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Outer Space Activities and an Observation of Related Laws of Korea

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Ⅰ. Introduction

Korea is a divided country between the North and South since 1945 as a remnant of the Second World War when the Soviet Union and the United States of America agreed to divide the Korean peninsula into two parts along the 38th parallel of the north latitude. Facilitating the surrender of the Japanese Emperor's Army occupying the Korean peninsula was the reason when the military power of Japan was subsiding as the American offensives were strangling Japan from all directions in 1945.

Hardly had the Second World War finished when the Cold War began. North Korea came under communist Soviet regime and since then confronts the democratic South, making Korea only divided country in the world well after the collapse of the Soviet Union that resulted in thawing of East-West tension.

With superior power, compared to its neighboring South, not only in military terms but also in economic wealth believed to be prevailing until the early 1970s, North Korea made full advantage of cooperating with the Soviet Union in acquiring military technology while the South had to be content with stationing of the American troops in its territory as deterrence to another attack from the North as it was the case of the Korean War 1950-1953. As a deterrence of North-South Korean competition of military build-up, the American government forced South Korea not to develop missile technology beyond the range of 180 km while North Korea accelerated its missile technology almost free hand and at a later stage the nuclear weapons program. The restraint imposed on South Korea relaxed when she joined the MTCR[1)]

1) Missile Technology Control Regime was established in 1987 by seven countries (USA, UK, France, Germany, Italy, Canada, Japan) in order to curb the spread of unmanned delivery systems for nuclear weapons, specifically delivery systems that could carry a minimum payload of 500 kg and a minimum of 300 km. In 1992 it expanded the

aimed at curbing missile delivery systems that carry a payload of more than 500 kg and distance of 300 km..

As a result, North Korea developed the No-Dong medium range ballistic missile[2] in the late 1980s followed by two ballistic missile programs known as the Taepo Dong 1 and the Taepo Dong 2 in the early 1990s. The supposed design objectives for the Taepo Dong 1 system were to deliver a 1,000 to 1,500 kg warhead to a range of 1,500 to 2,500 km and for the Taepo Dong 2 to deliver the same weight warhead to a 4,000 to 8,000 km range.[3] When the Taepo Dong 1 was launched in a two stage rocket in 1998, presumably to place the satellite into orbit, it was a failure according to the sources of the West keenly watching the event. If the rocket (this word interchangeable with the "missile" giving connotation of military use, while the "rocket" is for peaceful purposes, a feature of dual use), functioned properly, it could have reached a 3,800 5,900 km range.[4] Taepo Dong 2 missile, after its test failure in 2006, was fired as a three stage launcher of so called space satellite in April 2009. Unlike the North Korean assertion, putting the satellite into orbit was a failure again. However, the missile capacity of North Korea showed improvement with the rocket impact capacity 3,850 km from the launch site.[5]

Only lately seems the Korean government to recognize her pressing needs of extending rocket launch capacity beyond the range of 300 km, formally

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scope to include nonproliferation of unmanned aerial vehicles (UAVs) for all weapons of mass destruction. Membership has grown to 34 nations including Korea that joined it in 2001.

2) Ballistic missiles are classified by range as follows:
Short Range Ballistic Missiles (SRBMs)= 150-799 km
Medium Range Ballistic Missiles (MRBMs)= 800-2,399 km
Intermediate Range Ballistic Missiles (IRBMs)= 2,400-5,499 km
Intercontinental Ballistic Missiles (ICBMs)= 5,500 km and greater

3) CRS (Congressional Research Service) Report, the (US) Library of Congress, Order Code RS21473 updated Jan. 24, 2008.

4) Ibid.

5) http://en.wikipedia.org/wiki/Taepodong-2, last visited 22 Dec. 2009.

self-imposed limit as a member of the MTCR. However, the true desire of Korea has been to have free rein in developing missiles program that will assist her space activities including launching satellites into the geostationary orbit (GSO). Other than the fact that South Korea has to counter North Korean threat, and hence her needs to develop missile technology, ongoing space activities of South Korea have matured enough to develop her own rocket launching capacity without shackles.

