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NATIONAL SECURITY AGENCY
FORT GEORGE G. MEADE, MARYLAND 20755-6000

FOIA Case: 103877A
7 December 2018

JOHN GREENEWALD
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Dear Mr. Greenewald:

This responds to your Freedom of Information Act (FOIA) request of 23 March 2018, for Intellipedia pages on "Brilliant Pebbles" and "Project Excalibur." As stated in our initial response to you dated 18 April 2018, your request was assigned Case Number 103877. For purposes of this request and based on the information you provided, you are considered an "all other" requester. As such, you are allowed 2 hours of search and the duplication of 100 pages at no cost. There are no assessable fees for this request. Your request has been processed under the provisions of the FOIA.

For your information, NSA provides a service of common concern for the Intelligence Community (IC) by serving as the executive agent for Intelink. As such, NSA provides technical services that enable users to access and share information with peers and stakeholders across the IC and DoD. Intellipedia pages are living documents that may be originated by any user organization, and any user organization may contribute to or edit pages after their origination. Intellipedia pages should not be considered the final, coordinated position of the IC on any particular subject. The views and opinions of authors do not necessarily state or reflect those of the U.S. Government.

We conducted a search across all three levels of Intellipedia and located documents that are responsive to your request. Some of the documents are enclosed. Certain information, however, has been deleted from the documents.

Some of the withheld information has been found to be currently and properly classified in accordance with Executive Order 13526. The information meets the criteria for classification as set forth in Subparagraph (c) of Section 1.4 and remains classified SECRET as provided in Section 1.2 of Executive Order 13526. The information is classified because its disclosure could reasonably be expected to cause serious damage to the national security.

Because the information is currently and properly classified, it is exempt from disclosure pursuant to the first exemption of the FOIA (5 U.S.C. Section 552(b)(1)).

This Agency is authorized by statute to protect certain information concerning its activities, in this case internal URLs. Such information is exempt from disclosure pursuant to the third exemption of the FOIA, which provides for the withholding of information specifically protected from disclosure by statute. The specific statutes applicable in this case are Section 6, Public Law 86-36 (50 U.S. Code 3605) and Title 50 U.S.C. 3024(i). We have determined that such information exists in this record, and we have excised it accordingly.

In addition, personal information regarding individuals has been deleted from the enclosure in accordance with 5 U.S.C. 552 (b)(6). This exemption protects from disclosure information that would constitute a clearly unwarranted invasion of personal privacy. In balancing the public interest for the information you requested against the privacy interests involved, we have determined that the privacy interests sufficiently satisfy the requirements for the application of the (b)(6) exemption.

Since these deletions may be construed as a partial denial of your request, you are hereby advised of this Agency's appeal procedures. If you decide to appeal, you should do so in the manner outlined below.

- The appeal must be in sent via U.S. postal mail, fax, or electronic delivery (e-mail) and addressed to:

  NSA FOIA/PA Appeal Authority (P132)
  National Security Agency
  9800 Savage Road STE 6932
  Fort George G. Meade, MD 20755-6932

  The facsimile number is (443)479-3612.
  The appropriate email address to submit an appeal is FOIARSC@nsa.gov.
- It must be postmarked or delivered electronically no later than 90 calendar days from the date of this letter. Decisions appealed after 90 days will not be addressed.
- Please include the case number provided above.
- Please describe with sufficient detail why you believe the denial was unwarranted.
- NSA will endeavor to respond within 20 working days of receiving your appeal, absent any unusual circumstances.

For further assistance and to discuss any aspect of your request, you may contact our FOIA Public Liaison at foialo@nsa.gov. You may also contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. OGIS contact information is Office of Information Services, National Archives and Records Administration, 8601 Adelphi Road-OGIS, College Park, MD 20740-6001; e-mail: ogis@nara.gov; main: 202-741-5770; toll free: 1-877-684-6448; or fax: 202-741-5769.

Please be advised that records responsive to your request include material containing other government agencies' information. Because we are unable to make determinations as to the releasability of the other agencies' information, the subject material has been referred to the appropriate agencies for review and direct response to you.

Sincerely,

Paul K
for

JOHN R. CHAPMAN
Chief, FOIA/PA Office
NSA Initial Denial Authority

Encls:
a/s

Doc ID: 6643878

(U//~~FOUO~~) Anti-satellite Weapon

~~SECRET~~

From Intellipedia

An **anti-satellite weapon** (**ASAT**) is a space weapon designed to destroy a satellite for strategic military purposes. Currently, only the USA, the former USSR and the People's Republic of China are known to have developed these weapons, with India claiming the technical capability to develop such weapons. On January 11, 2007, China destroyed an old orbiting weather satellite, the world's first test since the 1980s.

Contents

History

The development and design of anti-satellite weapons has followed a number of paths. The initial efforts by the USA and the USSR were using air-launched missiles from the 1950s; many more exotic proposals came afterwards.

U.S. ASAT missile

U.S. Vought ASM-135 ASAT missile launch on Sep. 13, 1985 Air-launched missiles were the first approach because the basic technology was well known. The US began tests of such a system in 1959 but initial results were very discouraging, the first test launch missed by over 6,000 m, and after further failures the project was halted in 1963. Simultaneous U.S. Navy projects were also abandoned although smaller projects did drag on until the early 1970s. The USSR began a similar program in 1967 and actually built and deployed ASAT missiles from around 1976. Stung by the Soviet deployment, the USAF revived its own ASAT program. From 1977 Vought developed an ASAT to attack satellites in Low Earth Orbit (LEO), the three stage missile was fired by an F-15 Eagle in a steep climb and carried a miniature homing vehicle (MHV) to track and then destroy the target kinetically. The first test was in 1983 and the first successful interception, of the US satellite P78 SolWind, was on September 13, 1985.

(U) An F-15 carrying the ASM-135 ASAT missile

The use of high altitude nuclear explosions (see DOMINIC I, Program 437) to destroy satellites was considered after the tests of the first conventional missile systems in the 1960s. Existing guidance technology was insufficient to ensure a strike while a nuclear blast would be sufficient if the weapon was within 1,000 km of the target. However the drawbacks of this excessive destructive radius and the potential of more extensive radiation and EMP damage meant that nuclear ASAT systems did not reach test phase. However, the US adapted the nuclear armed Nike Zeus for ASAT from 1962. Codenamed Mudflap, the missile was designated DM-15S and a single missile was deployed at the Kwajalein atoll until 1966 when the project was ended in favour of the USAF Thor ASAT which ran until 1972. The US also detonated a number of high altitude nuclear weapons in other tests. A 1.4 Mt blast at 400 km over the Pacific in 1958 damaged three satellites and also disrupted power transmission and communications across the Pacific. The Outer Space Treaty of 1967 banned the orbiting or staging of nuclear weapons in space, but does not ban the attacking of satellites with nuclear weapons directly targeted by ground- or air-launched missiles.

Other concepts considered included manned and unmanned ASAT from orbit. A manned space vehicle would rendezvous with a satellite and then either disable or capture it. The military use of automatic self-destruct in satellites would have made this hazardous and the concept was soon altered to a manned vehicle equipped with stand-off weapons. Unmanned orbital ASAT suffered the same problems as air-launched attacks: guidance and interception systems could not be developed sufficiently well to ensure an intercept. Other ideas in addition to the unmanned orbital ASAT included kamikaze satellites, space mine dispensers and single-use space interceptors.

The USSR went for a kamikaze satellite approach because it would be the simplest and cheapest to implement. The designs were named Istrebitel Sputnikov (IS) (Interceptor of satellites, or literally "Destroyer of satellites"). Development work began in the early 1960s and the first test flights were made in 1968. The project was halted in 1972 under the terms of SALT I but the system was still deployed and testing of new versions continued up until around 1982 when the entire concept was scrapped, possibly in favour of

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more advanced orbital ASAT systems; whether such designs were actually ever deployed is still a matter of heated debate. The Soviet Union experimented with large, ground-based ASAT lasers from the 1970's onwards (see Terra-3), with a number of US spysats reportedly being 'blinded' during the 70's and 80's. In 2006 China was also suspected of blinding US spy satellites. [2] The USSR also experimented with military space stations with a capability for anti-satellite duty in its Almaz program.

