In recent years, risks to the stable use of global commons, such as outer space, cyberspace, and the oceans, are emerging as a new security issue. Factors behind this include the fact that activities in realms that cannot be perceived from conventional geographical perspectives, such as outer space and cyberspace, have become an important basis for national security and people’s daily lives, due to further advances in military science and technology, and information and communications technology. Moreover, there is considerable concern about the security of maritime traffic, including discussions about freedom of navigation and the frequent occurrence of piracy in recent years.

**Development and Utilization of Outer Space**

As Japan maintains an exclusively defense-oriented policy, it is extremely important to use outer space, which does not belong to any nation’s territories and which is not constrained by conditions such as surface topography, in order to strengthen information gathering to detect any indications of various situations in advance, and enforce warning and surveillance functions in Japan’s surrounding sea areas and airspace, as well as ensuring means of communication in activities such as international peace cooperation of the SDF.

Based on the Basic Space Law, the Cabinet’s Strategic Headquarters for Space Policy established the Basic Plan on Space Policy in June 2009; in January 2013, the new Basic Plan on

**Space Situational Awareness (SSA) Capabilities**

The MOD is promoting enhancement of the C4ISR function* through utilization of outer space, which does not belong to any nation’s territories and which is not constrained by conditions such as surface topography. For example, the MOD plans to launch a next-generation high-performance X-band communication satellite in FY2015.

Meanwhile, as a result of the increase in the number of countries developing and utilizing outer space, more and more countries have become capable of estimating the SDF’s capabilities from outer space. In addition, space debris, which could damage satellites, has been increasing, and technologies to degrade the functions of satellites, including anti-satellite weapons, are improving.

Therefore, for the stable use of outer space, it is very important to deepen study on maintaining more effective space situational awareness (SSA) capabilities, for example which serve as collision avoidance between space debris and satellites. Such capabilities include detection and identification of suspicious satellites and space debris with radars and optical telescopes, and analyzing and cataloging their orbits with a dedicated system.

SSA capabilities will also significantly contribute to collision avoidance between space debris and satellites operated by not only the MOD but also civilian purpose related organizations using outer space. Thus, SSA capabilities will improve Japan’s stable development and use of outer space.

Therefore, it will be essential for future study to cooperate closely with relevant organizations that benefit from SSA capabilities in anticipation of constructing a whole-government SSA system.

*“C4ISR: “Command,” “Control,” “Communication,” “Computer,” “Intelligence,” “Surveillance” and “Reconnaissance.”*
Space Policy was established, which emphasized the three issues: “national security and disaster management”, “industrial development”, and “progress in frontier areas including space science.” Moreover, in July 2012, the Strategic Headquarters for Space Policy was established within the Cabinet Office, engaging in the planning, formulation, and coordination of policy on the development and use of outer space.

On the other hand, in January 2009, the Ministry of Defense’s Committee on Promotion of Space Development and Use established the “Basic Guidelines for Space Development and Use of Space.”

The Ministry of Defense is promoting development and use of outer space for national security in coordination with related ministries. In FY2013, the MOD will address projects such as 1) research on the enhancement of C4ISR functions utilizing space, 2) maintenance, and operation of X-band SATCOM, 3) participation in the USAF Space Fundamentals Course, and 4) initiatives associated with space situational awareness.

**Column**

*“From the Sky to Outer Space”*

:A Message from an SDF Serviceman-turned-astronaut

Kimiya Yui, an astronaut belonging to the Japan Aerospace Exploration Agency

Hello to everyone who is reading “Defense of Japan.” I am Kimiya Yui, an astronaut belonging to the Japan Aerospace Exploration Agency (JAXA). Before becoming an astronaut, I served as an Air Self-Defense Force pilot for around 15 years. Now, I am undergoing training in the United States, Russia, Japan, and Europe in preparation for a long-term stay aboard the International Space Station (ISS), scheduled for 2015.

Do you know what activities Japan is conducting aboard the ISS and what reputation the country has? In “Kibo,” a Japanese module, various experiments are being performed using an intra-vehicular laboratory and an extra-vehicular laboratory platform, producing results steadily. The module’s cabin has drawn praise from crew members for being spacious and quiet. As it is frequently used as the site for TV interviews with astronauts stationed aboard the ISS, the sight of the cabin may be familiar to you.

The year 2012 marked the 20th anniversary of Japan’s manned space activity since astronaut Mori flew into outer space for the first time as a Japanese person. Over the past 20 years, Japan has acquired expertise step by step, becoming one of the major countries engaging in manned space development. I feel greatly honored to be involved in an activity on which countries around the world are pinning hopes. As this is an activity in which I am engaging as a representative not only of Japan but of mankind, I am dedicating myself to daily training with a sense of intensity.

