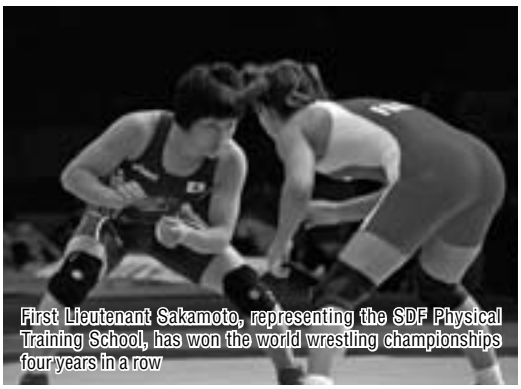
Part III

Measures for Defense of Japan

Chapter 4

Citizens of Japan, the Ministry of Defense and the SDF



First Lieutenant Sakamoto, representing the SDF Physical Training School, has won the world wrestling championships four years in a row

Section 1. Sustaining Defense Capabilities

Defense capabilities are the ultimate guarantee of a country's security and no other means can replace this function. It is not enough for the SDF, as the core of the defense capabilities, to simply create the necessary organization, but it is also indispensable to earn the understanding and support of the Japanese citizens in order to execute its missions.

Defense capabilities depend on organization and human resources. Under the security environment of recent years, missions have become more diverse and international in character, and equipment within the Ministry of Defense and the SDF[1] has been improved. Human resources must therefore be improved too, which means securing and training high-quality personnel.

It is essential that information and communications capabilities and related equipment keep up with this changing environment. Thus, various approaches are taken, from the viewpoint of strengthening information and communications capabilities and acquiring related equipment more promptly and appropriately.

This section explains the development of the organization and of human resources in the Ministry of Defense and the SDF, measures for the enhancement of information and communications capabilities, the effective and efficient procurement of equipment and the enhancement of technical research and development.

1. Organization of the Ministry of Defense and the SDF

The SDF, the core of Japan's defense capability, is a specialist organization that plays the most essential role in the continued existence of the country, that is, national defense. The SDF consists of a full range of units and services that provide the functions required to fulfill that responsibility.

1. Organization of the Ministry of Defense and the SDF

The Ministry of Defense and the SDF consist of a number of organs that center on the GSDF, MSDF, and ASDF, to fulfill their mission of defending Japan as armed organizations, and a number of other organs including the National Defense Academy, National Defense Medical College, National Institute for Defense Studies, Defense Intelligence Headquarters (DIH), Technical Research and Development Institute (TRDI), Equipment Procurement and Construction Office, and the Inspector General's Office of Legal Compliance.

In January 2007, the Japan Defense Agency was upgraded to the Ministry of Defense. With this transition, a ministerial post responsible for the defense of Japan was created, which has empowered the Minister of Defense to present various policy options commensurate with the policy planning administrative body. This has reinforced the function of policy planning and capabilities for accurately and promptly responding to a number of emergency situations. (See Figs. III-4-1-1,2)

2. System to Support the Minister of Defense

The Minister of Defense, in accordance with the provisions of the SDF Law, is in charge of the SDF, and is supported by the Senior Vice-Minister of Defense and two Parliamentary Secretaries for Defense. The Minister of Defense is supported by the Administrative Vice-Minister of Defense in supervising administrative work. Defense Counselors have provided support to the Minister of Defense in setting up basic policies. However, in FY 2009, the Defense Counselor system, which has lost its effective function, will be abolished, and the Defense Council and post of Special Advisor to the Minister of Defense will be established by law in order to strength the support system to the Minister of Defense and ensure civilian control.

Moreover, the Internal Bureau, Joint Staff and Ground Staff Office, Maritime Staff Office, and Air Staff Office support the Minister of Defense. The Internal Bureau is responsible for basic policies relating to the

work of the SDF. The Deputy Vice Minister of Defense and Directors-General of the Bureaus, as part of their own responsibilities, support the Minister of Defense when the Minister of Defense gives instructions and authorization to the Chief of Joint Staff (Chief of Staff, Joint Staff), and Chief of Ground Staff (GSDF Chief of Staff), Chief of Maritime Staff (MSDF Chief of Staff), and Chief of Air Staff (ASDF Chief of Staff). The Joint Staff is a staff organization for the Minister of Defense concerning SDF operations. The Chief of Joint Staff supports the Minister of Defense by providing unified military expert advice on SDF operations. The Ground Staff, Maritime Staff, and Air Staff are the staff organizations for the Minister of Defense concerning their respective services (excluding operations, with the Chiefs of Staff for the GSDF, MSDF, and ASDF acting as the top-ranking expert advisors to the Minister of Defense.

Fig. III-4-1-1 Organizational Chart of the Ministry of Defense

(As of end of FY 2008)

