric Co., Ltd., Japan	11-1-78	10-30-98	Contractors - F-15
General Motors	IHI Heavy Industries of Japan	11-7-78	11-6-88	T-56A-14 Engine for P-3C
Bendix	IHI Heavy Industries	11-7-78	11-6-88	Fuel Control Components for P-3C
Industrial Tectonics	Koyo Seiko Co. of Japan	11-9-78	11-7-88	Aircraft Bearings

Bendix	IHI Heavy Industries of Japan	11-9-78	11-7-88	Temperature Datum Control for P-3C
Pneumo Corporation	Teijin Seiki Co. of Japan	10-27-78	10-31-88	Nose Steer, Input-Nose Steer and Flap Drive - F-15
Parker Hannifin Corp.	Teijin Seiki Co. of Japan	11-22-78	11-21-78	Hydraulic Valves for F-15 Aircraft
Hazeltine	Toyo Comm. Co., Ltd.	9-18-78	9-15-93	AN/APX/76A Interrogators
Motorola	Nippon Electric of Japan	8-16-76	8-16-86	Command Destruct Receiver
Browning Arms	Miroku of Japan	9-29-76	1-1-82	Sporting Rifles
Lockheed	Kawasaki	6-30-78	6-30-88	P-3C Aircraft
McDonnell Douglas	Mitsubishi	6-26-78	6-23-93	F-15 Aircraft
Honeywell	Aviation Electronics	7-26-76	Indefinite	GG1111AJ05 Gyroscopes
IBM	IBM, Japan	1-4-77	12-31-83	Data Processing Equipment for Data Encryption System
United Technologies	Ishikawajima-Harima Ind.	6-26-78	3-31-90	F-100 Engine Components
EDMAC Associates	Japan Radio Co.	2-9-78	2-28-85	AN/APR-75 Sonobuoy Recivers

Hughes	Mitsubishi Electric	6-27-78	6-27-93	APG-63 Radar
Dynamic Control	Shinko Electric	6-27-78	6-23-88	F-15 Aircraft Armament Control Systems
SSP Products, Inc.	Yokohama Rubber Co.	6-26-78	6-23-88	Pneumatic & Fuel Duct Assemblies for F-15 Aircraft
Sundstrand	Teijin Seiki	6-27-78	6-23-88	Pneumatic & Fuel Valves for F-15 Aircraft
United Technologies	Ishikawajima-Harima	10-20-77	10-31-87	Model JFC-80 Fuel Control
Raytheon	Hitachi Ltd.	9-2-76	8-25-86	DE-1160B Sonar
Sperry	OKI Univac Kaisha Ltd.	9-14-77	9-30-87	MK 95 Input/Output Console
Aeronutronic Ford	Mitsubishi Electric	3-22-76	3-22-86	Communications Satellite
Hazeltine	Toyo Communications	6-26-78	6-30-93	AN/TPX-46(V) IFF Interrogators
Litton	Tokyo Shibaura Electric Co.	3-29-78	3-28-90	ANTSQ-73 System
Sundstrand	Teijin Seiki Co., Ltd.	7-3-78	7-3-88	Hydraulic Gear Pumps for P-3C Aircraft
Sundstrand	Teijin Seiki Co., Ltd.	7-6-78	7-3-88	Fuel Boost Pumps for P-3C Aircraft

Coproduction Authorized With Japan Since January 1, 1976 (as of June 15, 1980)

