



Testimony before the House Armed Services Subcommittee on Strategic Forces -- “Nuclear Weapons Modernization in Russia and China: Understanding Impacts to the United States,” October 14, 2011

Questions Regarding China’s Future Strategic Nuclear Capabilities

By Richard D. Fisher, Jr., Senior Fellow, International Assessment and Strategy Center

Chairman Turner and Distinguished Members of this Committee:

It is a privilege to provide testimony to guide this Committee’s deliberations on one of the most vexing challenges to the security of the United States: how to assess the future strategic nuclear capabilities of the People’s Liberation Army (PLA) of the People’s Republic of China (PRC), and how to plan for U.S. strategic capabilities that will ensure deterrence of PRC nuclear aggression and coercion against the United States, its allies and its friends. I would suggest to this Committee that even considering the current dire budgetary environment, this is one challenge that allows for no margin of error in the American response. After two decades of massive military investments the PRC leadership may be entering a phase where its assessment of an American relative decline could embolden new levels of aggression, perhaps against Taiwan, against the U.S. strategic position in Asia, or in support of its gathering network of client dictatorships – or all three of these.

Nuclear missile force modernization and growth in the PLA’s Second Artillery and PLA Navy are occurring at the same time that the PLA is developing ballistic missile defense (BMD) and space warfare capabilities, which hold the potential in the next decade to undermine the credibility of U.S. nuclear deterrent forces. In this current decade, the growth of the PLA’s medium range nuclear and non-nuclear missile forces, plus the PLA’s rapidly expanding conventional air, naval and Special Forces strike capabilities, will place an increasing burden on U.S. nuclear and conventional deterrent capabilities. It is also necessary to consider the potential for Russia to join China in nuclear coercion strategies directed against the United States. Furthermore, the United States could face new direct or indirect nuclear threats abetted by China’s proliferation of nuclear and missile technology to North Korea, Pakistan and Iran. China and its nuclear proxies have no interest in a “world without nuclear weapons” and deterring the range of nuclear and missile threats they can generate will not be accomplished by an aging U.S. strategic force of fewer weapons and fewer types of weapons.

Mr. Chairman, while it is most commendable that this Committee address these issues from an open source perspective, it must be stated that these sources are largely insufficient to assemble definitive conclusions about the PRC’s strategic nuclear force posture, modernization or the strategies underlying their growth. It is understood that similar constraints inhibit the intelligence community’s assessments on the subject as well. It is the policy of PRC government to deny

essential information about its nuclear strategic forces to all outsiders; it refuses to provide basic government documents describing its nuclear forces or their modernization plans, and it also refuses to engage in substantive discussions on its strategic nuclear intentions with the U.S. government. Chinese government White Papers on National Defense provide only a minimum understanding of PRC nuclear weapons policies and strategies. There is a much larger body of “grey” data ranging from cryptic comments by Chinese officials, papers by or interviews of unofficial Chinese academics on policy and technical matters, to a growing body of actual imagery of strategic systems. This deficit of official open source data from the PLA means that questions will dominate this testimony.

This aversion to transparency by the PLA is not limited to nuclear issues, but applies broadly and is a key component of a centuries old Chinese strategic culture that prizes deception. It is in this light that one should view China’s declared or described nuclear policies. Its oft-declared “No First Use” policy for nuclear weapons should be compared to a large body military literature favoring strategies of “preemption.” China’s at times vociferous diplomatic campaigns against missile defenses and space warfare since the 1980s have not included admissions that China has been developing both capabilities since the early 1990s. It is therefore reasonable to question whether the PLA will always pursue what has been described as a “minimum deterrent” strategy of a relatively small nuclear force. As the PLA seeks to fulfill new “Historic Missions” dictated by Chinese Communist Party (CCP) leadership to defend its international interests, by building global power projection naval, air and airmobile army forces, why should the PLA maintain only a “minimum” strategic nuclear force?

All of this serves to heighten the importance of declassified U.S. government assessments in aiding the U.S. and international public understanding of the PLA’s strategic nuclear intentions. Congressionally mandated annual Department of Defense reports on the PLA have become the most credible source of facts about the PLA offered by any government, which is why the PRC government regularly demands a halt to their publication. But these reports could do a far better job of warning the Congress and the nation regarding developments in China’s nuclear and conventional military capabilities. With due consideration for source protection, I would suggest that this Committee to consider mandating that this report describe in far greater detail the development of the PLA’s strategic nuclear capabilities. Denial of information only serves to diminish the strength of a public discussion vital to the security of this nation.

The following are responses to issues of concern listed by this Committee as they pertain to the future strategic capabilities of the People’s Republic of China:

Committee Concern One: The status and future direction of programs and activities in the Russian Federation and the People’s Republic of China (PRC) to modernize, update, or modify their nuclear weapons arsenals.

In general it can be assessed that the PLA has reached a technology threshold that will allow it to begin to deploy greater numbers of long range ICBMs and SLBMs if it so chooses, and to equip its long range missile with multiple warheads. When this happens, annual growth in PLA nuclear warheads could transition from double digits to triple digits. Regional IRBM/MRBM

forces of nuclear and non-nuclear DF-21A/B/C/D reportedly will be joined by a new 4,000km missile family by 2015. The PLA's arsenal of 1,500+ km range land attack cruise missiles could be joined by similarly ranged air launched and sea launched cruise missiles. By later this decade or early in the next decade this larger land and sea based missile force could be protected by a growing ballistic missile defense (BMD) system and enhanced by multiple PLA space warfare systems. It is also necessary to consider the impact on China's strategic nuclear position of both direct and indirect nuclear threats that could emerge from client states aided by China's proliferation of nuclear and missile technology, as it is necessary to consider the potential for China to enlist Russian "support" in potential nuclear coercion activities against the United States.

This section will first examine PLA missiles by broad categories: intercontinental ballistic missiles (ICBMs), submarine launched ballistic missiles (SLBMs), intermediate range ballistic missiles (IRBMs), medium range ballistic missiles (MRBMs) and ground launched cruise missiles (GLCMs). Principle sources for data and numbers include *Jane's Strategic Weapon Systems*, the Department of Defense China Military Power Reports (CMP Report) and annual *Military Balance* reports of the International Institute of Strategic Studies in London. From 2005 to 2009 the CMP Report provided a breakdown in PLA missiles by individual missile system and provided a range of estimates for missile numbers and launcher numbers. However, in 2011 the CMP Report did not list PLA missiles by individual type, but instead reported numbers in less specific (and less useful) broad categories.