The US followed a more technical space-based weapon approach. The primary area of research was into directed energy weapons, including a bizarre nuclear explosion powered laser proposal developed at Lawrence Livermore National Laboratory (LLNL) in 1968. Other research was based on more conventional lasers or masers and developed to include the idea of a satellite with a fixed laser and a deployable mirror for targeting. LLNL continued to consider more edgy technology but their X-ray laser system development was cancelled in 1977 (although research into X-ray lasers was resurrected during the 1980's as part of the SDI). The USSR had also researched directed energy weapons, under the Fon project from 1976, but the technical requirements needed of the high-powered gas dynamic lasers and neutral or charged particle beam systems seemed to be beyond reach. In the early 80's, the Soviet Union also started developing a counterpart to the US air-launched ASAT system, using modified MiG-31 'Foxhounds' (at least one of which was completed) as the launch platform. In 1985, the United States successfully destroyed one of its own satellites using a missile. [3]

After the Soviet Union collapsed, there were proposals to use this aircraft as a launch platform for lofting commercial and science packages into orbit. Recent political developments (see below) may have seen the reactivation of the Russian Air-Launched ASAT program, although there is no confirmation of this as yet.

The Strategic Defense Initiative gave the US and Russian ASAT programs a major boost; ASAT projects were adapted for ABM use and the reverse was also true. The initial US plan was to use the already developed MHV as the basis for a space based constellation of about 40 platforms deploying up to 1,500 kinetic interceptors. By 1988 the US project had evolved into an extended four stage development. The initial stage would consist of the Brilliant Pebbles defense system, a satellite constellation of 4,600 kinetic interceptors (KE ASAT), of 45 kg each, in Low Earth orbit, and their associated tracking system. The next stage would deploy the larger platforms and the following phases would include the laser and charged particle beam weapons that would be developed by that time from existing projects such as MIRACL. The first stage was intended to be completed by 2000 at a cost of around $125 billion.

Research in the US and Russia was proving that the requirements, at least for orbital based energy weapon systems, were, with available technology, close to impossible. Nonetheless, the strategic implications of a possible unforeseen breakthrough in technology forced the USSR to initiate massive spending on research in the 12th Five Year Plan, drawing all the various parts of the project together under the control of GUKOS and matching the US proposed deployment date of 2000.

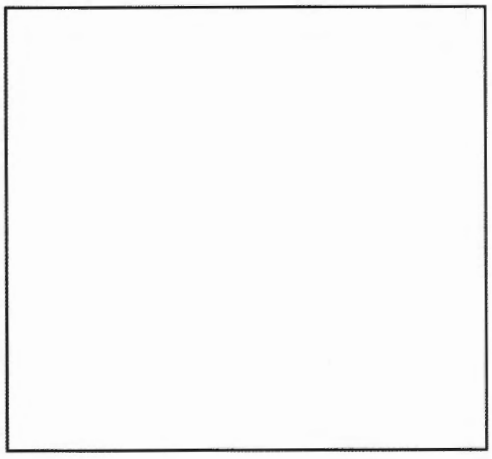
Both countries began to reduce expenditure from 1989 and the Russian Federation unilaterally discontinued all SDI research in 1992. Research and Development (both of ASAT systems and other space based/deployed weapons) has, however reported to have be been resumed under the Vladimir Putin government as a counter to renewed US Strategic Defense efforts post Anti-Ballistic Missile Treaty. However the status of these efforts, or indeed how they are being funded through National Reconnaissance Office projects of record, remains unclear. The U.S. has begun working on a number of programs which could be foundational for a space-based ASAT. These programs include the Experimental Spacecraft System (XSS 11), the Near-Field Infrared Experiment (NFIRE), and the space-based interceptor (SBI).

2007 Chinese missile test

Main article: 2007 Chinese anti-satellite missile test

At 5:28 p.m. EST January 11, 2007, the People's Republic of China successfully destroyed a defunct Chinese weather satellite, FY-1C. The destruction was carried out by a modified SC-19 medium-range ballistic missile with kinetic ASAT warhead.[1] FY-1C was a weather satellite orbiting Earth in polar orbit at an altitude of about 537 miles (865km), with a mass of about 750 kg. Launched in 1999, it was the fourth satellite in the Feng Yun series. This test raised concern in some other countries, partly because the Chinese government refused to publicly confirm whether or not the test had occurred until January 23, 2007 but mainly because of the potentially damaging space debris this test created and the implications it may have for a space arms race. The EU presidency stated, "A test of an anti-satellite weapon is inconsistent with international efforts to avert an arms race in outer space and undermines security in outer space."

(b)(1)
(b)(3)-50 USC 3024(i)
(b)(3)-P.L. 86-36



See Also

- Laser

Doc ID: 6643378 Retrieved from [redacted]

Categories: Military Terms Weapons Anti-Satellite Weapons

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(U//~~FOUO~~) PMESII China Weapons and Equipment

~~SECRET~~

From Intellipedia

Contents

Missiles

Main article: PMESII China Missiles

Sorting out Chinese missile programs is no easy task, given both the impressive diversity of these programs and the serious paucity of public information. This challenge is compounded by the relative lack of analytical attention to the question, as well as by the absolutely bewildering array of designations that are attached to each missile. A review of a number of apparently authoritative sources discloses persistent and irreconcilable differences in associating various designations with specific pieces of hardware. The paucity of specification data precludes robust reconciliation, and at least some authorities appear to have been led astray by a failure to contemplate pictures of the missiles in question.

There are at least four sources of designation nomenclature for Chinese missiles:

- Service Designation - the publicly disclosed name apparently used by the Chinese military once a missile enters operational service [eg, YJ-8].
- Builders Designation - the publicly disclosed name used by the enterprise developing the missile, both prior to and following acceptance for operational service [eg, C-801].
- NATO Designation - the mnemonic names long familiar from their application to Soviet missiles [eg, SARDINE.
- DIA Designation - the alpha-numeric type designations, again familiar from application to Soviet systems [eg SS = surface to surface] , stylisticlly modified by the insertion of the modifying letter "C" [for China] at the appropriate point in the alphanumeric sequence [eg CSS-N-4].

The Chinese alpha-numeric service designators follow a reasonably rigorous pattern not too dissimilar from that used in the United States, and one which is a model of clarity by comparison with the practices of almost all other countries. The application of the "HY" designation is somewhat confusing to Westerners, since the other Chinese missiles using the "HY" designator are large coastal defense cruise missiles. The confusion is entirely of Western origin, since the Chinese characters for the Hai Ying [Sea Eagle] anti-ship missile and the Hong Ying [Red Tassel] anti-tank missile are readily distinguished. A rather more substantial source of obscurity arises in the case of the "PL" designation used for air-to-air missiles, which some sources elaborate as Pili [Thunderbolt] while others suggest Pen Lung [Air Dragon]. Although the service designators tend to follow a complete numerical sequence, this is evidently no more the rule in China than in America. The diversity of designation categories for some types of missiles, notably anti-tank and anti-aircraft, and may reflect industry rather than service designations, though this requires some further explanation

Anti-satellite system

On 17 January 2007 Craig Covault, writing in Aviation Week & Space Technology, reported that China conducted a successful anti-satellite (ASAT) weapons test at about 5:28 p.m. EST on 11 January 2007. A kinetic kill vehicle launched by a medium range ballistic missile destroyed an inactive Chinese weather satellite. The Chinese Feng Yun 1C (FY-1C) polar orbiting meterological satellite had been launched in 1999. The ASAT was launched from or near the Xichang Space Center, and intercepted the target at an altitude of variously reported as either 530 or 537 miles. This altitude is consistent with the operational altitudes of American and Japanese imagery intelligence satellites.