Ⅱ. Korea Aerospace Research Institute (KARI)

Established in 1989 with the government fund and affiliated to the Korea Institute of Machinery and Materials (KIMM), KARI has been playing its vital role as the leader in the development of aircraft, satellite and space launch vehicle technology as well as performing the quality certification of aircraft and space products for the government. Becoming an independent organization in 1996, KARI was authorized by the Korean Aviation Law as the Type Certification Agency in 1997.

Its resources were driven more for research and development on rocket and satellite than for aircraft, which is not surprising because a heavy- weight Korea Aerospace Industries, Ltd (KAI) is spearheading in aircraft production for sales both in and out of the country. As a corporation merged from three different companies, i.e., Daewoo Heavy Industries, Ltd., Aircraft Business Sector of the Samsung Aerospace Industries, Ltd., and Hyundai Space and Aircraft Co. Ltd. in 1999, KAI was involved in many successful production of parts of aircraft, helicopter and fixed wing aircraft in joint venture, including

parts supply, with leading names of foreign aircraft manufacturers. Its recent success of producing high-tech T-50 super sonic advanced trainer is garnering the acclaim from international aviation circles.

KARI is playing a key role as the hub of the nation's space development. In the satellite area, it successfully launched Komsat-1(Korea Multi-purpose satellite-1) and Komsat-2 in 1999 and 2006 respectively. The KOMSAT-3, 5 and COMS (Communication, Oceanography and Meteorology Satellite) projects are ongoing together with remote-sensing, search and space environment tests.

In the launch vehicle area, KARI developed single-stage and two-stage scientific sounding rockets KSR-I and II in 1993 and 1998 respectfully. KSR-III with liquid propellant engine system was launched successfully in 2002. Lately, a small satellite launch vehicle (KSLV-1) with the first stage rocket built by Khrunichev State Research and Production Space Center in the Russian Federation and the second stage by the Korean technology was launched in August 2009 amidst keen attention of the whole nation. It failed however to put a satellite of science technology in a low Earth orbit because one of two fairings covering the payload did not detach on time.

Another program worthy note of KARI is the Korean Astronaut Program whereby a Korean lady, bio systems engineer, Ms. Yi So-yeon, in a cooperation project between KARI and the Russian Space Agency, could visit the International Space Station (ISS) on board a Russian Soyuz TMA-11 spacecraft in 2008. It's phenomenal because, with it, the Koreans waked up to the outer space things which they have thought something reserved only for big space powers like USA and Russia. About $20 million known to be paid to Russia for this cooperation project played more than its worth, more so when the same amount was charged to each of six space tourists who went to the outer space just for fun.

Summing up of the mission and major functions of KARI are[6]:

First, Perform basic and applied studies in aerospace technology in
- Development of leading-edge technology aircraft, aircraft evaluation and testing, and support of national development projects
- Research and development and launching of artificial satellite, and development of technology for satellite applications
- Development and launching of space launch vehicles, and operation of the Space Center

Second, Perform government-delegated tasks and support policy development in
- Development of technology for assuring aerospace safety and quality, and maintenance of legal quality certification and internationally recognized certification systems
- Establishment and support of the National Aerospace Development Policy and dissemination of knowledge on aerospace technology

Third, Support industries and transfer technology in
- Joint utilization of testing facilities and equipment with industries and academia, and training of scientists
- Transfer of technology from research and development and provisions for commercialization support.

Ⅲ. Satellite Development

Korea launched in 1992 from Kourou, French Guyana, its first satellite KITSAT-1 jointly developed by the Korea Advanced Institute of Science and

6) Introduction booklet on the Korea Aerospace Research Institute, Publication No. KARI-PUBL-2009-009, p.2.

Technology (KAIST) and the Surrey University in England. With the knowhow learned from the Surrey University, Korean technicians could manufacture KITSAT-2 and had it launched successfully in 1993. A few years later in 1996, Korean government formulated the "Mid and Long Term Basic Plan for Space Development", shifting pivotal role to KARI from KAIST and other ducational institutions as far as the research and development of space activities are concerned.