ICBMs and SLBMs

Estimated Growth in PLA ICBMs and SLBMs: DoD vs <i>IISS</i> (1)				
	2006	2008	2009	2010
ICBMs				
DF-4 (CSS-3) 5,400km range; 1x 1-3MT warhead	16-24/ 20	15-20/ 20	10-15/ 10	NA/ 10
DF-5A (CSS-4 Mod 2) 13,000km range; 1x warhead	20/ 20	20/ 20	20/ 20	NA/ 20
DF-5B (CSS-4 Mod 3 ?) 13,000km range; 5-10 warheads (2)				
DF-31 (CSS-10 Mod 1) 7,200+km to 8,000km range; 1x warhead	NA/ 6	<10/ 6	<10/ 12	NA/ 12
DF-31A (CSS-10 Mod 2) 11,200+ km range; 1x warhead	NA/NA	<10/ NA	10-15/ 24	NA/ 24
DF-XX First seen in 2007; undesignated by DoD but suspected of having multiple warheads; estimate 5-10 warheads		NA/ NA	NA/ NA	NA/NA
Total ICBMs	36-44/ 46	<55-60/ 46	<50-70/ 66	50-75/ 66
SLBMs (3)				
JL-1 (CSS-N-3) 1,770+ km; 1x warhead	10-14/ 12	NA/ 12	NA/ 12	NA/ 12
JL-2 (CSS-NX-5) 7,200+ km to 8,000km range; 1x warhead	NA/ NA	NA/ 24	NA/ 24	NA/ 24
Total SLBMs	10-14/ 12	NA/ 36	NA/ 36	NA/ 36
Sources: Department of Defense CMP Reports for 2007, 2009, 2010 and 2011; International Institute for Strategic Studies <i>Military Balance</i> for the same years. Reporting year represents assessment of previous calendar year.				
<ol style="list-style-type: none"> 1. DoD numbers in Roman type, <i>IISS numbers in bold italics</i>. 2. Reported MIRV variant, existence not confirmed by CMP Report or IISS reporting. 3. It is not clear that JL-1 and JL-2 have reached deployed status. 				

The above chart attempts to convey an estimate in the growth in the PLA's ICBM and SLBM force for the most recent 11th Five Year Plan (2006-2010), as offered by annual Department of Defense China Military Power reports and the International Institute for Strategic Studies. It suggests that overall number growth ranges from a possible low of 36 missiles in 2006 to a potential high of 75 by 2010. While these numbers are only illustrative, they should prompt questions regarding the potential rate of growth in PLA ICBMs and SLBMs. This chart also illustrates a transition from liquid-fueled ICBMs, which may remain in service for some time, to a larger number of newer solid fueled missiles that are mobile and could in the future feature multiple independently targetable reentry vehicle (MIRV) warheads.

DF-4 (CSS-3) Developed in the 1960s but not deployed until about 1980, the two-stage liquid fueled, single warhead DF-4 also formed the basis for the Long March-1 family of space launch vehicles (SLVs). At the height of its service about 25 were reported deployed, though numbers are said to have fallen to about 10. The DF-4 is likely stored in cave bases, which raises questions about its true number. Its longevity has likely been aided by the continued production of the Long March-1 SLV and it stands to reason that inasmuch as its range has been increased from early estimates of 4,750km (*Jane's Strategic Weapons*) to 5,300+km (DoD), this missile has also benefited from engine, reliability and guidance improvements developed for the Long March-1. However, the DF-4 represents a vulnerable first generation ICBM that requires open erection and lengthy refueling before launch.

DF-5A (CSS-4 Mod 2) Reported to have entered service in 1981, in 2002 DoD reported that the DF-5 would be replaced by the improved DF-5A by "mid-decade" or about 2005. The count of "20" DF-5A ICBMs has been consistently reported by DoD and the IISS, which also notes there are three brigades of this ICBM in the Second Artillery. The improved liquid-fueled DF-5A has a reported range of 13,000km which would allow it to reach all of the continental United States. These missiles are reportedly kept in concealed silos though evidence of cave storage should raise questions about the ultimate number of these ICBMs. *Jane's Strategic Weapons* has reported on the possibility of some DF-5A ICBMs being armed with 4-6 MIRV warheads while Asian military sources have mentioned to this analyst in 2010 that a MIRV warhead version may be called the "DF-5B." The 2011 CMP Report notes that by 2015 the PLA will have "enhanced CSS-4s." Could this mean with MIRV warheads? Inasmuch as the PLA has shown a penchant for sharing warhead technology between different types of missiles, the development of MIRV warheads for a future ICBM raises the



This 2006 image of what appear to be DF-5 ICBMs on horizontal carriages in a storage cave should raise questions about the ultimate number of these ICBMs. Source: FYJS Web Page

potential for older DF-5 ICBMs to be fitted with MIRVs. While there has been a tendency to expect that the DF-5A will be succeeded by new mobile solid fueled ICBMs, the DF-5A may persist in service for some time as it can benefit from the ongoing production line for and improvements developed for its derivative Long March-2 and Long March-3 SLVs.

DF-31 (CSS-10 Mod 1) While its development reportedly extends back to the 1970s and it may be derived from early efforts to develop the JL-2 SLBM, the solid-fueled and road mobile DF-31 reportedly was not tested successfully until 1995 and was not considered operational until 1999, when it appeared publicly for the first time in the October 1 military parade that marked the 50th Anniversary of the CCP regime. This parade featured three DF-31 ICBMs and by 2010 IISS would report that 12 DF-31s or one brigade had been deployed, whereas up to 2010 DoD would report this number as “<10.” Reported to be a three stage solid fuel missile with a single warhead and a 7,200+km to 8,000km range, the DF-31 is carried in a smooth featured cold-launch tube towed by a Hanyang HY 4301 truck. As such, it likely requires a network of paved roads so as to avoid causing fatal cracks in its solid rocket motor. While a considerable technical achievement for the PLA, the likelihood of there being only one DF-31 brigade suggests the PLA was interested in moving quickly to larger ICBMs.

DF-31A (CSS-10 Mod 2) Reports of a longer range solid-fueled ICBM at first referred to a new missile called the “DF-41,” which according to reports was being assisted by Russia during the 1990s with PLA access to technology from the RS12M *Topol* (SS-25) road mobile solid-fuel ICBM. Again, according to reports this program was not successful, but raises the possibility that China learned enough to advance the development of a larger and longer range version of the DF-31. The 2002 CMP Report mentioned that an “extended range” ICBM would be developed from the DF-31 and by 2008 the CMP Report noted that DF-31A numbers were “<10.” However, by 2010 the IISS was reporting that DF-31A numbers had grown to 24, or two brigades. The 2011 CMP Report notes “additional CSS-10 Mod 2s” will appear by 2015. This ICBM has a range reported as 11,200+km by CMP and as up to 10,000km to 14,000km by Jane’s Strategic Weapons Systems. The DF-31A is transported in a redesigned cold-launch tube towed by new Hanyang HY 4330 truck, but the concept is the same as with the DF-31. There



The February 2009 issue of *PLA Pictorial* included this image of the third stage of the DF-31A ICBM. It shows multiple thrusters on the base of the stage and the shroud suggests there is space for multiple warheads, or for one warhead and multiple decoys.

has been considerable speculation that there may be MIRV warhead versions of the DF-31A, with an Asian military source having suggested to this analyst in 2007 that the DF-31A could carry three to four warheads. However, this has not been verified by U.S. government or other reporting. In 2009 an image of the DF-31A third stage showed it featured generous maneuvering thrusters and

that there was enough space for multiple warheads or one warhead and multiple decoys. All of these capabilities would be intended to increase the survivability of the warhead bus.