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"The U.S. believes China's development and testing of such weapons is inconsistent with the spirit of cooperation that both countries seek in the civil space area," National Security Council spokesman Gordon Johndroe said. "We and other countries have expressed our concern regarding this action to the Chinese."

China does not have a publicly acknowledged dedicated anti-satellite effort. Existing Chinese launch capabilities could provide the basis for the development of such a system. The missile used for the 17 January 2007 test was not immediately identified. National Security Council spokesman Gordon Johndroe said the ASAT was launched on a ground-based medium-range ballistic missile. This would probably be the DF-21 / CSS-5 medium range ballistic missile, with a range of 1800 km carrying a 600 kg warhead.

CNN's Jamie McIntyre reported on 17 January 2007 that this successful test followed two or three earlier unsuccessful attempts. These prior attempts had not been previously reported in public. This would be generally consistent with the flight history of the small commercial satellite launch vehicle, called KT-1 (Kaituozhe-1), based on the solid rocket motors of the DF-31 ICBM. This system has consistently failed to place satellites into orbit, a flight profile consistent with a direct ascent ASAT test. The ASAT launcher is known as the KT-409 derivation of the DF-31, and KT-1 space booster.

R&D on fundamental technologies applicable to an ASAT weapons system have been ongoing since the 1960s. Under the 640 Program, the space and missile industry's Second Academy, traditionally responsible for SAM development, set out to field a viable antimissile system, consisting of a kinetic kill vehicle, high powered laser, space early warning, and target discrimination system components. This program was abandoned in 1980.

Preliminary research on ASATs has been carried out since the 1980s, at least partly funded under the 863 Program for High Technology Development.

PLA-affiliated publications assert that while China does not yet possess the capability to destroy satellites with high-powered lasers, they are capable of damaging optical reconnaissance satellites. The 1998 Report to Congress "Future Military Capabilities and Strategy of the People's Republic of China", states "China already may possess the capability to damage, under specific conditions, optical sensors on satellites that are very vulnerable to damage by lasers. However, given China's current interest in laser technology, it is reasonable to assume that Beijing would develop a weapon that could destroy satellites in the future."

China is said to be acquiring a variety of foreign technologies, which could be used to develop an anti-satellite (ASAT) capability. Beijing already may have acquired technical assistance which could be applied to the development of laser radars used to track and image satellites and may be seeking an advanced radar system with the capability to track satellites in low earth orbit. It also may be developing jammers, which could be used against Global Positioning System (GPS) receivers. In addition, China already may possess the capability to damage, under specific conditions, optical sensors on satellites that are very vulnerable to damage by lasers. Beijing also may have acquired high-energy laser equipment and technical assistance, which probably could be used in the development of ground-based ASAT weapons.

Given China's current level of interest in laser technology, Beijing probably could develop a weapon that could destroy satellites in the future. Although specific Chinese programs for laser ASAT have not been identified, press articles indicate an interest in developing this capability and Beijing may be working on appropriate technologies.

According to senior consultant, James T. Westwood, of Military Science and Defense Analytics, Unionville, VA, the Chinese ASAT test in January, 2007, was propitious in confirming in the real world, an original operations research and analysis study he did during 1989-1990 while consulting to a consortium of defense contractors paid by the then Strategic Defense Initiative Office (SDIO) in the Pentagon.

In that novel study, Westwood showed that space-based 'Brilliant Pebbles' component of the national missile defense system, sponsored by Dr. Lowell Wood (Edward Teller's protégé), of Lawrence Livermore National Laboratory, was a fundamentally flawed concept of operations because (1) it required less than one percent of the total constellation contemplated by the LLNL model to perform effectively and (2) because, like as the PRC anti-satellite event over fifteen years later, every successive, successful, kinetic-kill impact would increase the volume of an orbiting debris cloud, itself ever-more ruinous of the jth "pebble's" reliability.

The Clinton Administration cancelled 'Brilliant Pebbles' five years later. During this ground-breaking study, Mr. Westwood collaborated with Dr. Gregory Canavan, a kinematicists' and, at one time, the youngest lieutenant colonel in the U.S. Air Force on active duty, then at the Los Alamos National Laboratory. (Kinematics is that branch of physics which studies bodies in motion without respect to how they come to be in motion.)

In August 2006 there were reports that China had fired high-power lasers at American intelligence satellites flying over its territory. National Reconnaissance Office Director, Donald M. Kerr, told reporters that a US satellite had recently been "painted," or illuminated, by a ground-based laser in China. Some observers saw this as tests of Chinese capability to blind the spacecraft, while others took it as being tests of a laser radar for guiding a direct ascent kinetic energy ASAT. It was unclear how many times a the ground-based laser was tested against US spacecraft.

According to Westwood, in 1978, while employed as a senior special research analyst for one of the three-letter national intelligence agencies, he discovered and crystallized into application, a novel, original technique for interpreting and predicting all of the military and space programs of the former Soviet Union with consistent accuracy and reliability. There came from this numerous applications and non-surprises, e.g., that the ballistic missile programs, with their space rocket off-shoots (to coin a phrase), were arguably the most reliable and revealing among the thousands of armor, aircraft, ship, artillery, etc. military hardware and operations programs. In

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a recent interview with this author, Westwood says that to the extent that the military programs of the PRC long may have replicated the science Soviet Union's national planning schema, the same methodology likely can successfully illuminate China's future military and space programs. The present author was taught this methodology by Westwood in a Continuing Engineering Education short course at the George Washington University in the late 1980's.

The Dalian Universuty of Technology design team was on January 9, 2009 awarded the top PRC Science and Tecgnology Award for the development of the ASAT system. It was headed by Gua Dongming head of the Dalian scientific team that included Jai Zhenyuan, Kang Renke, Wang Yongqing, Sheng Xianjun of Dalian University and Yu Huilong of the 25th institute , 2nd. Academy Astronautics science and industry group.

Courtesy of Aviation Week & Space Technology and Aviationnow.com

U. S. intelligence agencies believe China performed a successful anti-satellite (asat) weapons test at more than 500 mi. altitude Jan. 11 destroying an aging Chinese weather satellite target with a kinetic kill vehicle launched on board a ballistic missile.

The Central Intelligence Agency, the National Security Agency, the Defense Intelligence Agency, NASA and other government organizations have a full court press underway to obtain data on the alleged test. Aviation Week & Space Technology reports on its web site Aviationnow.com. If the test is verified it will signify a major new Chinese military capability.

Neither the Office of the U. S. Secretary of Defense nor Air Force Space Command would comment on the attack, which followed by several months the alleged illumination of a U. S. military spacecraft by a Chinese ground based laser.

China's growing military space capability is one major reason the Bush Administration last year formed the nation's first new National Space Policy in ten years, Aviation Week will report in its Jan. 22 issue.

"The policy is designed to ensure that our space capabilities are protected in a time of increasing challenges and threats," says Robert G. Joseph, Under Secretary for Arms Control and International Security at the U. S. State Dept. "This is imperative because space capabilities are vital to our national security and to our economic well being," Joseph said in an address on the new space policy at the National Press Club in Washington D. C.

Details emerging from space sources indicate that the Chinese Feng Yun 1C (FY-1C) polar orbit weather satellite launched in 1999 was attacked by an asat system launched from or near the Xichang Space Center.

The attack is believed to have occurred as the weather satellite flew at 530 mi. altitude 4 deg. west of Xichang located in Sichuan province. Xichang is a major Chinese space launch center.

Although intelligence agencies must complete confirmation of the test, the attack is believed to have occurred at about 5:28 p.m. EST Jan. 11. U. S. intelligence agencies had been expecting some sort of test that day, sources said.

U. S. Air Force Defense Support Program missile warning satellites in geosynchronous orbit would have detected the Xichang launch of the asat kill vehicle and U. S. Air Force Space Command monitored the FY-1C orbit both before and after the exercise.

The test, if it occurred as envisioned by intelligence source, could also have left considerable space debris in an orbit used by many different satellites.

USAF radar reports on the Chinese FY-1C spacecraft have been posted once or twice daily for years, but those reports jumped to about 4 times per day just before the alleged test.