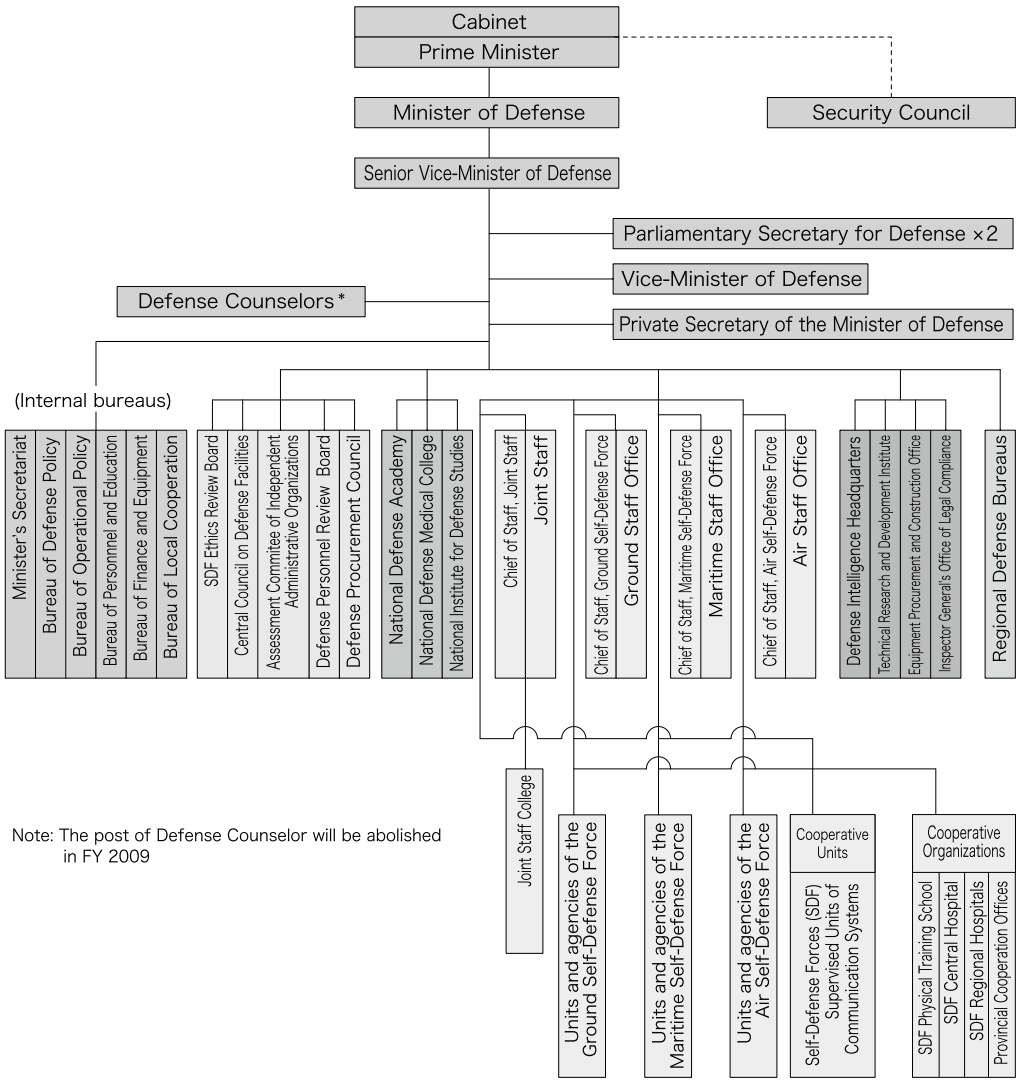


Fig. III-4-1-2 Outline of the Ministry of Defense

Organization	Outline
GSDF (see Location of Principal SDF Units at the end of the book)	○ Regional Armies ・Composed of multiple divisions, brigades and other directly controlled units (such as engineer brigades and anti-aircraft artillery groups) ・There are five regional armies, each mainly in charge of the defense of their respective regions ○ Divisions and Brigades Compared to the combat troops, composed of logistics support units which support combat units and others
MSDF (see above)	○ Self-Defense Fleet ・Consists of key units such as the Fleet Escort Force, the Fleet Air Force (consisting of fixed-wing patrol aircraft units and such), and the Submarine Force ・Responsible for the defense of the sea areas around Japan primarily through mobile operations ○ Regional Units The five regional units mainly guard their posts and support the Self-Defense fleet
ASDF (see above)	○ Air Defense Command ・Composed of three air defense forces and the Southwestern Composite Air Division ・Primarily responsible for general air defense duties ○ Air Defense Force Composed of key units such as air wings (including fighter aircraft and others), the Aircraft Control and Warning Wing (including aircraft warning and control units), and Air Defense Missile Groups (including surface-to-air guided missile units)
National Defense Academy of Japan (Yokosuka, Kanagawa)	○ An institution for the cultivation of future SDF officers Conducts training and education for future SDF officers (including education that complies to university establishment standards which are the same as other universities) ○ Offers a science and engineering postgraduate course equivalent to a master's or doctoral degree from a university (undergraduate and postgraduate courses) and a comprehensive security postgraduate course equivalent to a master's degree. Conducts education and training in order to impart a high ability of knowledge and research capability
National Defense Medical College (Tokorozawa, Saitama)	○ An institution for the cultivation of future SDF medical officers Conducts education and training for future SDF officers who will serve as medical doctors (including education which complies to the School Education Act that universities with medical education also comply to) ○ Offers a medical course that complies with university establishment standards for PhD programs for schools of medicine. Conducts education and training in order to impart a high ability of knowledge of advanced theoretics, application, and related-research capabilities
National Institute for Defense Studies (Meguro-ward, Tokyo)	○ Organization that functions as a "think tank" of the Ministry of Defense ・Conducts basic research and studies related to the administration and operation of the SDF* ・Conducts research and compiles data on military history ・Educates SDF officers and other senior officials ・Manages books and documents of historical value located in the connected library
Defense Intelligence Headquarters (Shinjuku-ward, Tokyo)	○ Central intelligence organization of the Ministry of Defense, which collects and analyzes military data ・Collects various military intelligence, including signal intelligence, image information and information acquired by warning and surveillance activities; comprehensively analyzes and assesses the information; and provides information to related organizations within the ministry ・Consists of six communication sites and its headquarters
Technical Research and Development Institute (Shinjuku-ward, Tokyo)	○ Central organization that conducts equipment-related research and development ・Conducts R&D in response to the operational needs of each service of the SDF ・Conducts R&D in a wide range of fields, from firearms, vehicles, ships and aircraft used by each service of the SDF to equipment for responses to NBC weapons and clothing
Equipment Procurement and Construction Office (Shinjuku-ward, Tokyo)	○ Central organization for affairs related to equipment procurement and a part of the construction work required by the SDF to accomplish its duties ・Necessary equipment include firearms, explosives, fuel, guided weapons, ships, aircraft, and vehicles ・Within the construction work related affairs, the drafting of technical standards and evaluation of plans are conducted
Inspector General's Office of Legal Compliance (Shinjuku-ward,Tokyo)	○ Institution which checks the general operations of the Ministry of Defense and SDF from an independent perspective Checks the accounting procedures, bidding procedures and other operational procedures from an independent viewpoint to ensure they are conducted fairly and in accordance with the law
Regional Defense Bureau (eight existing in the country)	○ Local branch office that provides defense administration in the regions ・Conducts administrative work related to obtaining the cooperation of local public organizations and the local people, local equipment procurement, and administration related to facilities ・Existing in the following eight regions: Hokkaido, Touhoku, North-Kanto, South-Kanto, Central Kinki, Kyushu and Okinawa

3. Restructuring of the Ministry of Defense

In July 2008, a report was compiled by the Council for Reforming the Ministry of Defense, established at the Prime Minister's Office, and in August 2008, the Ministry of Defense released the Basic Policies for Organizational Reform in the Ministry of Defense and the Implementation Plan for Realizing Reform of the Ministry of Defense. The Ministry will conduct organizational reform in FY 2009, including the establishment of the Defense Council by law. The Basic Concept for 2010 Organizational Reforms was formulated in December 2008, and drastic organizational reform is now under consideration. (See Part IV, Section2)

4. Base of Defense Administration in Regional Areas

The relationship between the Ministry of Defense and local communities is increasing its importance. Consequently, in September 2007, the Ministry of Defense unified the local branch offices of the Defense Facilities Administration Agency (the Defense Facilities Administration Bureaus) and the regional organizations of the Equipment Procurement Office at the time of the disbandment and integration of the Defense Facilities Administration Agency, and established the Regional Defense Bureaus as the local branch offices to create a base for comprehensive defense administration in regional areas, including coordination and consultation with local governments and municipalities related to defense policies.

The Regional Defense Bureaus are making explanations to the local communities of the policies of the Ministry of Defense and the reorganization of the U.S. Forces (as work to ensure local cooperation to obtain the understanding and cooperation of local governments and residents), and implementing various policies such as local coordination in line with the improvement of defense facilities in order to smoothly and effectively implement the overall administrative works of the Ministry of Defense.

2. Recruitment and Employment of Personnel in the Ministry of Defense and the SDF

The Ministry of Defense and the SDF need highly qualified personnel in order to fulfill their missions. Uniformed SDF personnel and other personnel of the Ministry of Defense and the SDF are recruited and employed under various systems[2]. (See Reference 60)

Recruitment at local cooperation headquarters

1. Recruitment

At SDF Provincial Cooperation Offices, which are located in 50 locations throughout the nation (four in Hokkaido, and one in each prefecture), the Ministry of Defense and the SDF conduct recruitment with the help of prefectural and municipal governments, schools, private recruitment counselors and others. Local public organizations are also required to carry out administrative recruitment activities[3], and the Ministry of Defense defrays the costs incurred by local public organizations.

Since recruitment of the SDF personnel is likely to become increasingly difficult with the declining birth rate in Japan, it is necessary to seek the assistance of local public organizations, related organizations and other community organizations. (See Fig. III-4-1-3) (See Reference 61)

Voice of SDF Personnel Engaged in Recruitment

Master Sergeant Katsuhide Tsugihara
Muroran District Branch, SDF Sapporo Local Cooperation Office, GSDF

My duties as public information personnel started with the recruitment of Mr. F, who was then enrolled in a professional school. Mr. F had sufficient academic ability but was a reticient and mild-mannered man who worried about his weight. I coached him for the interview and told him to lose weight. Upon repeated practice, he gradually became capable of communicating his thoughts and opinions in interviews, but the day of the admission exam in autumn arrived without a significant reduction in his weight.

Master Sergeant Tsugihara recruiting personnel for the SDF

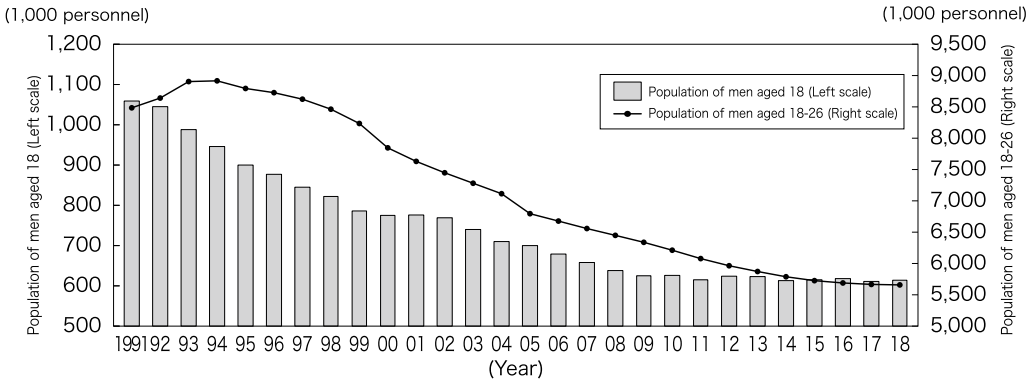
Mr. F passed the exam, but was told his figures for weight and body fat were high, as we expected. They passed him, but on the condition that he would improve these items by the time he actually joined the SDF. In response, we made concrete plans for reducing his weight, and I called him once every two weeks to hear how things were progressing. By these conversations, it seemed to me that he was making smooth progress in reducing his weight.