DF-XX (CSS-XX ?) In 2007, 2008 and 2009 there was a selective release of images on the Chinese internet of a new larger road-mobile ICBM that has not yet been designated by Chinese or U.S. sources. The distinctive feature of this ICBM is that it uses a 16x16 large-wheeled off-road transporter-erector-launcher (TEL) similar to that used by modern Russian road-mobile ICBMs like the *Topol* (SS-25) and the *Topol-M* (SS-27). Despite the availability of imagery, not until 2010 did the DoD CMP Report offer the comment, “China may also be developing a new road-mobile ICBM, possibly capable of carrying a multiple independently targeted re-entry vehicles (MIRV).” It would appear that the near-term deployment of a much larger off-road mobile and MIRV equipped ICBM would have justified a greater degree of public concern by the Department of Defense, inasmuch as this ICBM has the potential to make annual growth in deployed PLA nuclear warheads increase from double-digits to triple-digits. In mid-2010 an Asian military source suggested to this analyst that this ICBM could carry five to ten warheads. This would hold the potential for one brigade of 12x ICBMs to deploy 60 to 120 warheads. With four or eight brigades of this ICBM the PLA conceivably may be able to deploy enough warheads to threaten the 450 U.S. single-warhead *Minuteman-III* ICBMs deployed in stationary silos in North Dakota and Montana. As such, it would appear justified for this Committee to seek a greater degree of clarity from the Department of Defense on the status of this program and its threat potential.



These images from 2008 (top) and 2009 show a new PLA road-mobile ICBM similar in concept to modern Russian road-mobile ICBMs. In 2010 the DoD may have implied it may be MIRV capable. Other sources suggest that it is. The potential for this ICBM to rapidly increase deployed PLA nuclear warheads should justify greater clarity from DoD regarding this program. Source: Chinese Internet

JL-1 and JL-2 SLBMs Following on Mao Zedong’s 1958 decision that China should have nuclear powered ballistic missile submarines (SSBN), just as United States and the Soviet Union, what became the 4th Academy of the China Aerospace Corporation led the development of the first solid-fueled long-range ballistic missile for the PLA, the *Julang-1* (Great Wave-1, JL-1) submarine launched ballistic missile. The first Type 092 (Xia class, US Navy designation) SSBN was launched in 1981 and the JL-1 was not successfully fired from an underwater platform until October 1982 and then from the Type 092 in 1988. Only one Type 092 SSBN is the PLA Navy. It carries 12x 1,700km range JL-1s but its operational status is not clear. While the submarine has been well photographed and appears in ceremonial displays it is not clear that it undertakes deterrence patrols, though it could be deployed for combat missions. The 2011 CMP Report states, “The operational status of China’s single XIA-class ballistic missile submarines (SSBN)...remains questionable.”

However, the future of the PLA’s sea-based nuclear force rests with the second-generation Type 094 (JIN class) SSBN and its associated JL-2 (CSS-NX-5) SLBM program. Though the IISS reports that at least two Type 094s have been commissioned, the 2011 CMP Report states, “the associated JL-2 SLBM has faced a number of problems and will likely continue test flights. The date when the JIN-class SSBN/JL-2 SLBM combination will be fully operational is uncertain.” Previous CMP Reports have offered an estimate that the PLA will build up to five Type 094s, which could result in an eventual force of 60 JL-2 SLBMs. While no U.S. source has indicated the JL-2 may be equipped with multiple warheads, in 2007 an Asian military source suggested to this analyst that it may carry three to four warheads. Images of the JL-2 in “pop up” tests show blunt nose configuration that would be consistent with multiple warheads. But inasmuch as the PLA Navy is developing a third generation Type 095 nuclear attack submarine, it is possible that a third generation SSBN, sometimes called Type 096, may also be in development. It should be expected that such a potential new SSBN will feature an improved capability SLBM, perhaps a version of the JL-2 or even a new SLBM.



An April 2009 CCTV image (left) shows a pop up test of the JL-2; note the blunt nose cone. Below is an early 2009 image of the Type 094 SSBN at Yalong Bay in Hainan Island for a ceremonial visit by CCP Chairman Hu Jintao. Source: CCTV and Chinese Internet



Regional Nuclear and Missile Forces

Estimated Growth in PLA MRBMs and LACMs: DoD vs <i>IISS</i> (1)				
	2006	2008	2009	2010
MRBMs				
DF-3A (CSS-2 Mod ?)	14-18/	15-20/ 2	5-10/ 2	NA/ 2
DF-16 (CSS-?) 800km-1,000km range; IOC in 2011?				
DF-21 (CSS-5) 1,700+km to 2,150km range; 1x nuclear warhead	40-50	NA/ 33	NA/ 80	NA/ 80
DF-21A (CSS-5 Mod 2) 2,500km range; 1x nuclear warhead				
DF-21C (CSS-5 Mo) Terminal guided land attack, IOC 2005-2006 ? 2,800km range?; Non-nuclear warhead for now ?		NA	NA/ 36	NA/ 36
DF-21D (CSS-5 Mod ?) Anti-ship ballistic missile, 2,800km range ?; IOC 2010 or 2011 ? Non-nuclear warhead for now?				NA
DF-XX New 4,000km range MRBM expected by 2015; nuclear and non-nuclear armed versions possible				
Total MRBMs	40-50	60-80/ 33	85-95/ 118	75-100/ 118
LACMs				
DH-10 GLCM 1,500+km to 1,800km range; 1x non-nuclear or nuclear warhead	100 (2)	150-350	200-500	200-500+
DH-10 ALCM 1,500+km range to 1,800+km range; 1x non-nuclear or nuclear warhead, IOC in 2011 ?		NA	NA	NA
Total LACMs	100 (2)	150-350	200-500	200-500+
Total Regional PLA Missiles	140-150	210-430	285-595	275-600+
Sources: Department of Defense CMP Reports for 2007, 2009, 2010 and 2011; International Institute for Strategic Studies <i>Military Balance</i> for same years. Reporting year represents assessment of previous calendar year.				
1. DoD numbers in Roman type unless otherwise noted; <i>IISS numbers in bold italics</i> .				
2. From early 2007 Taiwan press report.				