U.S. Company	Foreign Entity	Date Approved	Date Expires	Commodity
Sundstrand	Teijin Seiki Co., Ltd.	7-3-88	7-3-88	Engine Fuel Pump for P-3C Aircraft
Anglo American Aviation Co.	Teijin Seiki Co.,	9-30-77	9-30-92	Spare Parts - F-15 Program
Honeywell	Japan Aviation Electronics Ind.	11-5-76	11-3-86	Radar Altimeter Equipment
Litton Industries	Fujitsu Ltd.	10-19-76	12-31-83	Microwave Tubes
Talley Industries	Daicel Ltd.	2-26-76	2-25-86	Rocket Catapult System for T2 & F104 Aircraft
Honeywell	Japan Aviation Electronics Ind.	8-17-78	8-31-88	HDC-301 Computers
Good year	Yokohama Rubber Co., Ltd.	8-16-78	8-16-88	Fuel Tanks for F-15 Aircraft
Lear Siegler	Shinko Electric Co., Ltd.	6-27-78	6-23-98	Electric Generator System for F-15 Aircraft
Eagle Picher	Japan Storage Battery Co., Ltd.	5-5-78	5-3-88	Batteries for the Hawk Improvement Program
McDonnell Douglas	Shinko Electric Co., Ltd.	8-17-78	8-16-88	Landing Gear Components for F-15 Aircraft

APPENDIX F:
U.S. - JAPAN AGREEMENT OF NOVEMBER 1983 ON TECHNOLOGY EXCHANGE

Reference 38. Chief Cabinet Secretary's Comment on Japan's Offer of Equipment and Technology to the U.S.*

January 14 (Friday), 1983

The Japanese Government has been asked since June last year by the U.S. Government to carry out a reciprocal exchange of technology in defense area between Japan and the U.S.

As a result of deliberate study within the Government on the problem of Japan's offer of equipment and technology to the U.S. as part of the proposed exchange of technology, in defense area, the following conclusion has been reached and approved at today's Cabinet meeting:

1. The Japan-U.S. security system stipulates the maintenance and development of the two countries' respective defense capabilities through mutual cooperation. And to date, Japan has obtained various forms of cooperation from the U.S., including the U.S. offer of technology to Japan, for the development of Japan's defense capability.

Considering new developments in recent years, including the vast improvement of Japan's technological level, Japan regards the reciprocal exchange of technology in defense area with the U.S. as being extremely indispensable to the maintenance of the effective operations of the Japan-U.S. security system.

This is in line with the purport of the Japan-U.S. Security Treaty and related arrangements which lay down reciprocal cooperation in defense area between the two countries, and also contributes to the peace and security of the Far East.

2. As regards the export of weapons and such, the Japanese Government has so far dealt with the matter in accordance with the three principles on weapon exports (including the government policy adopted on February 27, 1976, concerning weapon exports).

In view of the afore-mentioned circumstances, however, the Japanese government, in compliance with the U.S. request, will pave the way for the offer of weapon technology to the U.S. (including items which are vital to making such an offer effective and which fall under the category of weapons) as part of the reciprocal exchange, without being restrained by the three principles on weapon exports in case of the said offer.

In this case, Japan's offer of weapon technology to the U.S. will be carried out within the framework based on rules related to the Japan-U.S. treaty of mutual defense. By so doing, the basic perception of Japan as a peace-loving state, on which the three principles on weapon exports, designed to prevent the spread of international disputes, are based, will be maintained.

3. It goes without saying that the Japanese Government, for its part, will continue to stick to the three principles on weapon exports and respect the purport of Diet resolutions adopted in March 1981 regarding the weapon export issue.

---

*Defense of Japan 1983, translated by Japan Times, Ltd., from White Paper, Defense Agency, Japan, August 1983.

Mainichi Daily News
Dedicated To International Understanding
Wednesday, November 9, 1983

Japan, US Ink Accord On Mil. Tech Transfer

–Joint Panel To Be Formed–

Japan and the United States exchanged diplomatic notes here Tuesday on an agreement for Japan to provide military-related technology to the United States.

Foreign Minister Shintaro Abe and U.S. Ambassador Mike Mansfield signed the agreement after it was approved by the cabinet, one day before the arrival here of President Ronald Reagan.

Accordingly, the Japanese government has accepted the transfer to the United States of Japanese technologies "necessary for improvement of U.S. defense capabilities" in accordance with detailed arrangements to be concluded between responsible authorities of the two countries.

The two governments agreed to establish a joint military technology commission to handle the transfers.

The Japanese side of the commission is comprised of one official each from the Defense Agency, the Foreign Ministry and the Ministry of International Trade and Industry, while the American side is represented by one official each from the American Embassy in Tokyo and the Office of Mutual Defense Assistance in Japan.