SDF personnel are also striving day in, day out, although they and I are working in different fields, to serve the Japanese people and people around the world, and I have sincere respect for their activities. As I am resolved to continue to make patient efforts to the best of my ability, I would appreciate your continued support.
Stable and Effective Use of Cyberspace

Information and communications technology has developed and been widely adopted at great speed and, as a result, it is now essential as the infrastructure for socioeconomic activities. On the other hand, there is a possibility that people’s lives and economic activities will be severely affected if the computer systems or networks fail.

Based on this awareness, the Information Security Policy Council, which decides the basic strategy for Japan’s information security measures, and its implementing agency, the National Information Security Center (NISC), were established in 2005; since then, a variety of initiatives related to information security policy issues in Japan have been undertaken by public and private sector entities, with the NISC playing the leading role. In May 2010, the Information Security Policy Council formulated the Information Security Strategy for Protecting the Nation, as a comprehensive strategy for the period from FY2010 to FY2013. This strategy incorporated extremely important policies with respect to the national security, including preparation of the government’s initial response to a large-scale cyber attack, reinforcement of protection against cyber attacks in the defense field, and reinforcement of international cooperation against cyber attacks, etc. In consideration of the situation in which the risk surrounding cyberspace is becoming more severe as illustrated by more complex and sophisticated cyber attacks, this council is currently planning to formulate a new strategy by the summer of 2013.

Along with the National Police Agency, the Ministry of Internal Affairs and Communications, and the Ministry of Economy, Trade and Industry, the Ministry of Defense is designated one of the government agencies which must cooperate particularly closely with the NISC. Therefore, the Ministry contributes to the cross-sector initiatives led by the NISC by providing it with the knowledge and skills of the Ministry of Defense/the SDF. For example, the Ministry participates in cyber attack response training and personnel exchanges, and provides information about cyber attacks, etc. In light of such incidents as the cyber attacks on defense industry companies reported in 2011, the NISC established the Cyber Incident Mobile Assistant Team (CYMAT) to provide agile support, forming cross-cutting partnerships among ministries and agencies. The Ministry

Fig. II-2-5-1 Cyber Attack Countermeasures by Ministry of Defense & SDF

1) Increasing safety of information and communications systems
   - Introduction of firewall and virus detection software

2) Upgrading of cyber defense system
   - Upgrading of network monitoring system and analysis device for cyber defense

3) Development of rules
   - Implementation of Ministry of Defense directives relating to information assurance and strengthening of the system

4) Human resource development
   - Studying abroad at organizations affiliated with Carnegie Mellon University, and graduate schools in the U.S.; professional education at the National Defense Academy, etc.

5) Enhancement of information sharing
   - Coordination with relevant ministries and agencies such as the National Information Security Center, and with relevant nations such as the U.S.

6) Research of cutting-edge technology
   - Research on technology to develop the cyber training environment

The Six Pillars of a Comprehensive Defensive Measures against Cyber Attacks

- Upgrading of cyber defense system
- Developing rules
- Human resource development
- Information sharing
- Research of cutting-edge technology
- Increasing safety of information and communications systems
The Ministry of Defense sends personnel to CYMAT, thereby actively contributing to improving the security of the government as a whole.

The document entitled “Toward Stable and Effective Use of Cyberspace” adopted by the Ministry of Defense in September 2012 sets the context for and identifies features of cyber-related policy to enable a more secure and effective use of cyberspace by the Ministry of Defense and SDF; in addition to strengthening the capabilities of the Ministry of Defense and SDF, it stipulates that they will also contribute to nationwide initiatives involving the private sector, as well as promote cooperation with the international community including allied nations.

See Part III, Chapter 1, Section 3-3
(See Fig. II-2-5-1)

3 Security of the Oceans

Consisting of a multitude of islands, numbering more than 6,000, Japan is a maritime nation whose territorial waters and exclusive economic zone covers approximately 4.47 million km² about 12 times its 380,000 km² land area, which places it sixth in the world in terms of the oceanic area that it controls. Consequently, it is critical for Japan to establish itself anew as a maritime nation that achieves a balance between peaceful and proactive development and use of the ocean, and the preservation of the marine environment. Accordingly, based on the Basic Act on Ocean Policy, the Government established the Headquarters for Ocean Policy in the Cabinet to promote policies concerning the oceans intensively and comprehensively, and Cabinet approval was granted in March 2008 for the Basic Plan on Ocean Policy, which stipulates the basic policy concerning various measures relating to the oceans, with the objective of comprehensively and systematically promoting such measures.