But when I met him three months later, I saw that, far from getting thinner, he had gained more weight. I had been feeling reassured by checking with him on the phone, and realized I had been too optimistic. I figured that, in his current state, he would not pass the physical examination on the day of his entry in the SDF unit, and decided to do some running with him in the evening once every three days. Nevertheless, his weight was slow to come down, and he began to get nervous. One day, when I paid a visit to his house after he did not show up for our run, he told me that he "had had enough" and had obviously given up the idea of enlisting. I spoke with his parents and asked them to persuade him to try again, promising to work together with him. With the encouragement of his parents, he again promised to make the effort with me, and we continued to run together for the next month and a half. He never said much to begin with, and did not express words of confidence, but I diligently worked with him nonetheless, always recalling how his mother had bowed to me and asked me to please help her son out.

At long last, the big day arrived. I was completely confident that he would pass, but still felt apprehensive until I knew that he had actually done so. Toward evening, I was finally informed that he had passed. I went to see him in the unit for educating new recruits. "Congratulations Mr. F, I mean, Private F," I said, and he gave me the biggest smile I had ever seen on his face. That night, I received a phone call from his delighted parents, who exclaimed that they had never seen their son look so happy. I couldn't describe the sense of satisfaction I felt.

The examinees have their own particular circumstances that vary with differences in aspects such as living environment. We public information personnel are not mere recruiters; I believe we must take it to heart that we are involved with the future of individuals who want to be SDF personnel as we help them enlist. As the father of a child about the same age as recruits, I am going to continue my efforts to be a reliable person and recruiter.

Fig. III-4-1-3 Changes in Male Population at the Ages Eligible for Recruitment of Males to the Short-Term Service



Sources: The data of prior to 2007 (excluding 2005); "Population Estimates of Japan 1920-2000" and "Annual Report on Current Population Estimates" by the Statistics Bureau of Ministry of Internal Affairs and Communications. Data of 2005; National Institute of Population and Social Security Research made calculations based on the "Population Census," by the Statistics Bureau of Ministry of Internal Affairs and Communications, and made corrections by proportionally distributing the population with unknown age. Data of 2008 and after; "Future Estimate of Japan' s Population" by the National Institute of Population and Social Security Research (based on average estimate as of December 2007).

2. Employment

(1) Uniformed SDF personnel

Uniformed SDF personnel enlist of their own free will on a volunteer basis and are employed as General Officer Candidates; General Candidates for Enlisted (Upper)[4], Privates (GSDF), Seaman Apprentices (MSDF), Airmen Third Class (ASDF), and others[5]. Because of the special nature of the work they do, personnel management performed for uniformed SDF personnel is distinct from that of general civilian government employees[6].

New recruits trying on their uniforms for the first time

Personnel management of the uniformed SDF personnel differs significantly from that of general civilian government employees because the former adopts an early retirement system and a short-term service system to keep the forces strong. Under the early retirement system, the uniformed SDF personnel retire at a younger age than general civilian government employees. Meanwhile, under the short-term service system, employment may be completed in two or three years. Upon employment, the uniformed SDF personnel who enlist in each SDF service complete the basic education and training in a training unit or at a school of each SDF service, and are then assigned to units and positions nationwide.

The preferences and aptitude of each personnel are taken into consideration when assigning them to occupational areas and positions, which are determined before they complete their basic education. (See Reference 62-63)

(2) SDF Ready Reserve Personnel, SDF Reserve Personnel, and Candidates for SDF Reserve Personnel

a. Purpose of Maintaining the Reserve Personnel System

Normally, the number of uniformed SDF personnel is kept to the minimum needed to respond to situations: Uniformed SDF personnel need to be available immediately in an emergency as the need arises. To meet such needs promptly and systematically, there are three systems[7]: the SDF Ready Reserve Personnel System, the SDF Reserve Personnel System, and the System for Candidates for SDF Reserve Personnel[8].

In particular, the System for Candidates for SDF Reserve Personnel, which is mainly for personnel without experience, was established to develop and expand the defense basis, secure the stability of SDF Reserve Personnel, and effectively use civilian expertise in fields such as medical practice and language skills.

There are two employment categories in the SDF Reserve Personnel system: general and technical. Personnel hired in the technical category are healthcare professionals and qualified technical personnel in such fields as languages and information processing.

Candidates for SDF Reserve Personnel are appointed as SDF Reserve Personnel following completion of the education and training necessary to work as SDF personnel. In recent years, SDF Reserve Personnel employed with qualifications as healthcare professionals have participated in general disaster prevention drills as medical officers once being appointed as SDF Reserve Personnel, and those employed through their language qualifications have been active as interpreters, participating in Japan-U.S. joint armies of the GSDF post exercises and activities in other fields, following their appointment as SDF Reserve Personnel. (See Reference 64)

b. Cooperation from Corporations Employing Personnel

In addition to carrying out their normal duties, SDF Reserve Personnel and other personnel are also expected to undergo training to maintain the required skills. To attend such training, they take leave or vacation, or adjust their work schedules accordingly. To function smoothly, such systems require the understanding and cooperation of the employers of the personnel. SDF Ready Reserve Personnel, in particular, attend training for 30 days a year, so employers need to allow Ready Reserve Personnel to take this leave and prepare for their absence.

To assist, the Ministry of Defense provides a special subsidy to companies and other organizations to cover for their Ready Reserve Personnel when attending training sessions and the like. This reduces the burden on such employers.

(3) Administrative Officials, Technical and Engineering Officials, Instructors, and Other Civilian Personnel

There are approximately 22,000 civilian personnel – administrative officials, technical and engineering officials, or instructors, and others – in addition to uniformed SDF personnel at the Ministry of Defense and the SDF. These civilians are mainly employed through the Recruit Examination for National Public Employee Level 1[9], or the Class I, II, or III Examination for Ministry of Defense Civilian Personnel. After participating in the same training course, civilian personnel who passed Level 1 and Class 1 or 2 undertake a wide range of work.

Administrative officials are engaged in the planning of defense policy in the Internal Bureau, analysis/research at the Defense Intelligence Headquarters as well as a variety of administrative work (budget, public relations, operations associated with military bases, etc.) at the SDF bases and the Regional Defense Bureaus throughout the country.

Technical and Engineering officials play a key role in constructing various defense facilities (command headquarters, runways, facilities for ammunition storage, etc.), carrying out R&D, and pursuing the effective procurement of equipment such as fighter aircrafts and vessels.

Instructors conduct advanced research relating to defense and provide high-quality education to SDF

personnel at the National Institute for Defense Studies, the National Defense Academy, and the National Defense Medical College.

As of the end of March 2009, there were 632 Technical and Engineering Officials and Instructors with doctoral degrees.

In addition, in various organizations where these civilian personnel are the main work force, uniformed SDF personnel of the GSDF, MSDF and ASDF work together with these civilian personnel, mainly in fields where the special knowledge of uniformed SDF personnel is required.

3. Daily Education and Training

In order to accomplish its missions such as the defense of the country, the SDF needs its commanding officers and other members to maintain high capacity, knowledge and skills, and it also needs each unit to maintain a high level of proficiency. SDF personnel are always required to be prepared to fully exert their capabilities in any situation, so that the SDF can immediately and appropriately deal with various situations and deter any country threatening to invade Japan.

GSDF personnel conducting shooting training from a helicopter

MSDF personnel during a fire prevention exercise

Education[10] and training are crucial for the SDF to strengthen its capabilities to accomplish its missions by developing its human resources. For this purpose the SDF is making efforts to educate and train its personnel and its units under various constraints to make them strong, and to maintain and improve its readiness to respond to any situation, paying careful attention to safety including preventing accidents.

1. Education of Uniformed SDF personnel

(1) Present Status of Education

Enhancing the ability of each uniformed SDF personnel is essential for the SDF units to perform their duties at units. At its schools and training units, therefore, the SDF provides life-long opportunities for systematic phased education according to position and duties to nurture the necessary qualities in order to cultivate quality, knowledge and skills of personnel.

When personnel need to improve their professional knowledge and skills, or if it is difficult for them to acquire such knowledge and skills within the SDF, they may study abroad or at external educational institutions[11]

ASDF personnel taking part in flight training

such as domestic companies, research institutes, and similar organizations. The SDF will continue to entrust this kind of education to a wide range of external educational organizations to help personnel further improve their qualifications, knowledge and skills.