The PLA's Second Artillery Corp missile force maintains medium range ballistic missiles (MRBMs) that are nuclear and non-nuclear warhead armed, plus land attack cruise missiles (LACMs) that are non-nuclear armed, but could carry nuclear warheads. In addition the Second Artillery maintains a growing force of 1,000-1,200 (DoD CMP Report 2011) short-range ballistic missiles (SRBMs). The PLA plans to use its regional and short-range missiles in an integrated manner for strategic strike and tactical support missions, as part of its developing multi-service Integrated Joint Warfare strategies. This could include coordinated use of both nuclear and non-nuclear armed missiles. The above chart shows a substantial PLA investment in its regional missile forces, with U.S. government estimates provided by the annual CMP Reports showing over the 11th Five Year Plan (2006-2010), the possibility of a near 100 percent increase in MRBMs and a near 5x increase in LACMs. While it is likely that older DF-21 MRBMs may be replaced in the coming years, this family could be succeeded by a new 4,000km range family of missiles, as LACM numbers grow due to their deployment by the PLA Air Force and PLA Navy.

MRBMs

According to open sources the PLA Second Artillery Corp is close to phasing out its 2,800km range liquid fueled DF-3A, an improved version of the DF-3 that likely entered service in the

late 1980s. This family of MRBMs targeted U.S. military facilities in the Western Pacific and represented a first-generation system that required lengthy open refueling before launch.

Currently the mobile and solid-fueled DF-21 family is the most important MRBM system for the Second Artillery. IISS reports that there are five brigades of a nuclear warhead armed DF-21 variant, with DoD and IISS estimates of total numbers ranging from 50 to 80. This variant was displayed prominently in the 1999 CCP parade and started the PLA practice of using a truck to tow a cold-launch missile tube. It was derived from the JL-1 SLBM. In July 2002 the *Washington Times* report noted the DF-21 was tested with multiple decoy warheads while a February 2003 *Yomiuri Shimbun* report noted that a DF-21 was tested with multiple warheads in December 2002. It has not been reported in open sources that the PLA has subsequently modified some number of its early DF-21 with MIRV warhead.

Then in 2007 internet-source imagery began appearing of a new MRBM similar in size to the DF-21 but using a new 10x10 wheeled off-road capable TEL. This missile was subsequently identified as the “DF-21C,” though early images appears to show two potential variants, one with a sharp pointed missile tube cover and one with a rounded missile tube cover. One of these variants features a bi-conic maneuverable warhead similar in shape to the warhead stage used by U.S. MGM-31 *Pershing-II* terminally-guided MRBM—which is also used by the DF-15B SRBM. There is a direct relationship. After the *Pershing IIs* were dismantled as part of the 1988 Intermediate Nuclear Forces Treaty with the former Soviet Union, in the 1990s Chinese agents were able to obtain detailed information about this missile by purchasing trash from U.S. military bases that had discarded *Pershing-II* parts and information. China’s version likely incorporates more powerful radar and computers to achieve high accuracy. This MRBM allows to PLA to threaten key components of the U.S. military facilities on Okinawa, as it would also be able to target entrances to caves in Western Taiwan intended to shield its air force from early PLA missile strikes. While this DF-21 version likely uses a non-nuclear warhead it is conceivable that some could be nuclear warhead armed. The rounded tube cover version of this missile suggests another version that may be equipped with multiple nuclear or non-nuclear warheads or one warhead and multiple decoys.



These images from 2007 show what appear to be two versions of the “DF-21C” (left) and the DF-15B SRBM with the terminally-guided warhead believed also used on a version of the DF-21C. Source: Chinese Internet

China has also extended the *Pershing-II* concept into a terminally-guided anti-ship ballistic missile (ASBM), currently known by the designator DF-21D. In February 2011 China's *Global Times* reported the DF-21D had a 2,800km range. Instead of dropping down fast on a target like the DF-21C, it apparently uses maneuvers to both complicate interception and slow down the warhead so that a combination of synthetic aperture radar (SAR) and optical targeting systems in the warhead stage can better home in on a large ship. This MRBM's mission, however, depends on the PLA's ability to find a target by combining satellite, radar, electronic intelligence (ELINT) and airborne sensors. The DF-21D is believed initially to be armed with non-nuclear warheads that could include electro-magnetic pulse or flechettes that would achieve a "mission kill" rather than sink a ship. However, there is the potential for it to be armed with "kinetic" warheads that could do far more damage. Recent statements by U.S. Navy officials appear to indicate that this missile is near to if not already entering service.

There are two other PLA regional missile programs of importance. In March 2011 the Taiwan Legislature was told by a director of their National Intelligence Bureau that the PLA has started deploying a new 800km to 1,000km range missile called the "DF-16." While thought to be designed to achieve higher speeds to evade Taiwan's missile defense systems, an 800km range would allow this missile to attack U.S. military facilities on Okinawa from many points in China's Zhejiang Province.

Then, in a rare public Chinese disclosure, on February 18, 2011 the *Global Times* cited a "military source" that the China Aerospace Science and Industry Corporation (CASIC) was developing "a medium- and long-range conventional missile with a traveling distance of as far as 4,000 kilometers." Furthermore, it could be ready by 2015. While such a new intermediate range ballistic missile (IRBM) could eventually be nuclear armed, the *Global Times* appears to indicate that it may succeed the DF-21D as a longer-range ASBM and non-nuclear precision attack missile. This would be in response to the U.S. Navy's plans to deploy long-range unmanned attack aircraft on aircraft carriers by the early 2020s, which in turn was a response to the DF-21D.

LACMs

The PLA has been developing advanced land attack cruise missiles (LACMs) since the 1970s, devoting significant resources to develop new materials, micro guidance systems and small efficient engines, while pursuing technology shortcuts by purchasing pieces of the U.S. BGM-109 *Tomahawk* from Iraq and Afghanistan and purchasing Russian/Ukrainian Kh-55 LACM. It appears that most advanced development and testing was completed during the 10th Five Year Plan (2001-2005) as by 2006 the first reports of a Second Artillery LACM brigade emerged from Taiwanese sources, with about 100 reported deployed by 2007. The 2011 DoD CMP Report offers that the PLA had between "200-500" LACMs by 2010. This potential rapid buildup in LACM numbers is due largely to their lesser expense compared to MRBMs or SRBMs.

The Second Artillery's main LACM is called the "DH-10," and has a range of 1,800km according to Jane's Strategic Weapons Systems. It likely uses a combination of terrain following and navigation-satellite based guidance systems and Jane's notes that it could be armed with

either a non-nuclear or a nuclear warhead. Three DH-10 LACMs are carried on a truck-based TEL which apparently can facilitate rapid reloads of DH-10 containers. The PLA Navy uses 500km to 600km range YJ-62 cruise missile, similar in configuration to the DH-10, as an anti-ship missile currently launched from the Type 052C destroyer and from land-based truck TELs. It is expected that an anti-ship or land-attack variant of the DH-10 or YJ-62 could eventually equip PLA nuclear powered and conventional submarines. Later this decade the PLA should be expected to develop advanced variants of both cruise missiles, perhaps with greater range, accuracy and supersonic dash capability.