The USAF radar reports then ceased Jan. 11, but then appeared for a day showing "signs of orbital distress". The reports were then halted again. The Air Force radars may well be busy cataloging many pieces of debris, sources said.

Although more of a "policy weapon" at this time, the test shows that the Chinese military can threaten the imaging reconnaissance satellites operated by the U. S., Japan, Russia, Israel and Europe.

The Republic of China also operates a small imaging spacecraft that can photograph objects as small as about 10 ft. in size, a capability good enough to count cruise missiles pointed at Taiwan from the Chinese mainland. The Taiwanese in the past have also leased capability on an Israeli reconnaissance satellite.

Firearms

Since the establishment of the People's Republic in 1949, the Chinese received massive amounts of weaponry and equipment as well as the capability to build their own weapons from the Soviet Union before the Sino-Soviet split in the late 1950s and early 1960s. Most of the firearms that the PLA used in both the past and the present have their origins in many Soviet or Russian small arms like the Mosin-Nagant series rifles and carbines (the Chinese made the Russian Mosin-Nagant M-1944 carbine under licence as the Type 53 Carbine), the SKS carbine, the AK-47 assault rifle, the RPD light-machine gun, the Tokarev TT33 pistol, the DShK heavy machine gun.

The PLA's main infantry rifle is the recently issued QBZ-95. It is a replacement for the Type 81, which bears similarities to the AK-47. The PLA also utilise locally-manufactured versions of the Russian AK-47 series rifles and SKS series carbines with the

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Chinese Type 56 Assault Rifle (a locally-produced version of the AKM) and the Chinese Type 56 Carbine (a locally produced version of the SKS). Despite being similar to the original Russian-made AK-47s and SKSs, both the Chinese Type 56 Assault Rifle and the Chinese Type 56 Carbine have a number of differences which separate them from their original Russian counterparts. One example of the difference is that the Chinese Type 56 Assault Rifle has a permanently-attached, stiletto-style bayonet under the barrel of the rifle, a feature that is native to many Chinese-made AK-47s. The Chinese Type 56 Carbine is also different from the original Russian-made SKS carbines with the Chinese SKSs also utilising a stilletto-style bayonet like the Chinese Type 56 Assault Rifle while the original Russian-made SKS carbines utilised a sword-style bayonet.

The Chinese Type 56 was mass produced from the 1960s to the 1980s and was exported to many countries around the world. Despite the introduction of newer rifles like the Type 81 and the QBZ-95, the Chinese Type 56/AK-47 rifles are still used by some PLA second-line and training units. However, the Chinese Type 56/SKS carbines have been retained for ceremonial duties by the PLA in the same manner as the SKS has been retained for ceremonial duties in the Russian armed forces. The PLA and police forces are widely equipped with the Type 54, 7.62 mm pistol, although newer and better versions exist. The newest pistol in service is the QSZ-92 pistol.

Land-based weapons

The PLA's tank inventory was numbered around 10,000 during its peak time in the 1980s and 1990s, but this is estimated to have been reduced to 7,000, operating in 11 armored brigades. The Chinese-produced versions of the Soviet T-54A (Type 59 and Type 69) account for over two-thirds of the total PLA tank inventory. While retiring some of the older Type 59/69 series and replacing them with the second generation Type 88 and Type 96, the PLA is also upgrading the remaining Type 59/69 series tanks with new technologies including improved communication and fire-control systems, night vision equipment, explosive reactive armor, improved powerplant, and gun-fired anti-tank missiles so that they can remain in service as mobile fire-support platforms. The newest tank is the Type 99, which entered PLA service in 2001.

The PLA also operates about 2,000 light tanks including the Type 62 light tank and the Type 63 amphibious tank, both of which entered production in the 1960s. The Type 63 has now been upgraded with the addition the improved Type 63A featuring computerized fire-control, gun-fired anti-tank guided missile (ATGM), night vision equipment, satellite navigation, and improved powerplant.

Nuclear weapons

In 1955, China decided to proceed with a nuclear weapons program. The decision was made after the United States threatened the use of nuclear weapons against China should it take action against Quemoy and Matsu, coupled with the lack of interest of the Soviet Union for using its nuclear weapons in defense of China.

After their first nuclear test (China claims minimal Soviet assistance before 1960) on October 16 1964, China was the first state to pledge no-first-use of nuclear weapons. On 1 July 1966, the Second Artillery Corps (as named by Premier Zhou Enlai) was formed.

China became a major international arms exporter during the 1980s. Beijing joined the Middle East arms control talks, which began in July 1991 to establish global guidelines for conventional arms transfers, and later announced that it would no longer participate because of the U.S. decision to sell 150 F-16A/B aircraft to Taiwan on September 2 1992.

It joined the International Atomic Energy Agency (IAEA) in 1984 and pledged to abstain from further atmospheric testing of nuclear weapons in 1986. China acceded to the nuclear Non-Proliferation Treaty (NPT) in 1992 and supported its indefinite and unconditional extension in 1995. In 1996, it signed the Comprehensive Test Ban Treaty and agreed to seek an international ban on the production of fissile nuclear weapons material.

In 1996, China committed to provide assistance to unsafeguarded nuclear facilities. China attended the May 1997 meeting of the NPT Exporters (Zangger) Committee as an observer and became a full member in October 1997. The Zangger Committee is a group which meets to list items that should be subject to IAEA inspections if exported by countries, which have, as China has, signed the Non-Proliferation Treaty. In September 1997, China issued detailed nuclear export control regulations. China began implementing regulations establishing controls over nuclear-related dual-use items in 1998. China also has decided not to engage in new nuclear cooperation with Iran (even under safeguards), and will complete existing cooperation, which is not of proliferation concern, within a relatively short period. Based on significant, tangible progress with China on nuclear nonproliferation, President Clinton in 1998 took steps to bring into force the 1985 U.S.–China Agreement on Peaceful Nuclear Cooperation.

Beijing has deployed a modest ballistic missile force, including land and sea-based intermediate-range and intercontinental ballistic missiles (ICBMs). It is estimated that China has about 100-160 liquid fueled ICBMs capable of striking the United States with approximately 100–150 IRBMs able to strike Russia or Eastern Europe. China also possesses several hundred tactical SRBMs with ranges between 300 and 600 km.

China's nuclear program follows a doctrine of minimal deterrence, which involves having the minimum force needed to deter an aggressor from launching a first strike. The current efforts of China appear to be aimed at maintaining a survivable nuclear force by, for example, using solid-fueled ICBMs in silos rather than liquid-fueled missiles. China's 2006 published deterrence policy claims that they will "uphold the principles of counterattack in self-defense and limited development of nuclear weapons", but "has never entered, and will never enter into a nuclear arms race with any country". It goes on to describe that China will never undertake a first

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strike, or use nuclear weapons against a non-nuclear state or zone. US strategists, however, suggest that the Chinese position may be ambiguous, and nuclear weapons may be used both to deter conventional strikes/invasions on the Chinese mainland, or as an international political tool - limiting the extent to which other nations can coerce China politically, an inherant, often inadvertant phenomenon in international relations as regards any state with nuclear capabilities.

Chemical weapons

China is not a member of the Australia Group, an informal and voluntary arrangement made in 1985 to monitor developments in the proliferation of dual-use chemicals and to coordinate export controls on key dual-use chemicals and equipment with weapons applications. In April 1997, however, China ratified the Chemical Weapons Convention (CWC) and, in September 1997, promulgated a new chemical weapons export control directive.

ASAT

The PLA has started the development of an anti-ballistic and anti-satellite system in the 1960s, code named Project 640, including ground based lasers, and anti-satellite missiles. On January 11, 2007 China conducted a successful test of an anti-satellite missile, with an SC-19 class KKV.

Space-based system

The PLA has deployed a number of space-based systems for military purposes, including the imagery intelligence]satellite systems like the ZiYan series, and the militarily designated JianBing series, synthetic aperture satellites (SAR) such as JianBing-5, BeiDou satellite navigation network, and secured communication satellites with FENGHUO-1.