Takakuwa, Sergeant first class, GSDF, from the SDF Physical Training School taking 5th place in the 200m individual medley at the Beijing Olympics

(2) Joint Educational Programs

The joint operations posture was started in March 2006. Knowledge and skills regarding joint operations are essential in order to make it work, and education concerning joint operations provides an important basis for that. Therefore, the three services of the SDF have enhanced education on joint operations at their respective Staff Colleges[12], and at other educational facilities. Additionally, a joint educational program system has been set up, mainly at the Joint Staff College[13], where SDF officers who will become Senior Unit Commanders and Senior Staff receive joint education.

(3) Educational Programs Meeting the Needs of the Times

The SDF has increasing opportunities to take part in international activities, and is developing more active relationships with other countries, and so has provided tuition in English, Russian, Chinese, Korean, Arabic, and other languages in addition to the programs mentioned above. The SDF has also been accepting students from abroad to increase understanding of other countries. Furthermore, in order to conduct international peace cooperation activities in an expeditious and continuous manner, the GSDF International Peace Cooperation Activities Training Unit carries out professional performance education and training for GSDF personnel throughout the country (mainly key personnel at the time of dispatch). The International Peace Cooperation Center (provisional name) will be established to implement education, research, PR activities related to international peace cooperation activities. (See Chapter 3, Section 1) (See Reference 65-66)

2. SDF Training

(1) Training by Each Self-Defense Force

There are two main types of training within units in the GSDF, MSDF, and ASDF: training for individual SDF personnel to improve their proficiency in respective fields, and training for units to conduct systematic operations.

Training for individuals is conducted one-on-one in stages based on occupational classification and individual ability.

Training for units is conducted by size of unit, from small to large, and large-scale comprehensive training is also carried out to ensure that overall abilities can be exercised. (See Reference 67)

In addition to such training for national defense, training is given on the diverse roles required for the SDF in recent years. (See Chapter 1 Section 2 , Chapter 3 Section 1)

An ASDF CH47J that has landed on the MSDF transport vessel *Shimokita* during a joint exercise; and GSDF personnel boarding on reconnaissance motorcycles and on foot

(2) Joint Exercises

In order to exert defense capabilities most effectively in case of an armed attack on Japan, the GSDF, MSDF, and ASDF must conduct joint exercises during peacetime. Therefore, the SDF has been conducting joint exercises involving two or more forces. Such joint exercises have been strengthened with the transition to a joint operations posture in March 2006[14]. (See Reference 67)

(3) Restrictions on Education and Training, and Responses

Various facilities and equipment[15] are available for SDF training under the nearest possible environment to that of real fighting, yet many restrictions are imposed on their usage.

Particularly, restrictions[16] in maneuver areas, waters and airspace, and firing ranges where training is carried out are becoming tighter along with the modernization of equipment and other changes. Such areas are not sufficient in size, are unevenly dispersed across the nation, and have time limitations. Furthermore, training under an electronic warfare[17] environment – conducted as practical training – is limited by the need to avoid radio wave interference.

To deal with these restrictions, each SDF makes maximum use of its limited domestic maneuvering areas. They also strive to carry out more practical training by conducing live-firing training and Japan-U.S. joint exercises in the United States and waters off the United States where there are training conditions not available in Japan. (See Reference 68)

(4) Safety Management

Because the primary mission of the SDF is to defend Japan, SDF training and activities are inevitably accompanied by risk. However, accidents that cause injury or loss of property to the public or the loss of life of SDF personnel must be avoided at all costs.

Continuous safety reviews and improvements are vital, and must be jointly handled by the Ministry of Defense and the SDF. The Ministry of Defense and the SDF take great care to ensure the safety of military vessel and aircraft traffic, and firing training at ordinary times, and prepare aeronautical safety radio facilities and equipment for prevention and rescue in the event of marine accidents.

(5) The Collision between the Destroyer *Atago* and the Fishing Boat *Seitoku Maru*

On February 19, 2008, the destroyer *Atago* collided with the *Seitoku Maru* fishing boat resulting in the deaths of its crew of two. It is extremely regrettable that the SDF, which is responsible for defending the lives and property of the Japanese people, caused such an accident. On May 22, 2009, the Ministry of Defense released the results of an investigation carried out by the MSDF accident investigation committee headed by the MSDF Vice-Chief of Staff[18].

The report attributed the main cause of the accident to a failure to conform to fundamental procedures for safe navigation, such as: a continuous watch with the naked eye and radars on the bridge and at the Combat Information Center[19]; close coordination between duty officers, including proper communication and reporting; and the appropriate collision avoidance measures taken by duty officers.

In order to prevent recurrence of a similar accident, the SDF must go back to basics and ensure that all assigned duties are carried out steadily. The Ministry of Defense is resolved to thoroughly implement the preventive measures recommended by the committee[20].

(6) Death of a Student in a Training Course related to MSDF Special Boarding Unit

A MSDF Petty Officer 3rd Class enrolled in the Special Boarding Unit Applied Training Course fell unconscious during a hand-to-hand combat training with two instructors and 15 other students on September 9, 2008 and died on September 25, 2008.

The Ministry of Defense compiled and released an interim report on October 22, 2008, detailing the investigation process by the MSDF Accident Investigation Committee established on September 10, 2008, headed by the Chief of Staff of the MSDF's Kure District Headquarters.

The following problems are considered to be associated with this incident. First, the training program was not appropriately planned and managed. Specifically, it does not seem that this hand-to-hand combat training with 15 students without a break was carried out carefully taking into account their skill levels or the number of people involved in the training. Second, it was not reasonable to conduct this kind of hand-to-hand combat training for a student whose enrollment had been decided to be cancelled.

This incident is still under investigation by the Accident Investigation Committee, as well as by the MSDF Criminal Investigation Unit. The Ministry of Defense will continue a detailed investigation of the facts in addition to taking necessary measures to prevent a recurrence of a similar incident.

4. Working Conditions of Personnel, Measures on Personnel Matters, and Other Related Issues

The duties of the SDF make no distinction between night and day. The work assigned to uniformed SDF personnel can be extremely demanding, involving various operations onboard aircraft, long-term service on ships or submarines, or parachuting. To instill SDF personnel with pride and allow them to concentrate on their duties without anxiety, the Ministry of Defense and the SDF strive to provide salaries and allowances, medical care, health and welfare, and benefits that reflect the special nature of their duties. (See Fig. III-4-1-4)

1. The Panel to Examine Comprehensive Reform in the Personnel Field of the Defense Force

The Ministry of Defense has acknowledged the significance of maintaining high-quality human resources, and has implemented various measures for the new era[21]. Given the rapidly declining birth rate in recent years and changes in lifecycles of SDF personnel, a wide range of reforms, which focus on the personnel field of the Defense Force, has become a pressing issue, in order to secure sufficient human resources and create a comfortable working environment where personnel can concentrate on their duties without anxiety. In September 2006, the Panel to Examine Comprehensive Reforms in the Personnel Field of the Defense Force was established. The panel is headed by the Minister of State for Defense (at the time), and includes top officials of the Defense Agency (at the time) and outside experts. Under their authority the panel has implemented various types of research projects and studies.

In June 2007, the panel produced a report[22] of its findings compiled in the following categories: "Recruitment Items," "Service Period Items," "Items on Measures for Aid and Post-Retirement," and "Other Items."

Furthermore, in August 2007, the "Panel to Implement Measures for the Comprehensive Reform in the Personnel Field of the Defense Force[23]," headed by the Senior Vice-Minister of Defense was established This panel gives consideration to the creation of new positions within the SDF and, as such, is working for the steady implementation of these reforms.

2. Efforts for Further Utilization of Female SDF Personnel

The Ministry of Defense is making efforts to employ and promote more women (as SDF personnel, administrative officials, etc.) while giving due consideration to maintaining the strength of the SDF as well as to the capability, aptitude and motivation of each individual. At the same time, the Ministry is improving the working environment for a healthy work-life balance as well as eliminating the idea of fixed distribution of roles for work based on gender. Efforts are also being made to dispatch female SDF personnel to disaster relief and international peace cooperation activities.