The DH-10 LACM is now a major strike system for the Second Artillery; seen in the 2009 CCP Parade (left) and a rare image of the DH-10 missile (right). Source: Chinese Internet

ALCMs and Future Bombers While not a main concern when examining the PLA's nuclear modernization, it is important to monitor the PLA's potential to introduce advanced bomber systems later this decade. In 2007 internet source imagery appeared of a new variant of the venerable X'ian Aircraft Corporation (XAC) H-6 bomber, a development of the Soviet Tupolev Tu-16 bomber that first flew in 1955. This program apparently was a response to Russia's early 1990s refusal to sell the supersonic Tupolev Tu-22M *Backfire* bomber, a position that was reversed early in the last decade, but the PLA had already committed to its less expensive alternative. The "H-6K" was shown to have new more powerful Russian turbofan engines, a redesigned nose section with a new radar and optical targeting system and a new four-crew flight deck. But most significantly the H-6K was shown to be armed with six new air launched cruise missiles (ALCMs) on wing pylons, with the option that more might be carried in the bomb bays. By mid-2011 new imagery indicated that XAC may have started production of new H-6K bombers. In 2007 an Asian military source told this analyst that the PLA could build up to 50 of these new bombers. With its more powerful and efficient turbofan engines the H-6K likely has a radius close to 3,000km, which combined with an ALCM with a range close to 2,000km, would allow approaches to U.S. bases on Guam from several axis.

It would be important also to clarify if the XAC has been developing a new larger stealthy or supersonic bomber to succeed the long-serving H-6. During activities to mark the 60th anniversary of the PLA Air Force in 2009 a new China Aviation Museum display featured a

model of a large delta-wing subsonic bomber, which if realized might have intercontinental range. In addition, since the 1980s the PLA has funded extensive research into advanced supersonic and hypersonic speed technologies. In early 2010 researchers from the prestigious Institute of Mechanics, a major center for hypersonic research, published a paper outlining a concept for a Mach-3 speed waverider platform. This could represent a program to develop a new unmanned platform, or it could also represent a new manned attack aircraft.



An apparent new-production H-6K bomber seen outside the X'ian Aircraft Co. factory in May 2011 (top). Source: Chinese Internet

Advanced bomber concepts could include new subsonic or supersonic platforms. In early 2010 researchers from the Institute of Mechanics published a paper reviewing their concept for a Mach-3 waverider concept (bottom), seen in one of the Institute's wind tunnels. Source: Journal of Astronautics

Ballistic Missile Defenses (BMD) and Space Warfare

Since the 1980s China has pursued a vigorous diplomatic and propaganda campaign against space warfare and missile defense, especially U.S. missile defense programs. But historically for the PLA, ballistic missile defense and space warfare are related pursuits. Mao Zedong ordered the creation of China's first BMD program in 1963, which became known as the 640 Program, which eventually had a subsidiary anti-satellite (ASAT) program. Mao was apparently aware of early BMD programs in the Soviet Union and the United States and also wanted a "shield" for his ballistic missile "swords." While Deng Xiaoping ordered a halt to the 640 Program in 1980, it had produced one prototype interceptor missile and a large space tracking radar. Most 640 Program development work took place near the city of Korla, capital of the Mongol Autonomous Prefecture of Xinjiang Province, and today Korla remains a key center for current PLA BMD research and development.

The PLA's most recent BMD and space warfare programs likely date to late 1980s following the 1986 establishment under Deng of the "863 Program" for funding intensive basic scientific

research and technology development to aid economic and military modernization. Initial efforts to pursue space plane programs were justified by their potential military utility. And even though space planes were delayed in favor of what became the Shenzhou space capsule, practically every Shenzhou mission has been used for a military purposes. This includes Shenzhou-7's September 27, 2008 pass to about 45km (according to U.S. Strategic Command) from the International Space Station, having just launched a micro-satellite, finely illustrating the "dual use" nature of China's manned space program: was it an advance for China's space technology or a practice "co-orbital" interception for the PLA? Inasmuch as the PLA controls China's space program it can be expected that the 60-ton space station expected by 2020, or a 100+ ton space plane expected about the same time, will be "dual use" as well, able to target U.S. assets in Low Earth Orbit critical to its military activities. In late 2010 the PLA may have tested a small space plane called *Shenlong*, similar in size to the U.S. X-37B.

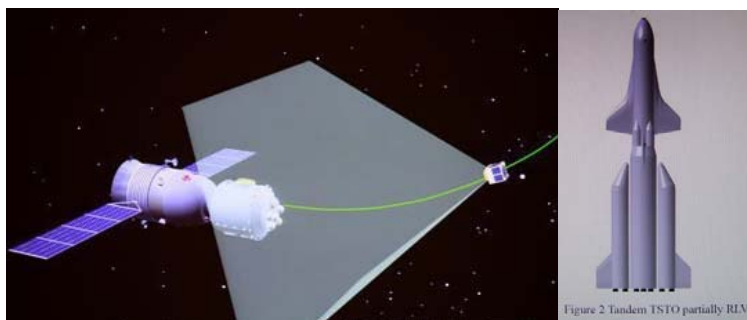
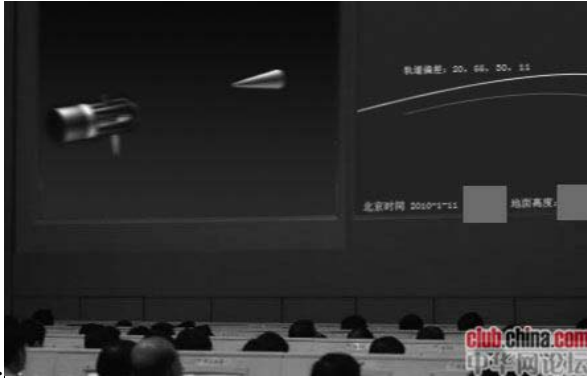


Figure 2 Tandem TSTO partially RLV

Shenzhou-7's Sept. 27, 2008 close pass by the ISS illustrates the "dual use" nature of China's space program. China may launch a reusable space plane by 2020 (right), a program also grounded in military requirements. The U.S. should expect that China's dual use program will target U.S. space assets that contribute to America's strategic nuclear warfighting capability.

But today PLA counter-space and BMD programs remain related in missile programs producing ASAT and BMD systems. In contrast to the 640 Program, it was the January 11, 2007 interception of a weather satellite that preceded the January 11, 2007 interception of a missile warhead launched toward Korla, which now hosts a new missile interception radar. After its 2007 success the PLA ASAT system was designated "SC-19" by U.S. officials. The SC-19 was likely derived from the KT-1 SLV program, which put two liquid fuel stages on the two solid-fuel stages of the DF-21 MRBM. It is possible that a version of the SC-19 may have also been used for the 2010 warhead interception. However, there are reports that the PLA is developing a family of dedicated BMD missiles, building on its success in developing 4th generation surface-to-air missiles (SAMs). In early 2008 an Asian military source indicated to this analyst that the PLA could deploy a national BMD system by 2025. While there has been no official U.S. or other assessments that acknowledge this possibility, due to its potential to affect the strategic nuclear balance between the U.S. and China, such a development should be of great interest to this Committee.