Still to be decided is what technologies will be transferred to the United States.

A Foreign Ministry official said that the decision will be made on the basis of American requests, taking into account Japanese national interests.

The transfer is to be conducted under the framework of the 1954 Mutual Defense Assistance Agreement (MDA) so that the technology transferred does not violate the United Nations Charter, is not diverted for another purpose and is not transferred to third countries.

The official who briefed reporters on the agreement said individual items of technologies transferred to the United States would be made known to the public "after thorough examination," in consideration of American requests.

The Japanese government decided to open the way for the transfer to the United States of Japanese military technology on Jan. 14 this year, shortly before Prime Minister Yasuhiro Nakasone visited Washington.

Japan has so far dealt with the question of arms exports, including the transfer of military technology in accordance with its three principles of banning the export of arms to a country to which the United Nations prohibits such sales, or ones involved or expected to be involved in armed conflict.

The Japanese government said the transfer to the United States of military technology would not be subject to these principles.

The note by the Japanese government to the United States said that the decision was made in view of the new situation, which has been brought about by the recent advance of technology in Japan in order to ensure an effective operation of the Japan-U.S. security arrangements.

Following that decision, Japanese and American officials conducted negotiations on arranging such technology transfer.

During the negotiations the American side requested the conclusion of an umbrella agreement, calling for the continuous comprehensive transfer of technology without "bureaucratic red tape," while the Japanese side insisted on making arrangements item by item, according to government sources.

The two sides made concessions in the last few days prior to the presidential visit so that a comprehensive agreement was reached, but the Japanese side reserved the right to decide on which technologies would be provided, the sources said.

EMBASSY OF THE
UNITED STATES OF AMERICA

No. 988 Tokyo, November 8, 1983

Excellency,

I have the honor to acknowledge the receipt of Your Excellency's Note of today's date, which reads as follows:

Tokyo, November 8, 1983

Excellency,

I have the honor to refer to the Mutual Defense Assistance Agreement between Japan and the United States of America signed at Tokyo on March 8, 1954 (hereinafter referred to as "the MDA Agreement"), which provides, inter alia, that each Government will make available to the other such equipment, materials, services, or other assistance as the Government furnishing such assistance may authorize, in accordance with such detailed arrangements as may be made between them. The Government of Japan, taking into consideration the assistance extended by the United States of America, including the transfer of defense-related technologies, under the MDA Agreement for the purpose of enhancing the defense capability of Japan, and recognizing the new situation which has been brought about by, inter alia, the recent advance of technology in Japan, has decided to reciprocate in the exchange of defense-related technologies in order to ensure the effective operation of the Japan-United States security arrangements, by opening a way for the transfer to the United States of America of military technologies.

In this connection, the Government of Japan confirms that the transfer of any defense-related technologies other than military technologies from Japan to the United States of America has been and is in principle free from restrictions, and welcomes the transfer to the United States of America of defense-related technologies, effected upon the initiative of and by mutual consent of the parties concerned. Such transfer will be encouraged.

His Excellency

Shintaro Abe,

Minister for Foreign Affairs,

Tokyo.

On the basis of the said decision by the Government of Japan, the representatives of the Government of Japan and the Government of the United States of America have held discussions on the ways and means to facilitate the flow of defense-related technologies from Japan to the United States of America and, for such purpose, have decided to establish a framework to implement the transfer of military technologies from Japan to the United States of America. The following is the understanding by the Government of Japan of the results of the above-mentioned discussions:

1. (1) Subject to the detailed arrangements to be concluded under paragraph 3, the Government of Japan will authorize, in accordance with the relevant laws and regulations of Japan, transfer to the Government of the United States of America and the persons authorized by it of such military technologies necessary to enhance defense capability of the United States of America, as will be identified and determined in accordance with the provisions of paragraph 2 below.

(2) For the purposes of the present understanding, the term "military technologies" means such technologies as defined in the Annex attached hereto and includes articles which are necessary to make transfer of military technologies effective and fall under "arms" as defined in the said Annex.