To provide childcare assistance to SDF personnel, who work under special working conditions (irregular work patterns, etc.), childcare centers were established at the GSDF Camp Mishuku in FY 2007, at the GSDF

Fig. III-4-1-4 Main Measures on Personnel Matters

Items	Measures by the Ministry of Defense and SDF	Related governmental activitie
Discussions on Reform of the Public Servant System	○ A partial amendment to the National Civil Service Law to be submitted to the Diet, which stipulates that measures in accordance with the general civil personnel shall be applied to the SDF personnel, followed by the adoption of competency- and performance-based personnel management and unified management of senior personnel by the Cabinet. ○ Discussions are currently being held on how to apply the systems, which have yet to be developed under the SDF Law and have been applied to regular service under revisions made in 2007 to the National Civil Service Law, to the SDF personnel while giving due consideration to the specific nature of the SDF as a special service.	Reform of the civil service System (Approved in the Cabinet meeting on April 24, 2007) Basic Act on Reform of National civil service System[1] (2008) Bill to Partially Amend the National Civil Service Law (submitted to the Diet in March 2009)[2]
Efforts for Gender Equality	○ The Defense Agency Headquarters for the Promotion of Gender Equality was established in 2001, with the Senior Vice-Minister of Defense as the head of the organization. It has implemented various measures. ○ In 2006, the headquarters drew up the Basic Plan for Gender Equality in the Defense Agency and made other decisions to promote: the expansion in the employment and promotion of female personnel, support for female personnel to balance work and family life, the improvement of facilities and accommodation on ships and other work areas to fit situations where more and more female personnel are being placed.	Gender-Equal Society Law (1999)[3]
Promotion of Measures to Support the Development of the Next Generation	○ The Defense Agency Committee for the Promotion of Measures to Support the Development of the Next Generation was established. ○ The Defense Agency drew up the Action Plan of the Defense Agency as a specific business proprietor. (In particular, encouraging male personnel to take child-care leave and special leave, and establishing day care centers on the premises of the Ministry of Defense and SDF).	Law for Measures to Support the Development of the Next Generation (2003)[4]
Approaches to Mental Health	○ After its establishment in 2003, the Defense Agency Headquarters for the Prevention of Suicide has discussed measures to prevent suicide and distributed referential materials on suicide prevention to garrisons and bases. ○ Efforts to enhance awareness among SDF personnel have been made through improvement in the counseling system, and the production and dissemination of educational videos. ○ In relation to mental health, measures on Post-Traumatic Stress Disorder and Critical Incident Stress have been deliberated.	
Active Utilization of Warrant Officers and Enlisted Personnel	○The GSDF, MSDF, and ASDF have assigned Warrant Officers and senior enlisted personnel new roles, including giving instruction on service discipline to enlisted personnel. For example, the MSDF introduced the Command Master Chief System in April 2003, while the ASDF introduced the Command Master System in April of last year, and the GSDF introduced the Master Sergeant Major System on a trial basis in 2008 .	
The Comprehensive Reform in the Personnel Field	○ The Panel to Examine Comprehensive Reform in the Personnel Field of the Defense Force was established in September 2006 with the Defense Agency Chief then as the chairman. They created reports on recruitment, items during one's tenure, measures taken for backup and after one's retirement, and on other items in June 2007. ○ In addition, the Panel to Implement Measures for the Comprehensive Reform in the Personnel Field of the Defense Force was established August 2007 with the Senior Vice-Minister of Defense as the chairman. They have steadily implemented the content of their report.	

Notes: 1. See <http://www.gyoukaku.go.jp/siryou/koumuin/080613kihonhou_honbun.pdf>
Notes: 2. See <http://www.gyoukaku.go.jp/koumuin/dai4/index.html>
Notes: 3. See <http://www.gender.go.jp/9906kihonhou.html>
Notes: 4. See <http://www.mhlw.go.jp/general/seido/koyou/jisedai/suisin.html>
Remark: As for the reference to the measures taken before the transition to the Ministry of Defense, the former name, "the Defense Agency," is used.

Camp Kumamoto in FY 2009, and will also be established in Yokosuka District in FY 2010.

In order to carry on the duties of personnel who take childcare leave, a system was introduced in FY 2007 to recruit fixed-term substitute personnel. As of end-March 2009, nine personnel had been recruited through this system.

Continued reviews are being carried out regarding the revision of restrictions on the assignment of female personnel to certain posts. In September 2008, restrictions with regard to assignments to destroyers, minesweeper tenders, and patrol helicopters[24] were lifted.

Voice of Female SDF Personnel Working on a Destroyer

Lieutenant Junior Grade Kaori Sei
Engineer on the *Hyuga*, MSDF

When I graduated from the faculty of literature of a regular university in March 2004, I wanted to experience a world that an ordinary corporate female employee would not be able to experience. For this reason, I decided to enter the Maritime Officer Candidate School in Etajima, Hiroshima Prefecture as a general officer candidate in the MSDF Officer Candidate School's 55th term.

Lieutenant Junior Grade Sei on duty in the cockpit

After completing the first year of study, I went on an ocean training cruise. Upon returning to Japan, I worked as an Assistant ASW officer on the training ship *Yamagiri*, a Communications Officer on the supply ship *Oumi*, and an Assistant Engineer Officer on the training ship *Kashima*. During this period, I had the opportunity to participate in three long-distance training voyages. On these voyages, I received practical officer training and strove to improve my own skills while sailing the oceans of the world.

I was assigned to the destroyer *Hyuga* as a Prospective Officer last November and engaged in work such as final adjustments for the ship's engine. When the *Hyuga* was commissioned on March 18 this year, I was appointed Assistant Engineer Officer. At present, I am busy every day with tasks aimed at making the *Hyuga* combat-ready as early as possible. My work includes the formulation of operating procedures for the *Hyuga's* new type of engine with fewer operators than ever before and the preparation of guidelines for damage control through proper response to fires and flooding. These are experiences an ordinary office employee would never have known, and perfectly in line with my motives for enlisting.

The *Hyuga* is the first destroyer to which SDF female personnel have been assigned. Its crew contains about 20 SDF female personnel, including myself. SDF female personnel have been assigned to training ships, supply ships, and other such vessels even in the past, and both male and female personnel have been given the same duties in the same work environment. The duties on a destroyer are sometimes physically hard for women to perform, but there is otherwise no difference from the vessels to which women have been assigned so far. All crew members–both female and male SDF personnel–are making efforts to execute their duties.

I am convinced that the placement of SDF female personnel on the *Hyuga* will lead to an increase in the number of women desiring duty on ships, and that their activities will also contribute to recruitment of manpower for the MSDF. As one of the first SDF female personnel to be part of a destroyer crew, I am determined to continue improving my capabilities, doing my utmost to improve the working environment for the smooth execution of duties by both men and women, and making a contribution so that women who follow me as SDF personnel will be able to exercise their abilities to the fullest in various assignments.

3. Efforts to Prevent Suicide among SDF Personnel

In 1998, the annual number of suicides in Japan exceeded 30,000 and has since maintained a high level. This is a serious social problem in Japan. The same is true for the SDF, with a record-setting 94 SDF personnel suicides in FY 2004, 93 suicides in FY 2006, 83 suicides in FY 2007, and 76 suicides in FY 2008.

The suicide of any SDF personnel is truly a great tragedy for both the suicides themselves and their bereaved families, and it is also a great loss for the SDF to lose capable personnel. The Ministry of Defense established, in July 2003, the Defense Agency Headquarters for the Prevention of Suicides (at the time), headed by the Parliamentary Secretary for Defense (at the time), and took the following measures to prevent suicide. Much effort will be continued to be made for the prevention of suicide.

1) Expanding the counseling system (inside counselors, outside counselors, mental health care officers, and a 24-hour telephone hotline for counseling).
2) Promoting education, to ensure that commanders feel signs of mental problems among subordinates, and that enlisted personnel are aware of their own mental health.
3) Setting a campaign period for the measures regarding mental health in spring and summer, which is when personnel are transferred, to enhance the measures for example: having commanders closely monitor the mental condition of subordinates whose environment has been changed due to personnel transfer, providing various reference materials and providing lectures.

4. Commemorating Personnel Killed in the Line of Duty

Since the establishment of the National Police Reserve in 1950, which has evolved through the National Safety Force and the Coastal Safety Force into the SDF today, SDF personnel have been striving to accomplish the noble mission of protecting the peace and independence of Japan. They have accomplished this by devoting themselves unstintingly to training, day and night, to live up to the expectations and trust of the Japanese citizens, regardless of danger, and with a strong sense of responsibility. During this time, however, more than 1,700 personnel have lost their lives in the line of duty.