This image from a missile control room, apparently showing a computer generated depiction of a warhead interception, appeared shortly after the January 11, 2010 warhead interception. Use of such computer generated simulations is a common feature of Chinese space launch control rooms. Source: Chinese Internet

Major Questions about the PLA's nuclear and strategic weapons development:

1. When will the PLA begin deploying MIRV equipped ICBMs; how many warheads by when?
2. Will there be a third generation SSBN to follow the Jin-class and will it have a new SLBM?
3. Will the PLA deploy a new 4,000km range missile family as reported in the Chinese press?
4. What is the status of the PLA's next generation bomber program—will it go supersonic?
5. How quickly will the PLA develop space warfare capabilities that threaten U.S. strategic space systems?
6. What is the projection for the PLA's deployment of a national BMD system?

Committee Concern Two: The evolution, current state, and future direction of nuclear weapons policy and strategy in Russia and the PRC.

"The atom bomb is a paper tiger which the U.S. reactionaries use to scare people. It looks terrible, but in fact it isn't. Of course, the atom bomb is a weapon of mass slaughter, but the outcome of a war is decided by the people, not by one or two new types of weapon" Mao Zedong, Little Red Book, 1946

China's approach to nuclear weapons, from the earliest kernels of Mao Zedong's thoughts about them, have combined the intense desire to possess nuclear capabilities, the desire to achieve this capability indigenously with the near equal desire to conceal or deceive in regards to ultimate purpose. This later point is illustrated by the Mao's famous 1946 bluff—three years before taking power--that U.S. nuclear bomb was a "paper tiger," that China's masses were far more powerful. But as the biography of Mao by Jung Chang and Jon Halliday (*Mao, The Unknown Story*, Alfred A. Knopf, 2005) makes clear, Mao wanted nuclear weapons as soon as he heard of their use against Hiroshima and devoted enormous energy toward their acquisition, first imploring Stalin for them, and eventually convincing Khrushchev to begin the technical assistance that greatly reduced Mao's acquisition of nuclear weapons and missiles, even though Khrushchev woke up to Mao's larger power ambitions and ended this assistance in 1960. For Mao, achieving this ultimate power was among the highest requirements for preserving and defending the CCP revolution from foreign threats and then for advancing his ambitions for Communist world and then world leadership.

Perhaps the main insight to draw from these observations is that Chinese statements or descriptions that pass for policy or strategy must be treated with appropriate skepticism, especially in regards to China's currently unfolding ambitions, first in Greater Asia and then globally. In short the PRC government would like the world to view China's nuclear policies

and goals as essentially “limited” to the needs of assuring “adequate retaliation” in the event of attack, with the assurance it will not seek “nuclear superiority.” Nuclear weapons, in this view, also are not intended for “offensive” military action. This “limited” posture then serves to justify PRC calls that the U.S. and Russia “drastically reduce” their nuclear arsenals before Beijing considers nuclear limitation agreements, and also justifies Beijing’s principled opposition to “destabilizing” missile defense and space warfare schemes, especially by the United States.

For most of the PRC’s 62 year history such a strategy was made necessary by harsh economic realities, many created by Mao’s paranoia and megalomania, which made building a large nuclear arsenal impossible even considering the great economic burden of pursuing a limited indigenous nuclear weapon, nuclear missile and nuclear missile submarine capability. During the leadership of Deng Xiaoping, Jiang Zemin and now Hu Jintao, conveying the notion of a “limited” nuclear strategy advances the goal of allaying suspicions in the West and in developed Asian countries in order to facilitate access to markets and technology. But even though the 1989 Tiananmen Massacre exposed anew the nature of the CCP regime, and even led to arms embargoes by the United States and Europe, the PRC pursued a gradual nuclear force modernization as it became far more adept at wielding its economic-political power to advance its commercial and political goals.

But will a “limited” nuclear posture remain sufficient for the PRC? The Tiananmen uprising warned the CCP above all others of its thin legitimacy and of the need to defeat internal threats and then external threats, starting with what it views as an existential threat from the “Chinese” democracy on Taiwan and preventing the fall of a pro-PRC dictatorship in North Korea. For the CCP these challenges are directly connected to the larger problem of American strategic power in East Asia and the further problem of Western dominance of rules, norms and markets that increasingly affect CCP power at home. After twenty years of intense military investment since 1989, the CCP has put the PLA on a trajectory toward building the world’s second most powerful power projection navy, amphibious navy, air force and airmobile army force after the United States—assuming it can continue to afford superior forces. If the CCP leadership values this level of “conventional” military power, then does it stand to reason that it would value a much greater level of nuclear missile and associated military space power?

Assured retaliation Regarding specifics of PRC nuclear policy, the 2011 CMP Report states:

“Beijing’s official policy towards the role of nuclear weapons continues to focus on maintaining a nuclear force structure able to survive an attack, and respond with sufficient strength to inflict unacceptable damage on the enemy. The new generation of mobile missiles, maneuvering and MIRV warheads, and penetration aids are intended to ensure the viability of China’s strategic deterrent...”

In addition to the listed weapon enhancements like MIRV warheads the PLA has constructed a massive network of underground missile shelters, perhaps extending to 5,000km. The 2001 CMP Report notes that despite the China penchant for nuclear “secrecy and ambiguity,” releasing some information about these facilities serves the “credibility of its limited nuclear arsenal.” The CMP Report does not pose an obvious question: has this vast tunnel network

allowed the PLA to conceal a much greater number of ICBMs, especially DF-4s, DF-5s and DF-21s, than the numbers listed in CMP Reports in the last five years?

Furthermore, it is worth monitoring whether this notion of a retaliatory and “limited nuclear arsenal” could change significantly depending on the number of new MIRV equipped missile the PLA deploys in the coming decade. Should the U.S. view a potential PLA force of 500 to 1,000 warheads concealed in possible 5,000km long tunnel network as a “limited” capability? What if in the next decade this force comes to be protected by a national BMD network and an array of space weapons that can threaten the range of surveillance, deep space surveillance, communication, navigation and weather satellites essential for the U.S. strategic nuclear capability? Would this also be viewed as consistent with a “limited” nuclear capability?

“No First Use” (NFU) Pledge Since 1964 it has been PRC stated policy, “not be the first to use nuclear weapons at any time or under any circumstances.” The 2011 CMP Report notes the NFU pledge has two components: the PRC will “never use nuclear weapons first against any nuclear weapon state,” and “will never threaten to use nuclear weapons against a non-nuclear state or nuclear free zone.” Despite some well know “ambiguities,” the CMP Report concludes there is “no indication that national leaders” have amended the NFU.