Manned spaceflight

The PLA is responsible for the Chinese space program. To date, all the participants have been selected from members of the PLA Air Force. China became the third country in the world to have sent a man into space by its own means with the flight of Yang Liwei aboard the Shenzhou 5 spacecraft on October 15, 2003 and the flight of Fèi Jùnlóng Niè Hàishèng aboard Shenzhou 6 on October 12, 2005 and Zhai Zhigang Liu Boming aboard Shenzhou 7 on September 25,2008.

Missile technology control regime

While not formally joining the regime, in March 1992, China undertook to abide by the guidelines and parameters of the Missile Technology Control Regime (MTCR), the multinational effort to restrict the proliferation of missiles capable of delivering weapons of mass destruction. China reaffirmed this commitment in 1994 and pledged not to transfer MTCR-class ground-to-ground missiles. In November 2000, China committed to not assist in any way the development by other countries of MTCR-class missiles.

Lasers

China has been purported to have engaged in laser weapons research, but there have been no reliable sources of information regarding the state, or nature of these weapons systems. Speculation from some sources have suggested incredibly varied programs of development, such as anti-missile, anti-personnel, and anti-satellite applications.

Land mines

China's attitude towards limiting the use of land mines is still unclear. However it has stopped production as of 2003, due to its China's peaceful rise policy.

Developing Weapons

According to the Pentagon, China is currently developing kinetic-energy weapons, high-powered lasers, high-powered microwave weapons, particle-beam weapons, and electromagnetic pulse weapons with its increase of military fundings.

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From Intellipedia

US Media Outlet Article

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How Offensive Is Missile Defense?

By: Robert Haddick - TCS Daily - 11 April 2007

The United States government's intelligence community believes that by 2015 Iran will have developed an inter-continental ballistic missile (ICBM) capable of striking the U.S. homeland. Should Iran's nuclear program continue apace, it might also have a nuclear warhead to attach to this missile.

To respond to this potential threat, the Bush administration recently proposed installing a minimal ground-based anti-ballistic missile capability in Europe with a mission of defending the United States against an ICBM attack from Iran. The U.S. has proposed bilateral negotiations with Poland and the Czech Republic to establish this system. Under the proposal, the U.S. would base ten interceptor missiles in Poland and an associated radar site oriented against Iran in the Czech Republic. This arrangement would exist outside the NATO alliance and the U.S. military would maintain sole command and control over the system. (Mr. Eric Edelman, the U.S. Undersecretary of Defense for Policy, recently conducted a briefing with the Pentagon press corps on this matter, the transcript for which is here.)

Backlash in Europe

U.S. government officials acknowledge that they were tardy in explaining their program and intentions to the Europeans. In any case, the Europe reception to the American missile defense plan has been harsh. This article from The Economist describes the mood:

The instinctive reaction of Frank-Walter Steinmeier, Germany's foreign minister and a member of the centre-left Social Democratic Party (SPD), was to rebuke America for "startling" Russia with talk of placing fancy new kit in the neighbourhood. "Because the stationing sites are getting closer to Russia, one should have talked with Russia first," he chided. The SPD chairman, Kurt Beck, went further. He has called the missile-defence plan a prelude to an arms race, and said: "We don't need new missiles in Europe."

Mr. Javier Solana, the European Union's chief for foreign policy, issued a blunt warning to Poland and the Czech Republic:

European Union foreign policy and security chief Javier Solana on Thursday warned the Czech Republic and Poland against agreeing to host a planned United States anti-missile system.

While the EU treaties granted member states sovereignty on security matters, "that sovereignty has to be made compatible with the EU's general interest in security," Solana told the European Parliament in Brussels. Why the Angst in Europe?

Much of the European backlash against the American plan for missile defense might be due to the general feeling of anti-Americanism that now exists there. Setting that reason aside, what are the strategic concerns Europeans policymakers might have?

The American missile defense proposal defends America. What's in it for Europe?

During his press briefing (cited above), Undersecretary Edelman mentioned that NATO was making its own separate study of Europe's missile defense needs. This study might result in a proposal for a NATO-controlled system to defend Europe against intermediate-range ballistic missiles. Mr. Edelman also mentioned that by adding a third site to the proposed American system in Poland and the Czech Republic (presumably additional interceptors at base in southeastern Europe), the American system could then defend Europe against the Iranian threat. But while the Europeans ponder what, if anything, they should do about defending themselves against ballistic missiles, the Americans are pushing forward on their defense needs. That is the implication of American policy.

The American proposal angers Russia. Europe doesn't want to live next to an angry Russia.

As Mr. Peter Cuthbertson recently discussed at TCS Daily, the Russians have responded to the American missile defense plan by vowing to rip up the 1988 Intermediate Nuclear Forces Agreement, mulling the resurrection of their SS-20 nuclear missiles, and threatening with attack the proposed missile de

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The Americans have responded to Russia's threats with emissaries to Moscow and an offer to cooperate with Russia on the general matter of rogue missile threats. It remains to be seen whether these entreaties will mollify the Russians and in turn, calm down the Europeans. Needless to say, the Russians have now stumbled on an effective lever by which they can extract something from either the Europeans or the Americans.

By entering into bilateral defense agreements with Poland and the Czech Republic, the Americans are dividing Europe against itself.

As someone trying to build up the European Union's institutions and credibility, one can understand why Mr. Solana might be unhappy with an American initiative that seems to carve off key central European countries from the rest of Europe.

But if Poland, the Czech Republic, the other former Soviet satellites seem to prefer defense arrangements with the Americans rather than with western Europeans, perhaps it is because the "new Europe" countries don't trust their neighbors to the west. The Czech foreign minister was quite open with this view, as the Financial Times recently described:

The Czech Republic wants the US to give security assurances in return for the country's help in providing a base for the proposed US missile defence system, Karel Schwarzenberg, Czech foreign minister, has said.

The demand, made in an interview with FT Deutschland, the Financial Time's sister paper, reflects the Czech Republic's fear that the Nato alliance would not fulfil all its defence commitments in the case of an attack on the country.

Commenting on Nato, Mr. Schwarzenberg said there had been "relatively few measures to show that security guarantees and the unconditional solidarity also apply to the new states".

Nato's 26 allies are formally committed to mutual self-defence under Article Five of its treaty. A failure of Nato to act in case of an attack, would "naturally be a big problem", Mr. Schwarzenberg said.

Mr. Schwarzenberg apparently understands European history. He also understands that as Iran gradually extends the range of its ballistic missiles, southeastern and central Europe will come under threat before Brussels, Madrid, Paris, and London will.

If Europe Doesn't Like Missile Defense, It Has Another Choice

If Europe doesn't like the American missile defense plan and the effect it might have on European solidarity, it might ponder for a moment the origin of the problem, namely Iran and its ballistic missile and nuclear programs. To its credit, Europe has stood with the United States as a united front at the United Nations Security Council. Together, the Europeans and the Americans have persuaded the Russians and Chinese to support two, albeit mild, Security Council resolutions designed to punish Iran for its lack of cooperation with international nuclear inspectors.

This is all to the good. But the Europeans must realize that their financing and trade with Iran keeps the Iranian government in business and thus Iran's nuclear and missiles programs moving ahead. Through the unilateral employment of sterner financial and trade sanctions against Iran, the Europeans have the capability of reining in the Iranian regime and its weapons programs. Removing the Iranian threat in this manner would remove the need for the American missile defense plan in Europe.

Imposing trade and financial sanctions on Iran means inflicting a bit of self-imposed economic harm on the European economy. It remains to be seen whether Europe's political leadership has the will to face the Iranian problem in this manner.

America Has Another Choice, Too

What if Mr. Solana gets his wish and the Eurocrats in Brussels succeed in compelling the Poles and Czechs to refrain from dealing bilaterally with the Americans? What if the American plan for a missile defense system based in Europe fails, while the Iranian threat advances? Where would that leave the Americans?