With the attention of the government, 110 kg mini-satellite KITSAT-3 was successfully put in low Earth Sun-synchronous orbit on the Indian launcher PSLV in 1999. It was the first time a satellite was designed, manufactured, tested, and operated, the whole process by the Korean technology. Although three KITSATs had their life times designed each for three years, they provided Korea with valuable experience upon which further satellite programs could be based with confidence.

Ensuing Korean satellites already in orbit or planned to be put within a few years in either geostationary or low Earth orbit (LEO) are five different categories as follows:

- Koreasat 1,2,3,5 in GSO for telecommunications and broadcasting purposes. All launchings almost successful.
- STSAT (Science and Technology Satellite) 1,2,3 in LEO.
- Komsat 1,2,3,5 for multi-purpose use in LEO.
- MBSAT in GSO launched as a Korea-Japan joint venture project.
- COMS (Communication, Ocean and Meteorological Satellite) project. Originally planned to launch in 2008 and deferred now to 2010 has triple purposes as its name stands for.

Koreasat 1 and 2, known in Korea as Mugunghwa (rose of Sharon or hibiscus, Korean national flower) 1 and 2, were South Korean communications

satellite launched by Delta rocket from Cape Canaveral, Florida. They carried each 15 Ku-band transponders to provide TV coverage for South Korea and other Asian countries. During the launch of the Koreasat 1 in 1995, one of the nine solid boosters of the Delta launch vehicle failed it to reach the GSO. It used up some of the reserved fuel to be moved to GSO. With this partial loss of fuel, its operational life time was expected to be reduced from ten to four and half years. It was one of twin satellites, and the other twin satellite was successfully launched about six months later in 1996 and was registered as the Koreasat 2.

Koreasat 1 was sold to Europe*Star as Europe*Star B. In July 2009 Koreasat 2 was sold to Asia Broadcast Satellite as ABS 1A.

The Koreasat 3 is configured to provide both fixed and direct broadcast services. It has 24 Ku-band (fixed Satellite Service), six Ku-band (Direct Broadcast Service), and three Ku-band transponders. It was manufactured with the participation of a Korean team which includes: Daewoo Industries, Doowon Electronics and Telecommunications Research Institute, Halla Engineering and Heavy Industries, Hyundai Electronics Industries, KARI, and Korean Air. It was contracted to Lockheed Martin and launched on an Ariane rocket in 1999.

Korea Telecom (KT) is Korea's foremost telecommunications company and is responsible for operating the Koreasat system. The company dedicated to developing new technologies to keep pace with Korea's rapid growing economy.

Koreasat 5 is South Korea's first combined civil and military communications satellite. Alcatel Space supplied both the multi-mission satellite and its ground control system, along with launch and early operations phase (LEOP) support. With 36 transponders in Ku-band, C-band (civil) and SHF band (military), Koreasat 5 with the mass of 4,465 kg was launched in 2006 on the high seas on Zenit-3SL, a rocket of the Sea Launch Company.

It currently delivers advanced broadband multimedia and digital television transmission services, along with conventional telecom services to operators in the Asia-Pacific region.

STSAT-1 was developed from technologies based on the KITSAT-1, 2 and 3, Korean micro-satellite program to acquire the necessary knowledge in 1990s. The STSAT-1 was the first satellite project for a space science mission in Korea, which started in 1998 until its successful launch in 2003. Its payloads were Far-ultraviolet Imaging Spectrograph (FIMS) and Space Physics Package (SPP) for observing space. The STSAT-2, a 100 kg class micro-satellite based on the National Space Program following the STSAT-1 was lost when the Korea Space Launch Vehicle 1(KSLV-1) failed to put it in LEO at its launch in August 2009 at the Naro Space Center in Korea. STSAT-3 is planned to be put in orbit in 2010 as a payload of another trial of KSLV-1.

The Komsat-1 and 2 projects accomplished the goal of developing a payload and a bus for LEO satellites for the purpose of acquiring high level satellite technology which is essential to meet the national spacecraft requirements as well as to obtain global market share. Komsat-1 was launched in 1999 by a Taurus launch vehicle at the Vandenberg Air Force Base of America. It weighs 460 kg and has 636 watts of power. It has four payloads on board: Electro-Optical Camera (EOC) capable of acquiring a 6.6 m resolution panchromatic image, Ocean Scanning Multi-Spectral Imager (OSMI) providing a 1 km resolution multi-spectral image, Ionosphere Measurement Sensor (IMS) and High Energy Particle Detector (HEPD).