Some analysts have noted that the NFU pledge was closer fit to Chinese nuclear strategies during the early period when China truly had a limited nuclear force. But today the Second Artillery, and perhaps soon, the PLA Air Force and PLA Navy will have an array of nuclear weapon systems, and a larger array of long-range precision-attack non-nuclear weapons that could achieve strategic effects without requiring a nuclear warhead. The PLA soon will not require nuclear weapons to sufficiently diminish the utility of Kadena Airbase on Okinawa or a U.S. aircraft carrier, to provide sufficient time to undertake a range of attack or coercive operations against Taiwan. Will these new weapons increase the PRC’s temptation to use decisive force, which following a conventional retaliation, could then justify an escalation to some level of coercive or actual nuclear weapon use?

One of the “ambiguities” in the NFU noted by the 2011 CMP Report is whether the PLA would use nuclear weapons against what it “considers its own territory,” most likely referring to Taiwan. A recent example of this ambiguity was in the May 3, 2011 issue of Hong Kong’s pro-PRC paper *Wen Wei Po* which had a long article lauding the Second Artillery, with one passage noting:

“With the focus on defending national sovereignty and territorial integrity, the SAC [Second Artillery Corp] has promoted coordinated development of nuclear and conventional missile troops since the Cold War. It has done this according to the strategic requirement for combing nuclear and conventional weapons as an efficient deterrence. The SAC has constantly enhanced its capability for dual deterrence and dual attack. The corps has made significant contributions in critical periods towards safeguarding national security, combating separatism, and promoting reunification of the country.”

“Combatting separatism, and promoting reunification” is a longstanding reference to Taiwan, which raises the prospect that the phrase “dual deterrence and dual attack” could refer to operational guidance that would anticipate SAC usage of both nuclear armed and non-nuclear armed missiles in the event of a Taiwan conflict. At a minimum this might imply that the PLA has integrated the use of nuclear weapons into a Taiwan war plan to a degree that may not be expected in Taipei or Washington.

Major Questions about PRC Nuclear Policy

1. What is the role of deception in PRC nuclear policy and strategy?
2. Are circumstances already gathering when the PRC will change its “limited” nuclear stance?
3. Should the U.S. assume that the PRC will use nuclear weapons early in a Taiwan campaign?

Committee Concern Three: The similarities and differences between U.S. deterrence of Russia and U.S. deterrence of the PRC, as well as extended deterrence in Europe as compared to Asia.

Today the United States faces very different challenges in deterring Russia versus deterring the PRC. Nuclear competition with the former Soviet Union came to be tempered by an arms control process, albeit a competitive process in the context of larger political struggles, which nevertheless evolved into a firmer basis for confidence and security, especially following the end of global military competition that was a result of the collapse of the Soviet Communist Party dictatorship. Russia has struggled over the last two decades to maintain a “superpower” level of nuclear and conventional military power and recent nuclear arms reduction agreement between the U.S. and Russia have been driven to a large degree by Russian financial constraints as much as any altruistic desire to reduce nuclear arsenals. Russian opposition to U.S. missile defense plans to help defend Europe against future threats from Iran is at times irrational, but this has not stopped Russia from investing in its own more advanced missile defense systems. Russia also appears willing to invest in new space warfare capabilities to match PRC and US capabilities.

As for extended deterrence against Russia, as did the former Soviet Union, Russia today still has to contend with the independent nuclear deterrents of Britain and France. An historic relaxation in threat dynamics have allowed the United States to steadily drawn down its conventional military presence in Europe and it no longer stations tactical nuclear weapons on U.S.Navy warships. European states also have in some cases drastically reduced their conventional military forces, which Russia has not exploited as it might have during the Cold War. While Russia can at times be threatening, especially to the weaker Baltic states and some former members of the Warsaw Pact, its international behavior is more opportunistic and ideology has largely been replaced by a still problematic tendency toward criminality.

One potential deterrence challenge that bears monitoring is the potential for Russia and China to add deeper operational layers to what is currently a largely a declining commercial military relationship enhanced with what at times are competitive regional “alliances.” The most prominent of these is the Shanghai Cooperation Organization, which now sees bi-annual multi-service military exercises which have been especially useful for the PLA to develop power

projection strategies and concepts. These exercises, a still vigorous commercial relationship in military technology, and likely significant intelligence service and criminal network relationships, do not yet constitute a full blown alliance. Russian popular anxieties about the PRC's growing power in Siberia, Asia and elsewhere are not reflected by Russian elites that profit from the PRC. It bears watching whether Russia and China could enhance non-kinetic military cooperation in the event of a Taiwan conflict. It is even prudent to consider that on a nuclear level that Russia could join the PRC to "tilt" against the United States during a Taiwan conflict, much as the U.S. and China tilted to deter Soviet nuclear threats against China in 1969.

Deterring the PRC, however, remains at a politically more primitive stage and holds the prospect for becoming far more difficult in this decade and beyond. As a state hostile to democracy, especially to the one on Taiwan, the PRC has ambitions to displace the United States as the strategically dominant state in Asia. The PRC is also building toward a superpower level of military strength to rival the U.S. globally. PRC hostility toward the U.S. has been less concealed in recent years, even though deep economic interdependence pervades this relationship. In addition, for over a decade the PRC has waged the most serious and costly espionage and cyber warfare campaign against the United States.

The PRC has refused to allow the development of useful military confidence with Washington, which the U.S. did build with Russia to a useful degree after the Cold War. Military-to-military dialogue is regularly held hostage to U.S. arms sales to Taiwan, and it has not produced any real Chinese advocates for better relations with the U.S., much as there are plenty of U.S. officials who work for better ties with the PLA. Furthermore, the PRC's refusal to consider nuclear transparency or "strategic assurance" dialogues suggests it desires a far more powerful military and strategic position before doing so. According to press reports, in June 2008 Chinese officials refused to enter into discussions to answer U.S. questions about the size of the PLA nuclear arsenal, and in January 2011 the PRC Defense Minister Liang Guanglie refused the request of U.S. Secretary of Defense Robert Gates to begin a dialogue on nuclear weapons. This followed the April 2010 Nuclear Posture Review in which the Obama Administration made a special case for pursuing "strategic assurance dialogues" with the PRC.

Nuclear deterrence of the PRC is also made problematic by its history of engaging in "optional wars." Even during periods of significant military inferiority, the PRC has repeatedly demonstrated a willingness to use military force, usually during a period when it was relatively assured of victory, or at least a small chance of a concerted retaliation. The PRC was also ready to use force when it perceived the opportunity to change a regional political balance in its favor. Mao joined Stalin's war to support Kim Il Sung in North Korea not just to show solidarity and to teach Washington a lesson, but also because of the promise of a generous Soviet rearmament of the PRC. Deng Xiaoping attacked Vietnam in 1979s because it was strategically overextended in Cambodia, would not receive Soviet military support, and most importantly, expected that the U.S. and Europe would reward him with commerce, technology and weapons. It is worth considering that the PRC may have decided this past Spring that it could get away with rearming Libya's Gaddafi after learning Washington was not going to lead the European military coalition forming to take action against him. Such intervention in support of dictators could

become more frequent and effective after the PLA acquires an amphibious projection fleet and a fleet of C-17 size jet transports.