Prime Minister Aso giving a memorial address at a memorial ceremony for SDF personnel killed in the line of duty

In the Ministry of Defense and the SDF, funeral ceremonies are carried out by each SDF unit, to which the personnel killed in the line of duty belonged, in order to express condolences to them. Moreover, in order to eternally recognize the achievements of the SDF personnel killed in the line of duty, and to express deep honor and condolences, memorial ceremonies are carried out in various forms, and support is provided to the families of the deceased[25].

5. Retirement and Outplacement of Personnel, and Related Issues

1. Retirement and Outplacement of Personnel

There is an early retirement system and a short-term service system for uniformed SDF personnel, to keep the forces strong. Unlike civilian personnel of the central government, many uniformed SDF personnel retire by their mid- 50s (personnel serving under the early retirement system) and their 20s (most uniformed personnel serving under the short-term service system).

To resolve concerns that uniformed SDF personnel may have about their future, it is essential to ensure that they can lead stable lives after retirement, and thus can work diligently without any worries while in service.

Such treatment also boosts morale and makes it easier to attract high-quality human resources.

For these reasons, the Ministry of Defense places great importance on outplacement measures for retiring uniformed SDF personnel in personnel matters, and assists outplacement, such as by providing occupational training to teach useful skills, and by effectively using employment information[26].

Various local organizations help retiring SDF personnel find new jobs. On the other hand, since the Ministry of Defense is not authorized to conduct employment placement services itself, the SDF Assistance Foundation – with the permission of the Minister of Health, Labour and Welfare, and the Minister of Land, Infrastructure and Transport – offers free employment placement services. As the job market is expected to remain tight, assistance from local governments and other organizations is also becoming increasingly necessary.

Retired Regular Personnel of the SDF work in various sectors, including the manufacturing and service industries, and are now increasingly being employed as risk management staff, including disaster prevention, by local public organizations. Retired SDF personnel are highly evaluated by their employers because they generally have an excellent sense of responsibility, diligence, physical strength, spirit, discipline and other qualities. In particular, those retired or reaching mandatory retirement age have great leadership skills cultivated through many years of service. (See Fig. III-4-1-5)

Fig. III-4-1-5 Main Measures for Reemployment Support

Items	Description
Occupational aptitude testing	○Testing aimed to provide guidance on the basis of individual aptitudes
Technical training	○Provide transferable technical skills for use after retirement (e.g. heavy-duty/special-purpose vehicle operation, information processing skills, crane operation, vehicle maintenance, boiler operation, handling dangerous materials) Technical training
Driver training	○Grant heavy-duty vehicle license
Disaster prevention and risk control training	○Provide technical knowledge on disaster prevention administration and the Civil Protection Plan
Correspondence courses	○Provide capabilities to obtain official certification (e.g. social insurance officer, health manager, realestate business manager) to SDF Regular Personnel that will take mandatory retirement
Business management training	○Enlighten SDF Regular Personnel that will take mandatory retirement so that they foster social adaptability. Also provide know-how to lead a stable life after retirement or reemployment
Career guidance	○Prepare near-retiree SDF Regular Personnel to find new employment and provide them with know-how to choose new occupation

2. Regulations on Outplacement of Personnel after Retirement

There are restrictions on the outplacement of uniformed SDF personnel to ensure impartiality in public duties. For example, within the first two years after a person leaves the SDF, if the prospective employer is a private company that had a contract with the Ministry of Defense within five years before said person leaves the SDF, then the approval[27] of the Minister of Defense or other regulated personnel is required. In 2008, the Minister of Defense approved 93 individual cases (93 persons) of reemployment of uniformed SDF personnel at private companies.

3. Reappointment System

The reappointment system allows the reemployment of personnel who have the desire and capabilities to continue working as SDF personnel after they reach the retirement age. The system makes the best possible use of experienced and valuable human resources, and secures the linkage between employment and pension. Under this system, the Ministry of Defense and the SDF have reappointed 367 personnel as of the end of March 2009. Furthermore, from the standpoint of building an environment for uniformed SDF personnel, who reach retirement earlier than general civilian government employees to focus on their duties with a sense of security, there are plans to revise the Reappoint System from the existing appointment within one year to make appointments possible within three years when under 60 years of age. (See Fig. III-4-1-6)

Fig. III-4-1-6 Overview of Reappointment System

Item	Administrative officials and others	SDF regular personnel
Basic approach	○ Present mandatory retirement age to remain in place; personnel in their early 60s who have the ability and desire to work in the public service to be reappointed	○ While maintaining present mandatory retirement age, personnel with the desire and ability to work as SDF regular personnel beyond the mandatory retirement age remains to be appointed to a position determined by the Minister of Defense
Job conditions	○ Full-time ○ Shorter-time service	○ Limited to full-time service
Period of reappointment	○ One year, with renewal allowed	○ Renewal is allowed within one year (term for personnel under 60 is intended to be within three years). ○ Extension is allowed for a certain period of time (between six months to a year) in the case of mobilization
Maximum age for reappointment	○ 65 (Maximum age was 61 between FY 2001 to FY 2003. Subsequently, the age has been increased incrementally by one year, every three years)	
Salary and allowance	○ Fixed monthly salary is provided based on job level and rank. Allowances, such as a commuting allowance, are provided	

6. Enhancing Information and Communications Capabilities

Information and communications are the basis for command and control, from the central commands to respective headquarters of each SDF, and to the lower units. It is what is called the “central nervous system” of the Ministry of Defense and the SDF. Thus, to enhance information and communications capabilities, which are directly linked to the ability to complete missions, the Ministry of Defense is making efforts to develop more extensive and flexible information and communications systems to meet the demands for joint operations and international peace cooperation activities.

1. Response to the Information Technology (IT) Revolution

In response to the IT revolution of recent years, the Ministry of Defense and the SDF are pursuing information superiority[28], and are developing the infrastructure to integrate their defense capabilities to ensure efficient operations. The following three core measures have been taken: 1) Developing sophisticated networks and frameworks, including the Defense Information Infrastructure (DII) and Common Operating Environment (COE);

2) Enhancing information and communications capabilities[29], such as the Central Command System (CCS) and the C2 (command and control) systems of the GSDF, MSDF, and ASDF; and 3) Assuring information security, such as responding to cyber attacks against the Ministry of Defense and the SDF.

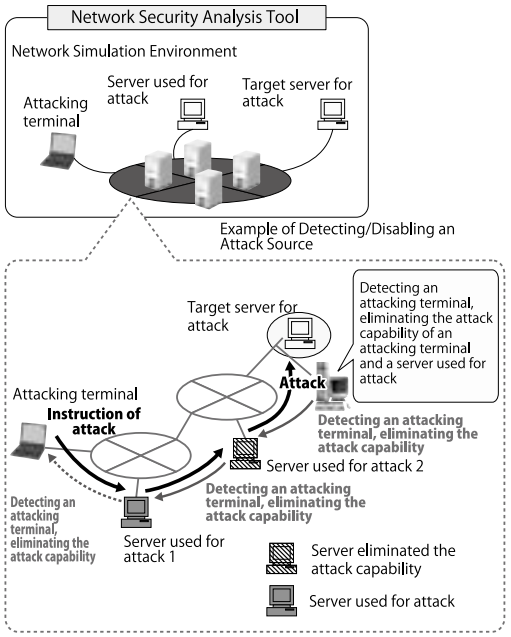
2. Future Policy for Information and Communications (Action Plan)

In order to meet the new operational requirements, it is necessary to develop more varied and flexible information and communications systems. The MOD has set policies and objectives to strengthen command and communications capabilities and developed advanced information and communications systems [30].

Now, DII is a MOD-wide network infrastructure, to which almost all systems are connected, and COE is incorporated into various kinds of C2 systems, and is being applied to logistics and accounting systems.

With respect to responses to cyber attacks, the SDF C4 Systems Command (C4SC) was newly established in March 2008 and response procedures were developed and implemented to deal with cyber attacks. Several efforts are also under way to strengthen cyber-attack response capabilities, for example, equipping with state-of-the-art protective systems and carrying out research and development of technologies to respond to cyber attacks. (See Fig. III-4-1-7) (See Part II, Chapter 2, Section 5)

Fig. III-4-1-7
Research on Anti-Cyber Attack Technologies



7. Efforts for Effective and Efficient Acquisition of Defense Equipment

Appropriate and efficient acquisition of defense equipment is one of the most important elements for Japan's defense. It is also imperative to always maintain an indispensable production and technological base for defense equipment in Japan. The MOD has therefore implemented a range of measures relating to the acquisition of defense equipment.