Just after the successful launch of Komsat-1, Komsat-2 project began to develop a highly advanced remote sensing satellite with the technology acquired from Komsat-1. Komsat-2 was successfully launched in 2006 by a Rockot launch vehicle at the Plesetsk Cosmodrome in northern Russia. It weighs 800 kg and has 1,000 watts of power, operating at the same orbital

altitude as Komsat-1.

Komsat-2, equipped with a MSC (Multi-Spectral Camera) able to acquire 1 m resolution panchromatic images and 4 m resolution color images, can resolve a building and even a car. The high resolution images will be used for various applications such as surveillance of massive natural disasters, utilization of mineral resources, construction of Geographic Information System (GIS), and cartography. According to the National Space Development Program, Komsat-3 and 5 will be developed and new project for another three satellites will begin by the year 2012. Currently, Komsat-2 services are sold by the SPOT Image, a French satellite company.

MBSAT is a satellite launched in 2004 as a joint venture project between MBCo, a subsidiary of Toshiba Company of Japan, and TU Media, a subsidiary of SK Telecom of Korea to provide subscribers of both countries with satellite Digital Multimedia Broadcasting (DMB) service. The service through satellite transponders allocated in proportion to the investment was directed to each of two countries. The satellite built by the Space Systems/Loral has 40 transponders (4 Ku-band, 36 S-band): 2 Ku-band and 24 S-band are allocated for Japan with its investment share of 65.34% and the rest of transponders are for Korea with its investment share 34.66% for the total investment of 272.5 billion Korean Won (about US$240 million).

For the reason presumably of the loss making operation, Toshiba sold this year in 2009 MBCo at a symbolic price of one Japanese Yen to SJC, Japanese operator of the satellite system both Korean and Japanese companies are relying on. The TU Media, providing 37 channels to the Korean subscribers of about two million continues to manage its business in deficit and despite of strong competition from other less costly terrestrial DMB services.

It is noteworthy that co-launchers Japan and Korea could not agree to the contents of the letter to be sent to the United Nations to register the satellite

in accordance with the Registration Convention 1975.[7] This is due to a mistaken perception in particular on the part of the Korean authorities that the registration letter in its form and content has a decisive character of rights or interests. Both companies of two countries had agreed in the contract that the satellite would be registered in the name of Japan, major share holder, after Japan consults with Korea. As to the registration of a co-launching satellite at the United Nations, the more share holding rights transpire for more burden in case of damage, more likely eventuality than claiming privilege or benefits.

COMS multi-mission geostationary satellite is being developed by EADS Astrium and KARI, and underwent its test campaign at a new KARI facility in Daejeon, Korea. It is planned to launch form Europe's spaceport at Kourou, French Guayna next spring (2010). The oceanography payload will be equipped with a multiband imager offering a spatial resolution at the equator of 350 m, unprecedented for a geosynchronous-Earth-orbit-based sensor.[8]

COMS project aims to develop a GSO satellite performing three categories of mission. The first mission planned in 2010 is weather monitoring of the entire globe, especially East Asia and the Korean peninsula, with high spatial, temporal and spectral resolution. The second mission is ocean color monitoring to preserve and develop marine resources and ecosystems around the Korean peninsula. The third mission is the in-orbit verification of Ka-band communication payload technology developed by domestic institutes.

Launch mass of the COMS is estimated at 2.5 tons and its electrical power is expected to be 3 kw with a required minimum operational life of seven years. After launch and early operation, satellite communication and meteorological/ ocean data services will be offered. Long term plan of National Space

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7) Convention on the Registration of Objects Launched into Outer Space, 14 January 1975; 1023 UNTS 15.

8) Aviation Week and Space Technology (AWST), 19 Oct. 2009, p.20.

Development envisages to launch a second GSO COMS in 2014.