Geography, geometry, and the laws of physics are the reasons a ground-based defense against Iranian ICBMs ends up in central Europe. But if the Europeans refuse, the U.S. has another basing option: space.

Does the United States have a viable space-based missile defense alternative? Although the U.S. government has spent no significant money on such a program for many years, there are two space-based options it could develop relatively quickly.

The first option would be the Brilliant Pebbles program which the U.S. Congress terminated in 1991. A Brilliant Pebble is a very small (roughly one meter, 10 kilogram) space-based interceptor that flies in low earth orbit oriented to the source of a potential missile threat. A constellation of dozens or hundreds of Brilliant Pebbles would provide a stream of interceptors that would provide continuous coverage of a threat. Upon detection of a hostile missile launch, U.S. controllers would activate some of the Brilliant Pebbles in orbit. After activation, the Brilliant Pebbles interceptors would use their sensors to find the rising missiles. Brilliant Pebbles would then maneuver and collide with the missiles in the missiles' boost phase, when the missiles' rocket plumes would make tracking easy, and before the missiles would be able to deploy their warheads or decoys.

As this recent report (8 MB) explains (see page 22, appendix D and appendix I), the U.S. Congress terminated the Brilliant Pebbles program in 1991 solely due to concerns over infringement of the Anti-Ballistic Missile Treaty, not due to problems of with the technology. Of course, the ABM treaty became defunct in 2001. Since 1991, Brilliant Pebbles technologies have been proven

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numerous times in a wide variety of NASA small satellite missions and in dozens of successful flight tests conducted by the Missile Defense Agency using "hit-to-kill" technology on several interceptor platforms.

A second option would be a space-based laser system. An aircraft-mounted anti-missile laser system is already in the late stages of development. This system's target tracking and engagement lasers have already been proven. Placing these lasers in several low earth orbit satellites would provide wide coverage against hostile missile threats.

A U.S. space-based missile defense system would no doubt be a highly provocative choice, breaking a long-standing taboo against basing weapons in space. One can see some petty gamesmanship in the Russian "outrage" at the proposed ten missile interceptors in Poland. But an effective American space-based missile defense system would truly unnerve Russian and Chinese defense planners since such a system would have the potential of negating their nuclear deterrent forces. Handled unwisely, such an American space-based deployment could be destabilizing.

Europe Needs to Grow Up

In any case, the U.S. is in a better situation than Europe. As Iran gradually extends the range of its missiles, Europe will become a target before the U.S. will. Yet it is the Americans that are actively preparing a defense, while the Europeans, who will be threatened first, are only studying the problem and complaining about the American program.

What about the threat of retaliation against Iran to deter a ballistic missile attack? There is no European doctrine for nuclear weapons use, and only France and Britain have nuclear forces. And many in Britain are opposed to maintaining that country's nuclear deterrent. With no missile defenses and no credible nuclear deterrent doctrine, Europe will leave itself exposed to intimidation.

Instead of complaining about America's missile defense proposal, Europe's statesmen should instead recognize their peril. They should cooperate with the American effort and see how it can be extended to provide coverage for Europe.

If Europe instead blocks the American plan, it is Europe that will suffer the most. It will soon find itself within Iranian missile range, without a defense, and without a credible deterrent. Meanwhile, the U.S. will find a way to defend itself from ICBM attack, from space if necessary. Europe needs to stop pouting about missiles defenses and start facing its future.

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See Also

STRAT Relevant News Archive

Integrated Missile Defense Public Communications

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Contents

Missiles

Main article: PC China Missiles

Sorting out Chinese missile programs is no easy task, given both the impressive diversity of these programs and the serious paucity of public information. This challenge is compounded by the relative lack of analytical attention to the question, as well as by the absolutely bewildering array of designations that are attached to each missile. A review of a number of apparently authoritative sources discloses persistent and irreconcilable differences in associating various designations with specific pieces of hardware. The paucity of specification data precludes robust reconciliation, and at least some authorities appear to have been led astray by a failure to contemplate pictures of the missiles in question.

There are at least four sources of designation nomenclature for Chinese missiles:

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- Service Designation - the publicly disclosed name apparently used by the Chinese military once a missile enters operational service [eg, YJ-8].
- Builders Designation - the publicly disclosed name used by the enterprise developing the missile, both prior to and following acceptance for operational service [eg, C-801].
- NATO Designation - the mnemonic names long familiar from their application to Soviet missiles [eg, SARDINE.
- DIA Designation - the alpha-numeric type designations, again familiar from application to Soviet systems [eg SS = surface to surface] , stylisticlly modified by the insertion of the modifying letter "C" [for China] at the appropriate point in the alphanumeric sequence [eg CSS-N-4].

The Chinese alpha-numeric service designators follow a reasonably rigorous pattern not too dissimilar from that used in the United States, and one which is a model of clarity by comparison with the practices of almost all other countries. The application of the "HY" designation is somewhat confusing to Westerners, since the other Chinese missiles using the "HY" designator are large coastal defense cruise missiles. The confusion is entirely of Western origin, since the Chinese characters for the Hai Ying [Sea Eagle] anti-ship missile and the Hong Ying [Red Tassel] anti-tank missile are readily distinguished. A rather more substantial source of obscurity arises in the case of the "PL" designation used for air-to-air missiles, which some sources elaborate as Pili [Thunderbolt] while others suggest Pen Lung [Air Dragon]. Although the service designators tend to follow a complete numerical sequence, this is evidently no more the rule in China than in America. The diversity of designation categories for some types of missiles, notably anti-tank and anti-aircraft, and may reflect industry rather than service designations, though this requires some further explanation

Anti-satellite system

On 17 January 2007 Craig Covault, writing in Aviation Week & Space Technology, reported that China conducted a successful anti-satellite (ASAT) weapons test at about 5:28 p.m. EST on 11 January 2007. A kinetic kill vehicle launched by a medium range ballistic missile destroyed an inactive Chinese weather satellite. The Chinese Feng Yun 1C (FY-1C) polar orbiting meterological satellite had been launched in 1999. The ASAT was launched from or near the Xichang Space Center, and intercepted the target at an altitude of variously reported as either 530 or 537 miles. This altitude is consistent with the operational altitudes of American and Japanese imagery intelligence satellites.

"The U.S. believes China's development and testing of such weapons is inconsistent with the spirit of cooperation that both countries aspire to in the civil space area," National Security Council spokesman Gordon Johndroe said. "We and other countries have expressed our concern regarding this action to the Chinese."

China does not have a publicly acknowledged dedicated anti-satellite effort. Existing Chinese launch capabilities could provide the basis for the development of such a system. The missile used for the 17 January 2007 test was not immediately identified. National Security Council spokesman Gordon Johndroe said the ASAT was launched on a ground-based medium-range ballistic missile. This would probably be the DF-21 / CSS-5 medium range ballistic missile, with a range of 1800 km carrying a 600 kg warhead.

CNN's Jamie McIntyre reported on 17 January 2007 that this successful test followed two or three earlier unsuccessful attempts. These prior attempts had not been previously reported in public. This would be generally consistent with the flight history of the small commercial satellite launch vehicle, called KT-1 (Kaituozhe-1), based on the solid rocket motors of the DF-31 ICBM. This system has consistently failed to

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place satellites into orbit, a flight profile consistent with a direct ascent ASAT test. The ASAT launcher is known as the KT-409 derivation of the DF-31, and KT-1 space booster.

R&D on fundamental technologies applicable to an ASAT weapons system have been ongoing since the 1960s. Under the 640 Program, the space and missile industry's Second Academy, traditionally responsible for SAM development, set out to field a viable antimissile system, consisting of a kinetic kill vehicle, high powered laser, space early warning, and target discrimination system components. This program was abandoned in 1980.

Preliminary research on ASATs has been carried out since the 1980s, at least partly funded under the 863 Program for High Technology Development.