2. (1) A Joint Military Technology Commission (hereinafter referred to as "the JMTC") shall be established as the means for consultation between the Government of Japan and the Government of the United States of America on all matters requiring mutual consultation regarding the implementation of the present understanding. The JMTC may discuss, where appropriate, matters concerning defense-related technologies.

(2) The JMTC shall be composed of two national sections.

The Japanese Section shall be composed of:

a representative of the Defense Agency;

a representative of the Ministry of Foreign Affairs; and

a representative of the Ministry of International Trade and Industry.

The United States Section shall be composed of:

a representative of the Mutual Defense Assistance Office in Japan; and

a representative of the Embassy of the United States of America in Japan.

(3) The JMTC shall serve, in particular, as the means for consultation in identifying military technologies to be transferred.

(4) The JMTC shall meet in Tokyo annually or upon request from either Section.

(5) The relevant information concerning a request of the Government of the United States of America for transfer of military technologies from Japan shall be communicated to the Japanese Section through the diplomatic channel in advance of a JMTC meeting where such request is to be discussed.

(6) Based on the information received from the United States Section and discussion within the JMTC, the Japanese Section shall determine such military technologies as are appropriate to be authorized by the Government of Japan for transfer to the Government of the United States of America and the persons authorized by it and communicate to the United States Section the result thereof through the diplomatic channel.

3. The detailed arrangements providing for, inter alia, military technologies to be transferred, persons who will be party to the transfer, and the detailed terms and conditions of the transfer, will be concluded between the competent authorities of the two Governments in order to implement the present understanding. The competent authorities of the Government of the United States of America will be the Department of Defense; the competent authorities of the Government of Japan will be those to be notified to the Government of the United States of America through the diplomatic channel.

4. The present understanding will be implemented in accordance with the MDA Agreement which provides, inter alia:

(a) that the furnishing and use of any such assistance as may be authorized by either Government shall be consistent with the Charter of the United Nations;

(b) that each Government will make effective use of assistance received pursuant to the MDA Agreement for the purposes of promoting peace and security in a manner that is satisfactory to both Governments, and neither Government, without the prior consent of the other, will devote such assistance to any other purpose; and

(c) that each Government undertakes not to transfer to any person not an officer or agent of such Government, or to any other government, title to or possession of any equipment, materials, or services received pursuant to the MDA Agreement, without the prior consent of the Government which furnished such assistance;

and arrangements concluded thereunder.

5. (1) Pursuant to the provisions of Article III, paragraph 1 of the MDA Agreement, the Government of the United States of America agrees to take such security measures as would guarantee the same degree of security and protection as provided in Japan, and no disclosure to any person not an officer or agent of the Government of the United States of America of classified articles, services or information accepted by the United States of America, will be made without the prior consent of the Government of Japan.

(2) The Government of the United States of America will exempt any taxes or other fiscal levies which may be imposed in the United States of America in connection with the transfer of military technologies authorized by the Government of Japan under the provisions of paragraph 1 above.

I have the honor to propose that, if the above understanding is acceptable to the Government of the United States of America, the present Note and Your Excellency's reply of acceptance shall be regarded as constituting an agreement between the two Governments which shall enter into force on the date of Your Excellency's reply and shall remain in force until six months after the date of the receipt of notice of termination by either Government.

I avail myself of this opportunity to renew to Your Excellency the assurance of my highest consideration.

Shintaro Abe
Minister for Foreign Affairs
of Japan

ANNEX

(1) The term "military technologies" means such technologies as are exclusively concerned with the design, production and use of "arms" as defined in the Policy Guideline of the Government of Japan on Arms Export of February 27, 1976.

(2) (a) The term "arms" as referred to above is defined in the said Policy Guideline as "goods which are listed from Item No. 197 to Item No. 205 of Annexed List 1 of the Export Trade Control Order of Japan, and are to be used by military forces and directly employed in combat". The said Policy Guideline proclaims that equipment related to "arms" production will be treated in the same manner as "arms".