Ⅳ. Launching Capacity

The Korean National Science and Technology Council issued a plan for a National Space Program which could be an important milestone in the history of science of Korea. The plan addressed the development of new space launch vehicles which are named Korea Space Launch Vehicle (KSLV). The KSLV program consists of two consecutive LEO launch vehicle developments: KSLV-1 and KSLV-2. The payloads of KSLV are a 100 kg-class satellite for KSLV-1 and a 1.5 ton-class satellite for KSLV-II.

KARI has taken responsibility for the KSLV development process, and the KSLV program office in KARI was newly re-organized to include many experienced rocket engineers. KARI already successfully carried out development of a single-stage sounding rocket (Korea Sounding Rocket I: KSR-I), two-stage sounding rockets KSR-II and KSR-III. Upon completion of development, KSR-I was twice successfully launched in 1993 to the height of 38.6 km with flight distance 87.5 km. First launch of KSR-II with a scientific payload in 1997 was however a failure. Second try in 1998 with a sold propellant rocket engine as the previous ones was a success, reaching the altitude 137 km with flight distance 127 km. KSR-III with first-ever liquid propellant rocket engine in Korea was a partial success in its launch in 2002.

KSLV program was kicked off in August 2002 with KARI in charge and involving university laboratories and private companies tasked with over 200 projects[9] to design and build parts. The rocket stands 33 m tall and weighs

9) Joon Lee, Launcher Regulations in Korea, IAC_09.E3.33, p. 2, the 60th International Astronomical Congress (IAC), Daejeon, Korea, 2009.

140 tons to be capable of sending a 100 kg satellite payload into an ecliptic orbit around the Earth. The first stage rocket with the liquid fuel booster was built by the Khrunichev State Research and Production Space Center in the Russian Federation while the second stage rocket was built by Korea and is provided by a "kick motor" using solid fuel. It generates 8 tons of thrust, enough power to deliver the satellite into its proper orbit.

The main purpose of the KSLV program is to acquire the technology of the second stage rocket, of the scientific satellite and to gain insight into electronics, flight control, navigation and systems integration. Private companies participating in the program are Korean Air, Doosan Infracore Co., Samsung Techwin, Hyundai Heavy Industries Co. and university laboratories.

The KSLV-1 has been only a technology development exercise and its second and last launch is planned for April 2010. As described earlier, the first launch, on 25 August 2009 failed.

Using experience built up with the KSLV-1 technology program, Korea will begin full-scale development of the KSLV-2 under a schedule that allows two years for preliminary design with a first launch planned in 2018.[10)]

V. Space Law and Policy in Korea

Space is increasingly considered an important area to develop in Korea. This change of perception is due to recent developments in and around the country. The North Korean second launch to put its so called satellite in orbit last April 2009 after its failed first attempt in 1998 awakened the anxiety of the South about the North and discontent with the current regime of

10) AWST, 19 Oct. 2009, p.31.

international missile control in contrast with North Korea's free hand. Being restrained to developing no greater than 300 km range of missiles by MTCR while America provides military protection against outside threats, South Koreans do not feel comfortable. For them, it's a matter of unfair restraint and national pride stemming from economic progress and technology prowess. Besides, building up rocket technology for space activities has nowhere been prohibited despite numerous international regimes to deter missile technology.

Another development drawing attention to space of Korean people was the hosting of the 60th International Astronomical Congress in Daejeon, Korea in 2009. It was an international event in succession to the news of the first Korean astronaut Yi So-yeon that was extensively covered by the local press.

Korean government revised in 2008 the "Mid and Long Term National Space Development Basic Plan" adopted by the National Science and Technology Council (of which Chairman is the President) in 2005. The purpose of revision was to actively foster aerospace industry. Prior to the revision of the Basic Plan, the Ministry of Education, Science and Technology (MEST) announced in November 2007 an ambitious plan on space activities: sending a unmanned probe to orbit the Moon in 2020; landing another one on its surface in 2025; develop a large-scale rocket that can carry 300 tons of freight into space by 2017 and start building a space shuttle launching system in 2020.[11)]

The opening of the Korea Space Center, the 13th of its kind in the world, as the spaceport in the middle of 2009 at Oinarodo, Goheung County, South Cholla Province, Korea was a proof of the serious and continuous efforts of the Korean government in this regard. It was at this place that the KSLV-1 was launched last August and supposed to be the launch site of the following satellites. The spaceport, as a government property being run by KARI includes launch tower, control tower, rocket assemble and test facilities and space

11) Doo Hwan Kim, Space Law in Korea: Existing Regulations and Future Tasks, German Journal of Air and Space Law, Vol. 57, No. 4 (Dec. 2008), p.571.

simulators.