1. Comprehensive Acquisition Reform

The Ministry of Defense has been promoting comprehensive acquisition reform. The major goals are: more efficient and streamlined procurement, supply and Life Cycle Cost (LCC)[31] of defense equipment and materials; enhancement of open and transparent procurement processes; as well as preservation and upgrading of the necessary defense production and technological infrastructure.

Once procured, major defense equipment is used over a long period of time, ranging from 10 to 20 years or more. Therefore, acquisition reform towards more efficient and streamlined management of equipment–from concept-refining, development, production, operation (including maintenance, repairs and modernization) to disposal–is of increasing importance. In light of this fact, the Ministry of Defense established the Equipment Procurement Office (then) in July 2006 with the aim of achieving more efficient equipment acquisition[32].

The MOD is pursuing a variety of efforts for efficient procurement of equipment and materials. These include the package purchase of equipment in a single fiscal year rather than over multiple fiscal years; lump-sum purchase of equipment and materials instead of respective purchase by the three SDF services; commoditization of certain specifications at the development stage; introduction of commercial off-the-shelf products; private consignment; and review of equipment maintenance costs.

While the Japanese government is making efforts to assure appropriate public purchasing in all fields, the MOD has also been reviewing limited tendering contract procedures to enhance the transparency and fairness of the procurement process. Limited tendering contract procedures are being reformed by expanding the scope of the comprehensive evaluation bidding system[33], increasing the number of contracts for package purchase of equipment over multiple fiscal years, and introducing efficient bidding procedures. A Deputy Director-General in charge of audit was appointed at the Equipment Procurement Office in July 2006, while a councilor in charge of auditing and an audit division were set up in the Internal Bureau in the MOD in August 2006.

2. Efforts for Comprehensive Acquisition Reform

In October 2007, a Project Team for the Promotion of the Comprehensive Acquisition Reform was organized, with the Parliamentary Secretary for Defense at the helm, in response to a Ministerial Directive for the Acceleration of the Comprehensive Acquisition Reform. The Report of the Acquisition Project Team (the Report)[34] comprised measures to deal with commercial import issues in response to, for example, the padded-billing case by Yamada Corporation, as well as measures to strengthen LCC management and set cost reduction goals.

The Report has prescribed a detailed schedule for the implementation of individual measures to clarify the steady progress of the Reform. Each responsible department has been conducting work in accordance with the schedule.

On July 30 and December 25, 2008, the Project Team met and confirmed the steady progress of individual projects. The progress thus far is outlined below.

(1) Actions for Commercial Import Issues

(i) In order to prevent a recurrence of padded billing, such as the case of Yamada Corporation, the Ministry has established special provisions for commercial import procurement (direct inquiry of estimates, doubling of the penalty for breach of promise regarding padded-billing) (since April 2008), held information sessions to foster direct contracting (in July 2008), and introduced commercial import investigations to check records of the trading company's accounting system. (December 2008).

(ii) Price survey procedures have been prepared (September 2008) and the number of import liaisons has been increased from 3 to 10 people to enhance the price survey function in the United States. (Since October 2008)

(iii) Establish a Commercial Import Procurement Division in the Equipment Procurement and Construction Office. (FY 2009)

(2) Strengthening of Management of Life Cycle Costs

(i) Establish a Life Cycle Cost Management Office in the Equipment Procurement and Construction Office (EPCO)

(ii) Pilot operations (LCC Annual Report on Selected Equipment, Report to the Minister) in preparation for full-scale operations from FY 2009 (since March 2008)

(iii) Promotion of LCC research/education (a joint seminar with U.S. DoD and Japan Aerospace Exploration Agency (JAXA) in June 2008)

(3) Establishment of Performance Targets for Cost Control

(i) A comprehensive cost reduction goal of a 15% reduction in costs by FY 2011 in comparison with costs in FY 2006 with regard to R&D, procurement and maintenance of defense equipment.

(ii) Rate of cost reduction: Average of around 8.8% (reduction of approx.170 billion yen) in FY 2007, average of around 8.6% (reduction of approx.170 billion yen) in FY 2006 (provisional value), average of around 13.9% (reduction of approx. 280 billion yen) in FY 2009 (provisional value).
(See Part II, Chapter 2, Section 5)

(4) Expansion of Incentive Contracts System

The Ministry has introduced a new and more effective incentive contract[35] system that improves the evaluation procedure for contractor's proposals which promotes corporate cost reduction activities by reviewing the overall system to enhance the effect of incentive contracts. One case has been taken on (October 2008).

(5) Review of Central and Local Procurement

(i) In order to further improve transparency, the approval of Minister of Defense is now required for high-value limited tendering contracts for local procurement (same level as central procurement: over 150 million yen) (Since July 2008).

(ii) In order to manage central and local procurement in a unified manner, appropriate systems are going to be established (FY 2009-FY 2010).

(6) Other

(i) In order to incorporate the streamlining of supply, maintenance, procurement and education, in addition to joint operations, into the development of defense capabilities, the Joint Coordination Committee on Equipment was set up in the Joint Staff (July 2008).

(ii) The Technology Evaluation Committee was set up as a new evaluation framework to promote comprehensive acquisition reform, including the reduction of development costs. (May 2008)

3. Enhancement and Expansion of the Defense Production & Technological Base

Regarding defense equipment, it is necessary to pursue effective and efficient acquisition of defense equipment that adequately responds to the development of joint operations and meets the needs of troops, taking into account the latest trends in military science and technology. Therefore, for the acquisition of equipment the SDF selects the most appropriate method of procurement–domestic production, import, or domestic production under license agreement–on the basis of reviews that take into consideration not only performance and price, but also maintenance, supply, ease of education and training, and the necessity of Japan's own improvements.

At the same time, securing a domestic production and technology base that possesses the production capacity and technological capability to supply outstanding domestically produced equipment plays an important role. This is because regarding major defense equipment such as aircraft, ships, tanks and guided missiles, production

volumes are low as a whole, initial investment required is high and a high level of technological capability is required. The number of companies able to develop and produce these types of equipment is therefore limited to one or a handful of companies. For this reason, there is a possibility that withdrawal from the market of a single firm involved in the manufacture of equipment could immediately interfere with the stable acquisition and maintenance of equipment. When procuring equipment from outside of Japan, maintaining this domestic production and technology base makes it possible to secure negotiating power with partner countries and acquire equipment under conditions as favorable as possible to Japan.

For this reason, the Ministry of Defense, taking severe financial circumstances and the importance of life cycle cost management into account, believes that priority should be given to establishing, maintaining and fostering a defense production and technological base, taking the approach of selection and focus. (See Reference 69)

8. Enhancement of Technical Research & Development

In the Ministry of Defense, strict financial circumstances make it necessary to select and concentrate research programs (e.g. by sharing works with the private sector, focusing on fields of our country's superiority).

1. Research & Development of the Technical Research & Development Institute (TRDI)

It has become necessary to introduce emerging technologies into R&D, and to conduct deeper analysis on operational needs. For these purposes, a number of new R&D methods are being adopted[36].

A pilot research project will be launched in FY 2009 allowing individual SDF personnel to communicate with each other and share information. In order to reflect the opinions of users concerning operational performance improvements and weight reduction in the research of this system technology, research activities shall be carried out using a wide range of evaluation data based on practical operations and the results of experiments[37] on C4I2 (Command, Control, Communication, Computer, Intelligence and Interoperability) and cooperation between defense force units.

In view of joint operations to realize organizational combat through networking of forces, high-performance digital data link systems shall be developed for loading fighter aircrafts.

In order to optimize the performance, schedule and cost throughout the lifecycle of equipment, it is effective to thoroughly conduct trade-off analyses on a number of proposals regarding performance and cost at the point of concept creation or R&D. Additionally, it is effective to continuously follow-up for improvements and other necessary measures, after deployment of equipment. Continuous study is underway as part of efforts to enhance the R&D system.

2. Strengthening Relations with the Commercial-off-the-Shelf (COTS) Technology Field

In regard to R&D at the Ministry of Defense, the National Defense Program Guidelines and the Mid-Term Defense Program state that efforts should be made "by proactively introducing advanced technology of industrial, governmental, and academic sectors."