(b) The relevant part of Annexed List 1 of the Export Trade Control Order:

197	Firearms and cartridges to be used therefor (including those to be used for emitting light or smoke), as well as parts and accessories thereof (excluding rifle-scopes)
198	Ammunition (excluding cartridges), and equipment for its dropping or launching, as well as parts and accessories thereof
199	Explosives (excluding ammunition) and jet fuel (limited to that the whole calorific value of which is 13,000 calories or more per gram)
200	Explosive stabilizers
201	Military vehicles and parts thereof
201 - 2	Military vessels and the hulls thereof, as well as parts thereof
201 - 3	Military aircraft, as well as parts and accessories thereof

202	Anti-submarine nets and anti-torpedo nets as well as buoyant electric cable for sweeping magnetic mines
203	Armor plates and military steel helmets, as well as bullet-proof jackets and parts thereof
204	Military searchlights and control equipment thereof
205	Bacterial, chemical, and radio-active agents for military use, as well as equipment for dissemination, protection, detection, or identification thereof

I have the honor to confirm on behalf of the Government of the United States of America that the foregoing understanding is acceptable to the Government of the United States of America and to agree that Your Excellency's Note and this reply shall be regarded as constituting an agreement between the two Governments which shall enter into force on the date of this reply and shall remain in force until six months after the date of the receipt of notice of termination by either Government.

I avail myself of this opportunity to renew to Your Excellency the assurance of my highest consideration.

Michael J. Mansfield
Ambassador Extraordinary
and Plenipotentiary of
the United States of America

APPENDIX G:
FY 1984 BUDGET OF THE
TECHNICAL RESEARCH AND DEVELOPMENT INSTITUTE (TRDI)

TECHNICAL RESEARCH AND DEVELOPMENT INSTITUTE BUDGET FOR FY 1984

The total FY 1984 Technical Research and Development Institute (TRDI) budget is $369,106,000. Of this amount $239,672,000 is allocated for so-called new R&D items. TRDI's 84 main R&D program elements for the Japan Defense Agency, listed below, total $193,223,000, an amount included in the $239,672,000.

		($000)
I	AIRCRAFT	
	Intermediate Trainer (XT-4)	$ 31,145
	Engine for above (XF 3-30)	4,234
	Target Drone (XJ/AQM-4)	6,400
	Shipboard ASW Helicopter	42,494
	Aircraft System Simulator	0
	FADFC (Engine Fuel Control)	268
		$ 84,541
II	GUIDED MISSILES	
	Ground-based ASM (XSSM-1)	$ 23,060
	Dogfight Missile	3,410
	Improved SAM Rocket Motor	405
	HTPB Rocket Propellant	213
	Active Radar Seeker	0
	Manuevering Body	0
	MM Wave Seeker Studies	157
		$ 27,245
III	ARTILLERY AND VEHICLES	
	New Tank (TK-X)	$ 11,643
	Armored Reconnaisance Vehicle	1,455
	Projectile Structural Research	660
	Armor Structural Research	247
	Mine Control Equipment	838
	MICV	16,689
	1 Cyc Diesel Engine Trial Production	387
	New Special Fuze	523
	New Smoke Projectile	0
		$ 32,442

APPENDIX G

IV ELECTRONIC EQUIPMENT

Signal Processor	$ 580
Sonar OQS-X, Surface Ship	4,791
Microwave Characteristics Evaluation Equipment	1,530
New Surveillance Radar	13,234
Moored Sonar LQQ-4	6,272
Future Artillery Computer	13,587
Fiber Optic Data Bus	180
Modular ECM	3,872
Tail Warning for F-15	1,681
Radar Absorbent Materials	460
Tactical Signal Jammer	0
	$ 46,187

V SHIP AND UNDERSEA WEAPONS

Signal Transmission Equipment	$ 0
Surface Effect Ship	387
Submarine Quieting	149
Air Droppable Mines	949
High Pressure Equipment	330
Advanced Propeller (GRX-3)	648
Pressure and Welding Structure Models	345
	$ 2,808

GRAND TOTAL..... $193,223