Turning to the governing law on space activities in Korea, there are three legislations so far enacted as follows:

- Aerospace Industry Development Promotion Act (AIDPA) 1987
- Outer Space Development Promotion Act (OSDPA) 2005
- Outer Space Damage Compensation Act (OSDCA) 2008

Notable difference between the AIDPA and OSDPA apart from many overlapping regulations is that the former is implemented and supervised by the Ministry of Knowledge Economy (MKE) while latter by the MEST. AIDPA aims to promote national interests through reasonable support and efficient research and development activities. In another word, promoting outer space industry for economic benefits. The Act covers both air and space industries as targets to be encouraged by MKE. MKE can designate specific enterprises to strategically develop certain industry items with government support. A committee in the name of Aerospace Industry Development Policy Examination is established by the Act to devise basic plan of the promotion of the aerospace industry and to discharge other missions described therein.

The government shall take policy to foster the aerospace industry and can even designate certain institution for this purpose offering financial assistance if necessary (Articles 4 to 8). The minister of MKE undertakes performance and quality inspection for aerospace products but can absolve the products for export (Art.10). Any aircraft, space object, apparatus or material not inspected under Art. 10 shall not be used except for those flights (Art. 11). Government may support the research, development and the industry of aerospace science and technology financially with preferred long-term loan or by lending state-owned facilities free of charge or on cost (Articles 12 & 13).

The Aerospace Industry Development Policy Council headed by the Minister of MKE is established to set up basic plan and to coordinate important aerospace policy matters among different ministries (Articles 14 to 16). The rest of Articles were either deleted (Articles 17, 18, 23 & 24) or on miscellaneous matters (holding hearing to cancel designation of institution according to Articles 8 & 17 *bis*, entrusting the inspection business to other organs in Art. 19, inspection charge in Art. 20 and penalties for breach of the current Act in Articles 21 & 22).

OSDPA, though late than AIDPA in coming into legislation, has more to do with practical and current activities of outer space. Its purpose is to promote national security and economic interests through orderly promotion and efficient use and management of space objects and thereby facilitate peaceful use and scientific exploration (Article 1). With many definitions (Art.2) of new industrial area to promote rather than regulate, it stipulates that the government's mission is to both observe the outer space related treaties concluded with foreign countries[12] and international organizations and envisages peaceful use of outer space. Another mission of the government is establishing and implementing comprehensive policies for the outer space development (Art.3).

Like AIDPA (Art.3), OSDPA stipulates that the government has to establish Space Development Promotion Basic Plan in detail (Art.5). To do so and to consider other matters as well that are related to the space development, National Space Committee, headed by the Minister of MEST, is established (Art.6). The Minister may designate and support an expert body which is called Space Development Institute to systematically and effectively implement space development projects (Art.7). No such entity has been designated yet.

Article 8 is about preliminary registry of the space objects 180 days prior

12) Treaties concluded by, and to which, Korea is a party has the same effects as the internal law in accordance with Art.6 of her Constitution.

to their launch in or outside the country as long as the launcher is the Korean national or entity. Following step is to formally register with the MEST within 90 days after the space object reached its planned orbit so as to register through the Ministry of Foreign Affairs and Trade at the United Nations in accordance with the Registration Convention 1975 (Art.9). Exception of the procedures for space objects to be registered by the Korea Communications Commission in charge of broadcasting and radio regulations in accordance with Article 44 of the Radio Wave Act 2009. It may be interpreted that there are two channels to register Korean space objects, one by the Foreign Ministry, the other the Communications Commission. This is the shortcomings, overlooked together with the fact that there is no stipulation about the central national registry, by the drafters of law.