TRDI aims to investigate and introduce superior technologies in the private sector. As part of this effort, basic technology research themes have been selected, and investigation and research projects that invite public participation by not only private corporations, but also various research organizations, were introduced.

Advanced Information Combat Equipment System (AICES) prototype

Furthermore, technological information is exchanged with organizations such as the Japan Aerospace Exploration Agency (JAXA), Information Technology Promotion Agency (IPA), National Institute of Health Sciences and National Maritime Research Institute. Utilization of such projects is intended to push forward introduction of a wide range of superior technology from research organizations and corporations.

It is also important to spread the outcome of R&D at the Ministry of Defense into the private sectors. The Ministry of Defense is cooperating to promote the conversion of aircraft that have been developed as SDF aircraft for civil use, since this may lead to a reduction in the procurement costs of such aircraft. The Ministry of Defense is cooperating with other related ministries and agencies through the Council of Ministries and Agencies Related to Promotion of Development of Civil Aircrafts[38].

[COLUMN]

COMMENTARY

Fighter Aircraft Stealth Technology (Electro-Magnetic Waves)

Ever since their appearance, fighter aircraft have always been developed by mobilizing the most advanced technology of the times. The so-called fifth generation of fighters represented by the U.S. F-22 feature a stealth capability, high maneuverability, and sophisticated electronic equipment, and boast an overwhelmingly superior fighting power. As a result, various other countries are pursuing programs of research and development (R&D) related to items such as the stealth capability, which is one of the key technologies of the fifth-generation fighters. This trend will presumably gather even more momentum over the coming years.

Japan, too, has thus far carried out ground testing of the stealth capabilities of fighter aircraft. These capabilities are realized mainly through reduction of radar echo (i.e., reducing the radar cross section (RCS)). The ways of curtailing radar echo include having the waves reflected in a particular direction using a shape that prevents them from being reflected back in the direction of the point of origin, and application of an absorbent to absorb the electro-magnetic energy (see Figure 1).

Figure 1

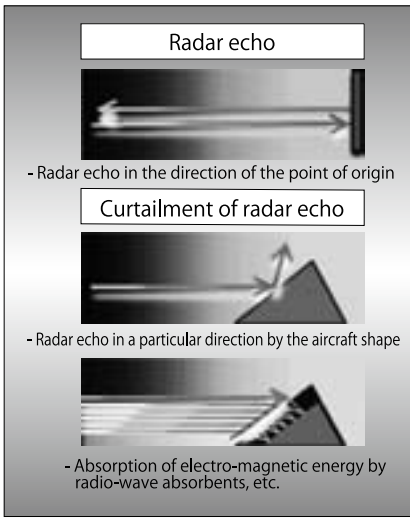
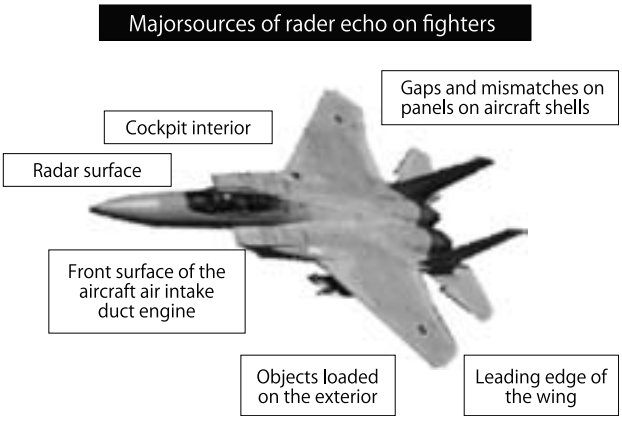


Figure 2

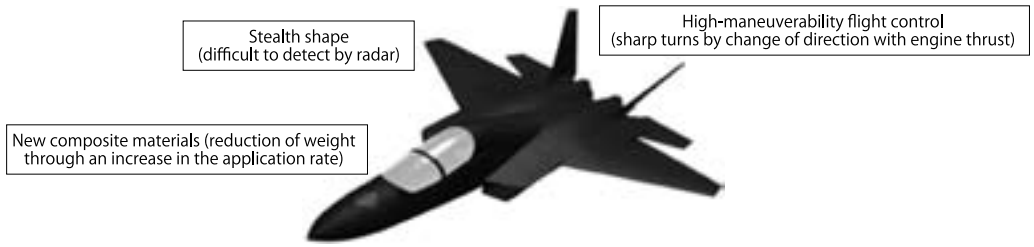


The main sources of echo on a fighter are the leading edges of the main wings and tails, air intakes, and the surface disparity of panels on the fuselage shell. Curtailment of radar echo from these parts is linked to RCS reduction (see Figure 2).

The major specific type of RCS-reducing technology consists of altering the fuselage, panels, and air intake ducts into special shapes (see Figure 3).

The Technical Research & Development Institute of the Ministry of Defense has been promoting various research programs aimed at acquiring such technology. In a project for "Research on Flight Control System for Enhanced Maneuverability" to test the RCS-reducing technology on the level of an entire aircraft as the culmination of its ground testing research to date, it produced a full-aircraft, actual-sized RCS model and obtained all sorts of data with it in France. As for future activities, besides researching technical practicality, we are going to acquire various data through application to real aircraft under actual environments in the context of "Research on Advanced Technology Demonstrator Aircraft", and also intend to compile all types of documentation conceivably required for studies of air defense in Japan.

Figure 3



[COLUMN]

VOICE

Voice of Female Technical Officials Working in R&D

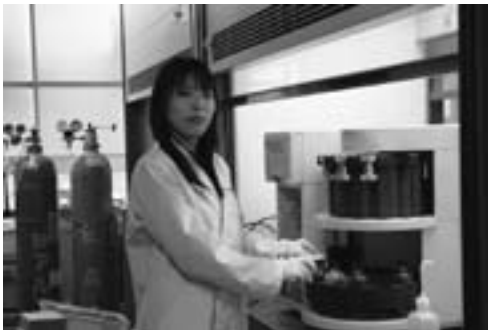
Technical Official Risa Kimoto
Surface Ship Systems Section, Systems Division, Naval Systems Research Center
Technical Research & Development Institute

I joined the Technical Research & Development Institute as an electronic engineer in 2005.

Currently, I am engaged in hydrodynamic and hydro acoustic evaluation testing for naval ships in the Flow Noise Simulator (FNS). The FNS is a large, low-turbulence, re-circulating water tunnel with a very low background noise level. The FNS is one of the most technically advanced cavitation tunnels in the world, and it is capable of conducting a wide variety of naval hydrodynamic / hydro acoustics tests with large scale models. Most of the tests in the FNS require hard work, but that increases the pride I have for my job.

Inside the measurement tunnel of the flow noise simulator

Technical Official Eri Kawashima
NBC Detection Technology Section
Human Oriented Systems Division, Advanced Defense Technology Center
Technical Research & Development Institute


In the chemical laboratory

I joined the Technical Research & Development Institute as a chemical engineer in 2005. Since being assigned to the NBC Detection Technology Section, I have been constantly engaged in the research and development (R&D) of a palm-sized automated chemical agent detector (PACAD). Initially, I carried out basic research, such as the verification of detection mechanisms and the examination of detection algorithms. The R&D of PACAD is currently in the prototyping stage, and I get busier and busier every year because of the increase in workload that involves coordinating meetings and performing tests in addition to the routine research work. Though very busy, I am learning more and more by experiencing various tasks, and I get a sense of satisfaction out of my job.

Technical Official Takako Yasunaga
Guidance and Control Research Section, Missile Research Division
Air Systems Research Center
Technical Research & Development Institute


Inside the missile system simulator

I joined the Technical Research & Development Institute as an electronic engineer in 2005. Presently, I am working at the Guidance and Control Research Section, which has been conducting physical simulations of guided weapons. The Missile Research Division conducts research, test and evaluation on the guidance and control of missiles to confirm performance. As missiles apply a wide range of technologies depending on their missions and operation, I conduct physical simulation tests for various prototypes. We must have a deep understanding of the characteristics of the guided weapon, as well as their target, for each test in preparation.

I feel a sense of responsibility for my mission as these missiles are produced domestically and deployed on each corps after these tests. Besides, I am encouraged by the satisfaction I get from conducting research on the state-of-the-art technologies for future guided weapon systems.