The PRC's penchant for strategic opportunism may carry into its next generation of leadership. In 1979 the now imminent PRC leader Xi Jinping was an "intern" working for his relative, the Chief of Staff of the PLA Central Military Commission. Xi likely received a unique tutorial in Chinese stratagems and strategic timing, and then went on to develop a deep understanding of Taiwan, serving in many positions in Fujian Province in the 1980s. Later this decade, Xi Jinping will have an increasing level of military superiority on the Taiwan Strait that could be greatly enhanced by effective use of deception and surprise. Will the PLA have enough strategic and regional nuclear forces alone to "deter" a U.S. military response to PLA coercive military operations against Taiwan? Or might a Russian nuclear "tilt" with the PRC against the U.S. serve to seal Taiwan's fate, and usher a reordering of power relations in Asia?

Xi may also decide to strike Taiwan if the leadership of the United States is diverted by a significant disaster, perhaps consisting of multiple nuclear terrorist strikes. The deterrent problem for the United States is that despite nearly 30 years of "discussions," Washington has failed to prevent Beijing from playing a major role in abetting the nuclear weapons ambitions of Pakistan, Iran and North Korea, all of which have relationships with terrorist organizations capable of undertaking attacks against the United States. In recent years it has been feared that Taliban forces could capture some of Pakistan's PRC-assisted nuclear weapons, but with U.S.-Pakistan relations in a deep decline, what are the chances that a radicalized Pakistani official or government might give the Taliban such weapons? In the future, Iran's PRC-assisted nuclear weapons could be given to Hezbollah, which today is working with Venezuelan and other anti-U.S. forces and networks in Latin America. Should there be strikes against the United States or its allies and interests by PRC-abetted nuclear weapons, what would be the appropriate U.S. response toward the PRC? Furthermore, if the U.S. were to lead a multinational operation to capture Pakistani nuclear weapons, would the PRC attack this force, or even replace any captured nuclear weapons?

Given the PRC's potential to engage in hostile acts, against Taiwan, or against U.S. allies like Japan or the Philippines, putatively to impose maritime territorial claims, plus the danger of a nuclear armed North Korea, the task of extending nuclear and conventional deterrence to Asian allies and friends may become more difficult during this decade, not less. The expansion of PLA regional nuclear and non-nuclear armed ballistic and cruise missiles may soon make a purely "defensive" response insufficient, such as deeper investments in expensive regional BMD systems. It may become necessary for the U.S. to consider a reintroduction of tactical nuclear systems on U.S. ships or a new secure tactical nuclear system for U.S. submarines or a redeployment of tactical nuclear weapons to forward bases, to give the U.S. more flexibility in deterring Pyongyang. As the PLA's all around power increases, deterring North Korea may become a higher priority as an outbreak of conflict on the Korean Peninsula may tempt the PRC to move against Taiwan.

In addition Washington must consider how it can better remain ahead of the PLA in what is now a blossoming arms race in Asia. One offensive-defensive cycle already mentioned is how a new

4,000km PLA IRBM may trump the U.S. Navy's long-range unmanned strike aircraft that were intended as a response to PLA ASBMs. It may be time to abandon the limits of the INF Treaty and begin to develop multi-purpose MRBMs that can perform anti-ship, land-attack and anti-air missions. In addition the U.S. may have to be far more flexible developing deterrent strategy for space, developing several active weapons to be held in reserve as it pursues better "assured access" to space and "resilience" in space systems.

Major Questions about Deterrence of the PRC:

1. **Given the PRC's internal insecurities should the U.S. anticipate a decade of increasing PRC hostility?**
2. **Has the PRC decided to forego confidence and transparency with the U.S. in the current period?**
3. **Will increasing nuclear and conventional military strength tempt future PRC leaders to attack Taiwan?**
4. **How should the U.S. pursue justice with the PRC regarding its possible abetting of a nuclear weapon that is used in a terrorist attack against the United States?**

Committee Concern Four: The impacts of the above on the U.S., including the effectiveness and credibility of the U.S. deterrent and extended deterrent; programs to modernize the U.S. nuclear stockpile, delivery vehicles, and supporting infrastructure; and U.S. nuclear strategy, policy, posture and strategic relationships.

While this analyst is not qualified to respond to all of these concerns the following suggestions are offered to this Committee:

1. At this stage in United States-PRC relations and given the power ambitions of the PRC leadership, the prospect of any major budget driven U.S. unilateral disarmament could prove destabilizing to U.S. security and U.S. security interests in Asia. Given the PRC's troubling instability and a resulting need for political/military scapegoats, future "weakness" shown by Washington could result in near-term increases in threats to Taiwan or other U.S. allies and friends in Asia. Furthermore, at this time, "negotiated stability" or "parity" in nuclear weapons with the PRC may come at the cost of the U.S. strategic position in Asia.
2. Given the potential for the PLA to develop a significantly larger strategic and regional nuclear and non-nuclear missile arsenal, which in the next decade could be defended by a BMD system and supported by a robust space warfare capability, it is suggested that this is not a period to be considering any new reductions in the number of U.S. deployed warheads or in the inventory of stockpiled warheads and warhead components. A modern, survivable nuclear deterrent force of sufficient size may become a more important component of America's ability to deter PRC aggression. This may require reconsideration of recent reductions in nuclear warhead numbers, the reduction of *Minuteman-III* warheads from three to one, and the removal of a secure tactical nuclear capability from the U.S. Navy.
3. While it remains necessary for the U.S. to expand missile defense development, and to expand missile defense cooperation with key allies, it may now be necessary to consider the development of a new family of U.S. MRBMs to deter the PLA's expanding

capabilities in this area. The assurance that U.S. and allied ships could sink the PLA Navy with their own ASBMs may be the optimal way to deter the PLA from using its ASBMs. Nuclear deterrence in Asia can be greatly enhanced by keeping abreast of conventional deterrent requirements. For example, the 2009 U.S. decision to end F-22 5th generation fighter production and to refuse to sell this fighter to Japan is proving to have been a great error given the PLA's development of one or more 5th generation fighters with capabilities near to or in excess of the F-22. This decision, and the more recent decision not to sell Taiwan new F-16 fighters, serves to increase PRC temptations to use force, which easily could escalate into U.S.-PRC nuclear confrontations.

4. It is decades overdue that the U.S. pursue a multinational strategy to explain the PRC's past nuclear and missile proliferation and devise a concerted approach to assign "costs" for the potential use of PRC-abetted weapons by terrorists. The PRC likely understands that the U.S. cannot build enough weapons to deter this kind of attack. But the PRC must see that the U.S. can impose a significant price if the PRC does not seek to reverse its past nuclear and missile proliferation.