Articles 11 to 13 relate to the qualification of launching license and its cancellation in certain cases. Articles 14 and 15 oblige the launcher to take insurance for third party liability for launching. Article 16 establishes Space Accident Investigation Committee headed by the Minister of MEST. Rest of articles (17 to 29) deals with utilization of information acquired from space activities (Art.17), support for civil space activities (Art.18), suspense of civil space activities in war and emergency (Art.19), cooperation among different ministries (Art.20), rescue of astronauts and their return (Articles 22 & 23), penalties and fines (Articles 27 to 29).

As to the OSDCA, a few concepts are found in a clear and simple way. Rights of indemnification of the Korean government to those responsible launchers (Art.3), fault liability for damage incurred in space and non-application of Product Liability Act 2000 to space damage (Art.4), limit of damages to 200 billion Won (equivalent to about $176 million) (Art.5), obligatory insurance taking for launching (Art.6), supplementary compensation by the government for damage exceeding the limit in Article 5 (Art.7), timely

notice of claim within one year and limitation of actions to three years (Art.8) are enshrined in this Damage Compensation Act.

Ⅵ. Concluding Remarks

Korea is a fast growing country in every aspect. Spurred by the economic growth since three decades ago, she has achieved democratic rules and social reforms that lay ground the system of a developed country. With dynamic character, the country endeavors to excel, if not follow steps of, those leading countries in the world.

Area of outer space is no exception for Koreans to develop the industry in every sector. This zeal got the boost from the successful production of state-of-the-art T-50 super sonic trainer aircraft that came out to the international market recently as a strong contender. Korea is also the 7th largest air power in 2007 according to the air transportation achievements compiled by the International Civil Aviation Organization (ICAO).

In modern industry, achieving the hard ware development is normally easier than the soft ware development. So is for Korea in the relationship between economic progress and social maturity. True also in the outer space industry where the relevant science and technology are more advanced than the framework that the social sciences are composing. In another words, legal framework is much desired in Korea to properly accommodate and facilitate the development of scientific, technological, and economic activities in the outer space.

A few examples of such mismatch are noted as follows:

- Although it is not a unique feature of Korea, the rivalry between relevant ministries for regulating or dealing with the same subject matter often

defeats the purpose of fostering the concerned industry. Aerospace Industry Development Promotion Act 1987 legislated with the initiative of the former Ministry of Industry (now MKE) is doubly governing the space industry together with the Outer Space Development Promotion Act that came into being with the initiative of the former Ministry of Science and Technology (now MEST).

- Aerospace Industry Development Policy Council established by the former(AIDPA) in its Article 14 has similar mandate as far as the space industry is concerned as the National Outer Space Committee stipulated in Article 6 of the latter (OSDPA). The reason is that the Ministries concerned are not willing to fully coordinate to get rid of these unnecessary overlapping regulatory measures only to defend their own turf.
- As to regulating the space object which has nothing to do with defending turf, there exists incomprehensive method of keeping a central national registry and inconsistency in registering satellites with the United Nations resulting in the interpretation of two different domestic channels instead of one.

A solution to such confusing and inconsistent approach is adopting a single Act to cover all aspects of space activities, replacing current, in particular, those two overlapping Acts, i.e., AIDPA and OSDPA. When so doing, a Committee to be set up is to he headed by either the Prime Minister or the President, a superior position easy to coordinate the differences taking place between competing Ministries.

References

CRS (Congressional Research Service) Report, the (US) Library of Congress, Order Code RS21473 updated Jan. 24, 2008.

Introduction Booklet on the Korea Aerospace Research Institute, Publication No. KARI-PUBL-2009-009.

Joon Lee, Launcher Regulation in Korea, IAC_09.E3.33, the 60th International Astronomical Congress (IAC), Daejeon, Korea, 2009.

Doo Hwan Kim, Space Law in Korea: Existing Regulations and Future Tasks, German Journal of Air and Space Law, Vol. 57, No. 4 (Dec. 2008).

Aviation Week and Space Technology (AWST), 19 Oct. 2009.

http://en.wikipedia.org/wiki/Taepodong-2

Abstract

The missile technology and its development in south Korea have been restrained to the limit of 180 km by America which instead provided to Korea with security protection. In the same vein, America pressured South Korea to abort its nuclear weapons program so as to prevent another possible military encounter that can easily develop into a war between South and North Korea.