PLA-affiliated publications assert that while China does not yet possess the capability to destroy satellites with high-powered lasers, they are capable of damaging optical reconnaissance satellites. The 1998 Report to Congress "Future Military Capabilities and Strategy of the People's Republic of China", states "China already may possess the capability to damage, under specific conditions, optical sensors on satellites that are very vulnerable to damage by lasers. However, given China's current interest in laser technology, it is reasonable to assume that Beijing would develop a weapon that could destroy satellites in the future."

China is said to be acquiring a variety of foreign technologies, which could be used to develop an anti-satellite (ASAT) capability. Beijing already may have acquired technical assistance which could be applied to the development of laser radars used to track and image satellites and may be seeking an advanced radar system with the capability to track satellites in low earth orbit. It also may be developing jammers, which could be used against Global Positioning System (GPS) receivers. In addition, China already may possess the capability to damage, under specific conditions, optical sensors on satellites that are very vulnerable to damage by lasers. Beijing also may have acquired high-energy laser equipment and technical assistance, which probably could be used in the development of ground-based ASAT weapons.

Given China's current level of interest in laser technology, Beijing probably could develop a weapon that could destroy satellites in the future. Although specific Chinese programs for laser ASAT have not been identified, press articles indicate an interest in developing this capability and Beijing may be working on appropriate technologies.

According to senior consultant, James T. Westwood, of Military Science and Defense Analytics, Unionville, VA, the Chinese ASAT test in January, 2007, was propitious in confirming in the real world, an original operations research and analysis study he did during 1989-1990 while consulting to a consortium of defense contractors paid by the then Strategic Defense Initiative Office (SDIO) in the Pentagon.

In that novel study, Westwood showed that space-based 'Brilliant Pebbles' component of the national missile defense system, sponsored by Dr. Lowell Wood (Edward Teller's protégé), of Lawrence Livermore National Laboratory, was a fundamentally flawed concept of operations because (1) it required less than one percent of the total constellation contemplated by the LLNL model to perform effectively and (2) because, like as the PRC anti-satellite event over fifteen years later, every successive, successful, kinetic-kill impact would increase the volume of an orbiting debris cloud, itself ever-more ruinous of the jth "pebble's" reliability.

The Clinton Administration cancelled 'Brilliant Pebbles' five years later. During this ground-breaking study, Mr. Westwood collaborated with Dr. Gregory Canavan, a kinematicists' and, at one time, the youngest lieutenant colonel in the U.S. Air Force on active duty, then at the Los Alamos National

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Laboratory. (Kinematics is that branch of physics which studies bodies in motion without respect to how they come to be in motion.)

In August 2006 there were reports that China had fired high-power lasers at American intelligence satellites flying over its territory. National Reconnaissance Office Director, Donald M. Kerr, told reporters that a US satellite had recently been "painted," or illuminated, by a ground-based laser in China. Some observers saw this as tests of Chinese capability to blind the spacecraft, while others took it as being tests of a laser radar for guiding a direct ascent kinetic energy ASAT. It was unclear how many times a the ground-based laser was tested against US spacecraft.

According to Westwood, in 1978, while employed as a senior special research analyst for one of the three-letter national intelligence agencies, he discovered and crystallized into application, a novel, original technique for interpreting and predicting all of the military and space programs of the former Soviet Union with consistent accuracy and reliability. There came from this numerous applications and non-surprises, e.g., that the ballistic missile programs, with their space rocket off-shoots (to coin a phrase), were arguably the most reliable and revealing among the thousands of armor, aircraft, ship, artillery, etc. military hardware and operations programs. In a recent interview with this author, Westwood says that to the extent that the military programs of the PRC long may have replicated the former Soviet Union's national planning schema, the same methodology likely can successfully illuminate China's future military and space programs. The present author was taught this methodology by Westwood in a Continuing Engineering Education short course at the George Washington University in the late 1980's.

The Dalian Universuty of Technology design team was on January 9, 2009 awarded the top PRC Science and Tecgnology Award for the development of the ASAT system. It was headed by Gua Dongming head of the Dalian scientific team that included Jai Zhenyuan, Kang Renke, Wang Yongqing, Sheng Xianjun of Dalian University and Yu Huilong of the 25th institute , 2nd. Academy Astronautics science and industry group.

Courtesy of Aviation Week & Space Technology and Aviationnow.com

U. S. intelligence agencies believe China performed a successful anti-satellite (asat) weapons test at more than 500 mi. altitude Jan. 11 destroying an aging Chinese weather satellite target with a kinetic kill vehicle launched on board a ballistic missile.

The Central Intelligence Agency, the National Security Agency, the Defense Intelligence Agency, NASA and other government organizations have a full court press underway to obtain data on the alleged test, Aviation Week & Space Technology reports on its web site Aviationnow.com. If the test is verified it will signify a major new Chinese military capability.

Neither the Office of the U. S. Secretary of Defense nor Air Force Space Command would comment on the attack, which followed by several months the alleged illumination of a U. S. military spacecraft by a Chinese ground based laser.

China's growing military space capability is one major reason the Bush Administration last year formed the nation's first new National Space Policy in ten years, Aviation Week will report in its Jan. 22 issue.

"The policy is designed to ensure that our space capabilities are protected in a time of increasing challenges and threats," says Robert G. Joseph, Under Secretary for Arms Control and International Security at the U. S. State Dept. "This is imperative because space capabilities are vital to our national

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security and to our economic well being," Joseph said in an address on the new space policy at the National Press Club in Washington D. C.

Details emerging from space sources indicate that the Chinese Feng Yun 1C (FY-1C) polar orbit weather satellite launched in 1999 was attacked by an asat system launched from or near the Xichang Space Center.

The attack is believed to have occurred as the weather satellite flew at 530 mi. altitude 4 deg. west of Xichang located in Sichuan province. Xichang is a major Chinese space launch center.

Although intelligence agencies must complete confirmation of the test, the attack is believed to have occurred at about 5:28 p.m. EST Jan. 11. U. S. intelligence agencies had been expecting some sort of test that day, sources said.

U. S. Air Force Defense Support Program missile warning satellites in geosynchronous orbit would have detected the Xichang launch of the asat kill vehicle and U. S. Air Force Space Command monitored the FY-1C orbit both before and after the exercise.

The test, if it occurred as envisioned by intelligence source, could also have left considerable space debris in an orbit used by many different satellites.

USAF radar reports on the Chinese FY-1C spacecraft have been posted once or twice daily for years, but those reports jumped to about 4 times per day just before the alleged test.

The USAF radar reports then ceased Jan. 11, but then appeared for a day showing "signs of orbital distress". The reports were then halted again. The Air Force radars may well be busy cataloging many pieces of debris, sources said.

Although more of a "policy weapon" at this time, the test shows that the Chinese military can threaten the imaging reconnaissance satellites operated by the U. S., Japan, Russia, Israel and Europe.

The Republic of China also operates a small imaging spacecraft that can photograph objects as small as about 10 ft. in size, a capability good enough to count cruise missiles pointed at Taiwan from the Chinese mainland. The Taiwanese in the past have also leased capability on an Israeli reconnaissance satellite.

Firearms

Since the establishment of the People's Republic in 1949, the Chinese received massive amounts of weaponry and equipment as well as the capability to build their own weapons from the Soviet Union before the Sino-Soviet split in the late 1950s and early 1960s. Most of the firearms that the PLA used in both the past and the present have their origins in many Soviet or Russian small arms like the Mosin-Nagant series rifles and carbines (the Chinese made the Russian Mosin-Nagant M-1944 carbine under licence as the Type 53 Carbine), the SKS carbine, the AK-47 assault rifle, the RPD light-machine gun, the Tokarev TT33 pistol, the DShK heavy machine gun.

Type 95 Assault Rifle.