To fulfill the stipulations of the Basic Act on Ocean Policy—the implementation of 1) a comprehensive deliberation regarding the Headquarters for Ocean policy and 2) the 5-year review of the Basic Plan on Ocean Policy—, the Basic Plan on Ocean Policy was reviewed in 2012 in coordination with relevant ministries and agencies, with the Cabinet Office’s Secretariat of the Headquarters for Ocean Policy taking the lead, and the newly formulated Basic Plan on Ocean Policy was approved by the

Column

Deepening Bonds Through the Sea
-Activities Related to Maritime Safety-

Captain Takashi Inoue, Head of the International Unit, JMSDF Staff College

As a leading force to ensure maritime safety, the JMSDF is working to deepen relationships with foreign navies through joint exercises and staff talks. In addition, there is activity from a different approach producing a steady flow of successful results in developing relationships. That is the Asia Pacific Naval College Seminar which I’ll introduce here. Since 1998, the Staff College has been holding the seminar by inviting teachers and researchers from the naval academies of Asia-Pacific countries once every year to deepen mutual understanding through discussions on a variety of topics related to maritime safety and thereby to contribute to the promotion of defense exchange with neighboring countries. This year, the 16th Seminar was held from February 18 to 22.

With the participation of the Japan Coast Guard, the Ocean Policy Research Foundation (OPRF), the Royal United Services Institute for Defence and Security Studies (RUSI) and the Japan International Cooperation Agency (JICA) in the seminar, we discussed wider-ranging topics more than ever, strengthening mutual understanding through opinion exchange on maritime safety not only from the viewpoint of the Asia Pacific region but also from European and civilian perspectives, for example.
In recent years, concerning changes in social situations with respect to the ocean, the new Basic Plan on Ocean Policy specified the following slogans, which give directions to Japan as an Oceanic State: 1) international cooperation and contribution to the international community, 2) wealth and prosperity through ocean development and exploitation, 3) shift from a country protected by the ocean to a country that protects the ocean, and 4) challenge unexplored frontiers. The new plan stipulates measures to be implemented intensively in the next 5 years or so as well as measures related to the ocean that need to be promoted in a comprehensive and systematic manner.

In addition, the new plan provides important measures in terms of Japan’s security. Specifically, from the perspectives of security in the waters surrounding Japan and of securing peace and order, the new plan stipulates the systematic provision of SDF’s vessels and aircraft, strengthening coordination between the SDF and Japan Coast Guard, and taking initiatives to secure maritime safety by continuing antipiracy operations off the coast of Somalia and in the Gulf of Aden.

Furthermore, from the perspective of Japan’s security and maintaining maritime order, the new plan also stipulates proper surveillance and guarding of major remote islands and surrounding seas, promoting projects related to the strengthening of the defense posture for the protection of offshore islands, including the Southwestern Islands, and preparing well for various contingencies.

Accordingly, the Ministry of Defense is engaging in a number of efforts in FY2013, including 1) build-up of equipment for ensuring maritime safety, such as the construction of fixed-wing patrol aircraft, a destroyer, and a submarine, acquisition of minesweeping and transporting aircrafts, and extension of the operating life of destroyers and rotary-wing patrol aircrafts; 2) research and development focused on areas including sonar and other technologies that can detect noise-reduced submarines and other objects; 3) dealing with pirates off the Coast of Somalia and in the Gulf of Aden; 4) strengthening cooperation with the Japan Coast Guard through joint training to deal with unidentified ships; and 5) participating in multilateral maritime security conferences and training exercises.

The international community faces a variety of security challenges that encompass conflict around territorial rights and differences in interpretations of maritime rules, not to mention the problems of piracy, illegal dumping, smuggling and illegal immigration, and disaster relief.

In the Asia-Pacific region as well, initiatives aimed at building cooperation and confidence for the purpose of maritime security are being undertaken within regional security dialogue frameworks, in the form of the ASEAN Regional Forum (ARF) and the ASEAN Defence Ministers’ Meeting (ADMM-Plus). The Ministry of Defense also participates actively in such discussions, including the Inter-Sessional Meeting on Maritime Security (ISM-MS). The Ministry of Defense also participates actively in such frameworks, including the Inter-Sessional Meeting on Maritime Security (ISM-MS).

Environmental Initiatives

**1 Effects Exerted by Climate Change on the Security Environment**

With the mounting concern for climate change caused by global warming, there has been a growing tendency in recent years to give thought to the effects exerted by climate change on security. For example, in the Quadrennial Defense Review (QDR) published by the U.S. Department of Defense in February 2010, climate change is positioned as one of the factors which exert an important effect on the shape of the security environment in the future. Thus, there is a growing, shared understanding that climate change could have effects on the security environment.

**2 Environmental Conservation Initiatives**

As part of the government, the Ministry of Defense is developing action plans based on various government programs, and actively promoting a variety of initiatives aimed at raising awareness of environmental conservation among the troops and other personnel, as well as ensuring thorough environmental conservation and the reduction of the burden on the environment in the maintenance and management of SDF facilities, among other areas.