This restraint was a bit relaxed when South Korea joined the Missile Technology Control Regime (MTCR) in 2001 whereby the limit was 300 km. The situation of South Korea is in much contrast with its neighbor, North Korea, which has fired Taepo Dong 1 and Taepo Dong 2 to put its alleged satellite respectively into the Earth orbit. The range of this rocket believed to be reaching more than 5,500 km, a range of the intercontinental ballistic missile, without any rein.

South Korea that has just geared its full powers for its outer space industry, with the current space projects of putting its satellites into the low Earth orbit, will in future put its satellite into the geostationary orbit, 36,000 km above the Earth. To do so, such restraint had better be resolved.

Korean space industry, as it is alike in other countries, started with putting and manufacturing sounding rockets, producing satellites but relying on foreign launching facilities, and learning launching capacities.

Experiencing three time launchings of KITSAT, the current satellite projects of Korea are undertaken as follows:

- Koreasat
- STSAT
- Komsat
- MBSAT
- COMS (Communication, Ocean, and Meteorological Satellite)

Koreans waked up to the things of outer space in 2008 with the first Korean astronaut Li So-yeon, a lady bio systems engineer. Although the first Korean made rocket in cooperation with a Russian company to fire last August 2009 was a failure, it should be considered as an inevitable process for future endeavors.

There are currently three outer space related laws of Korea: Aerospace Industry Development Promotion Act 1987, Outer Space Development Promotions Act 2005, and Space Damage Compensation Act 2008. The first two stemming from the two different ministries are, however, overlapping in many aspects and have some shortcomings to be improved.

Key Words : Satellite, Missile, Rocket, Launcher, Space related Korean law

초 록

한국에서의 미사일 개발은 미국이 안보를 제공하는 대가로 그 개발을 180 km로 한정되어왔고 같은 맥락에서 남.북한간의 긴장이 가져올 수 있는 또 하나의 전쟁 위험성을 사전 차단하기 위한 목적으로 한국의 핵무기 개발도 취소된 바 있다. 이러한 제한은 한국이 2001년 MTCR (미사일 기술 통제 체제)에 가입하면서 미사일 개발 허용 거리가 300 km로 연장되었지만 북한이 핵무기는 물론 대포동 1,2호 발사로 5,500 km 이상의 대륙간 탄도탄 미사일에 이용되는 로켓 발사를 추진하면서 제한 없는 군비 발전을 진행하는 것과 대비된다.

한국이 최근 우주 산업 개발을 본격 진흥하면서 지구 저 궤도에 인공위성을 진입시키는 것에서 장래 지상 36,000 km의 지구 정지궤도에 위성 진입을 계획하는 것을 염두에 둘 때 이러한 제한은 언제인가 해소되어야 할 것이다.

한국의 우주 산업은 대개가 그러하듯이 소형 위성 제작과 이를 타국 발사체에 의뢰하여 발사, 그리고 우리의 발사체 개발이라는 3단계로 진행되고 있다.

이미 지나간 소형과학위성의 3차에 걸친 발사에 이어 현재 5개의 위성 사업이 진행되고 있는 바, 이들은 다음과 같다:

- 무궁화 위성
- 과학기술위성
- 다목적 실용위성
- 한별위성
- 통신해양기상위성

2008년 이소연 우주 비행사의 탄생으로 한국민들의 우주에 관한 관심이 제고되고 있는 가운데 2009년 8월 나로 1호 발사는 실패로 끝났지만 계속 추진하여야 할 우주 산업에 있어서 하나의 거쳐야 할 과정에 불과하다.

한국의 우주 관련 국내법은 1987년 제정된 항공우주산업개발촉진법, 2005년 제정된 우주개발진흥법, 2008년 제정된 우주손해배상법이 있으나 전자 2개의 법은 소관부서가 상이한 것에 연유하여 중복되어 있고, 일부 미비한 점이 있어 개선이 요망된다.

주제어 : 인공위성, 미사일, 로켓, 발사체, 우주관련 국내법