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The PLA's main infantry rifle is the recently issued QBZ-95. It is a replacement for the Type 81, which bears similarities to the AK-47. The PLA also utilise locally-manufactured versions of the Russian AK-47 series rifles and SKS series carbines with the Chinese Type 56 Assault Rifle (a locally-produced version of the AK-47) and the Chinese Type 56 Carbine (a locally produced version of the SKS). Despite being similar to the original Russian-made AK-47s and SKSs, both the Chinese Type 56 Assault Rifle and the Chinese Type 56 Carbine have a number of differences which separate them from their original Russian counterparts. One example of the difference is that the Chinese Type 56 Assault Rifle has a permanently-attached, stiletto-style bayonet under the barrel of the rifle, a feature that is native to many Chinese-made AK-47s. The Chinese Type 56 Carbine is also different from the original Russian-made SKS carbines with the Chinese SKSs also utilising a stilletto-style bayonet like the Chinese Type 56 Assault Rifle while the original Russian-made SKS carbines utilised a sword-style bayonet.

The Chinese Type 56 was mass produced from the 1960s to the 1980s and was exported to many countries around the world. Despite the introduction of newer rifles like the Type 81 and the QBZ-95, the Chinese Type 56/AK-47 rifles are still used by some PLA second-line and training units. However, the Chinese Type 56/SKS carbines have been retained for ceremonial duties by the PLA in the same manner as the SKS has been retained for ceremonial duties in the Russian armed forces. The PLA and police forces are widely equipped with the Type 54, 7.62 mm pistol, although newer and better versions exist. The newest pistol in service is the QSZ-92 pistol.

Further information: Infantry equipment of the People's Liberation Army of China

Land-based weapons

File:Type 98 tank raised view.jpg
Type 98 MBT

The PLA's tank inventory was numbered around 10,000 during its peak time in the 1980s and 1990s, but this is estimated to have been reduced to 7,000, operating in 11 armored brigades. The Chinese-produced versions of the Soviet T-54A (Type 59 and Type 69) account for over two-thirds of the total PLA tank inventory. While retiring some of the older Type 59/69 series and replacing them with the second generation Type 88 and Type 96, the PLA is also upgrading the remaining Type 59/69 series tanks with new technologies including improved communication and fire-control systems, night vision equipment, explosive reactive armor, improved powerplant, and gun-fired anti-tank missiles so that they can remain in service as mobile fire-support platforms. The newest tank is the Type 99, which entered PLA service in 2001.

The PLA also operates about 2,000 light tanks including the Type 62 light tank and the Type 63 amphibious tank, both of which entered production in the 1960s. The Type 63 has now been upgraded with the addition the improved Type 63A featuring computerized fire-control, gun-fired anti-tank guided missile (ATGM), night vision equipment, satellite navigation, and improved powerplant.

Nuclear weapons

In 1955, China decided to proceed with a nuclear weapons program. The decision was made after the United States threatened the use of nuclear weapons against China should it take action against Quemoy and Matsu, coupled with the lack of interest of the Soviet Union for using its nuclear weapons in defense of China.

After their first nuclear test (China claims minimal Soviet assistance before 1960) on October 16 1964,

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China was the first state to pledge no-first-use of nuclear weapons. On 1 July 1966, the Second Artillery Corps (as named by Premier Zhou Enlai) was formed.

China became a major international arms exporter during the 1980s. Beijing joined the Middle East arms control talks, which began in July 1991 to establish global guidelines for conventional arms transfers, and later announced that it would no longer participate because of the U.S. decision to sell 150 F-16A/B aircraft to Taiwan on September 2 1992.

It joined the International Atomic Energy Agency (IAEA) in 1984 and pledged to abstain from further atmospheric testing of nuclear weapons in 1986. China acceded to the nuclear Non-Proliferation Treaty (NPT) in 1992 and supported its indefinite and unconditional extension in 1995. In 1996, it signed the Comprehensive Test Ban Treaty and agreed to seek an international ban on the production of fissile nuclear weapons material.

In 1996, China committed to provide assistance to unsafeguarded nuclear facilities. China attended the May 1997 meeting of the NPT Exporters (Zangger) Committee as an observer and became a full member in October 1997. The Zangger Committee is a group which meets to list items that should be subject to IAEA inspections if exported by countries, which have, as China has, signed the Non-Proliferation Treaty. In September 1997, China issued detailed nuclear export control regulations. China began implementing regulations establishing controls over nuclear-related dual-use items in 1998. China also has decided not to engage in new nuclear cooperation with Iran (even under safeguards), and will complete existing cooperation, which is not of proliferation concern, within a relatively short period. Based on significant, tangible progress with China on nuclear nonproliferation, President Clinton in 1998 took steps to bring into force the 1985 U.S.–China Agreement on Peaceful Nuclear Cooperation.

Beijing has deployed a modest ballistic missile force, including land and sea-based intermediate-range and intercontinental ballistic missiles (ICBMs). It is estimated that China has about 100-160 liquid fueled ICBMs capable of striking the United States with approximately 100–150 IRBMs able to strike Russia or Eastern Europe. China also possesses several hundred tactical SRBMs with ranges between 300 and 600 km.

China's nuclear program follows a doctrine of minimal deterrence, which involves having the minimum force needed to deter an aggressor from launching a first strike. The current efforts of China appear to be aimed at maintaining a survivable nuclear force by, for example, using solid-fueled ICBMs in silos rather than liquid-fueled missiles. China's 2006 published deterrence policy claims that they will "uphold the principles of counterattack in self-defense and limited development of nuclear weapons", but "has never entered, and will never enter into a nuclear arms race with any country". It goes on to describe that China will never undertake a first strike, or use nuclear weapons against a non-nuclear state or zone. US strategists, however, suggest that the Chinese position may be ambiguous, and nuclear weapons may be used both to deter conventional strikes/invasions on the Chinese mainland, or as an international political tool - limiting the extent to which other nations can coerce China politically, an inherant, often inadvertant phenomenon in international relations as regards any state with nuclear capabilities.

Chemical weapons

China is not a member of the Australia Group, an informal and voluntary arrangement made in 1985 to monitor developments in the proliferation of dual-use chemicals and to coordinate export controls on key dual-use chemicals and equipment with weapons applications. In April 1997, however, China ratified the Chemical Weapons Convention (CWC) and, in September 1997, promulgated a new chemical weapons

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export control directive.

ASAT

The PLA has started the development of an anti-ballistic and anti-satellite system in the 1960s, code named Project 640, including ground based lasers, and anti-satellite missiles. On January 11, 2007 China conducted a successful test of an anti-satellite missile, with an SC-19 class KKV.

Space-based system

The PLA has deployed a number of space-based systems for military purposes, including the imagery intelligence]satellite systems like the ZiYan series, and the militarily designated JianBing series, synthetic aperture satellites (SAR) such as JianBing-5, BeiDou satellite navigation network, and secured communication satellites with FENGHUO-1.

Manned spaceflight

The PLA is responsible for the Chinese space program. To date, all the participants have been selected from members of the PLA Air Force. China became the third country in the world to have sent a man into space by its own means with the flight of Yang Liwei aboard the Shenzhou 5 spacecraft on October 15, 2003 and the flight of Fèi Jùnlóng Niè Hăishèng aboard Shenzhou 6 on October 12, 2005 and Zhai Zhigang Liu Boming aboard Shenzhou 7 on September 25,2008.

Missile technology control regime

While not formally joining the regime, in March 1992, China undertook to abide by the guidelines and parameters of the Missile Technology Control Regime (MTCR), the multinational effort to restrict the proliferation of missiles capable of delivering weapons of mass destruction. China reaffirmed this commitment in 1994 and pledged not to transfer MTCR-class ground-to-ground missiles. In November 2000, China committed to not assist in any way the development by other countries of MTCR-class missiles.

Lasers

China has been purported to have engaged in laser weapons research, but there have been no reliable sources of information regarding the state, or nature of these weapons systems. Speculation from some sources have suggested incredibly varied programs of development, such as anti-missile, anti-personnel, and anti-satellite applications.

Land mines

China's attitude towards limiting the use of land mines is still unclear. However it has stopped production as of 2003, due to its China's peaceful rise policy.

Developing Weapons

According to the Pentagon, China is currently developing kinetic-energy weapons, high-powered lasers,

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high-powered microwave weapons, particle-beam weapons, and electromagnetic pulse weapons with its increase of military fundings.

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