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China's Nuclear Development

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ABSTRACT

China's economic and technological growth and the transfer of necessary technologies in the past three decades have been debated seriously by international community. How China will behave in the coming years is difficult to say. Hence the question arises whether China will be a responsible and cooperative player or will it use its military and economic might to safeguard its national interest thereby giving rise to challenges and threats to various countries? China's military and space modernization programmes have already serious security challenges for various countries.

INTRODUCTION

China is one of the world class military powers. The main reason is Chinese nuclear development which is capable of delivering multiple large nuclear weapons to anywhere in the world. The direct threat from Chinese nuclear weapons depends largely on a country's relationship with China, as well as China's perception of military risk from a given state. But the greatest threat to the world emanates from the Chinese programme of years of irresponsible nuclear proliferation that have armed dangerous states like Iran, North Korea, Pakistan, and others.[1]

In the 1950's, the Chinese government was under the influence of the Soviet Union, a friendly Communist state. Along with the United States' decision to declare the exiled Guomindang (GMD or KMT) in Taipei, the legitimate government of China, the "Lean" decision was a major cause of rift between the United States and China. This rift caused the two countries much difference in their perception. In the era of the Cold War, or nuclear force was a real and significant threat to the world community. Specifically, Mao Zedong was much worried about nuclear blackmail from the United States over the Taiwan issue. It even accepted assistance from the U.S.S.R. in developing a nuclear weapons program. The Soviet Union gave to China an experimental nuclear reactor, gas diffusion equipment, a cyclotron, and many advisors to help in the development their weapon programmme.[2] Even when the relationship between China and the Soviet Union were not so coordinate, China went alone in the development of its nuclear weapons. The world was surprised when China became a full fledged nuclear power in 1964. Less than three years later, China tested its first thermonuclear device. On June 17th, 1967, the Chinese detonated a 3.3 Megaton Hydrogen bomb at 2960 meters in the air.[3] The 32 months between first nuclear and first thermonuclear tests is shorter than any other nation's thermonuclear lag.

The Cultural Revolution of 1967 was a turning point in the history of China. China attained the status of great power and enhanced its nuclear weapons capabilities. The Chinese military quickly developed long-range nuclear delivery systems targeting systems and larger bombs. Some of this impressive development has drawn dark accusations. The Cox Report, released in January 1999, accused the Chinese government of stealing design documents for thermonuclear weaponry, Multiple Independently Targetable Re-entry Vehicle (MIRV) technology, and long-range missile technology. The Chinese called the accusations "groundless," and maintained that all nuclear technology was indigenously developed. The swift rise of China's nuclear programme is impressive, and has brought about a large and advanced arsenal capable of great damage to most of the world.[4]

China's nuclear programme and its proliferation and modernisation have serious implications in South Asia. Similarly India's nuclear programme is more influenced by China's capabilities than of Pakistan. The Indian government's objective was to develop an effective credible deterrence against nuclear blackmail. It is a common perception that Indo-Pak nuclear deterrence is far more prone to breakdown as compared to the India-China nuclear equation. The latter is believed to enjoy a greater level of stability. This assumption arises from four prevailing realities. Firstly, despite the fact that China illegally occupies 48,000 sq km of Indian territory and lays claim to another 90,000 sq kms in Arunachal Pradesh and some other sectors. Unlike Pakistan, Beijing does not resort to the open use of direct asymmetric warfare to fulfil its revisionist ambitions.5

Therefore, Pakistan's nuclear weapons programme is a part of offensive –defensive strategy. It carries the possibility of deterrence breakdown because of border skirmishes which has often escalated to a larger conflict. The possibility of a similar development between India and China is minimized inspite of the repeated incursions made by the Chinese along the Line of Actual Control. Secondly, India and China also have nuclear doctrines that enhance deterrence stability. Like China, India too followed the policy of minimum credible nuclear deterrence. It has declared a 'retaliation only' policy that is based on the capability to cause unacceptable damage with the help of survivable and reliable nuclear forces after the adversary's first use of nuclear weapons. Any nuclear use would have to be a greatly considered which is largely assumed to be a non-option for rational state actors.

Thirdly, most Chinese writings perceive nuclear weapons as a political tool of deterrence. Both countries believe that a defensive role for their nuclear arsenal would project it as an effective instrument that would be used to safeguard their country's integrity against possible nuclear coercion or blackmail through the use of the threat to impose a high cost on the aggressor, so that no gains appear worthwhile. Thus, both the countries seek to exploit the political benefit of the nuclear weapon by enhancing the military aspect of its nuclear capability.

Fourthly, China and India have focused on economic development and it is widely speculated that China would not undertake revisionist activities that would distract it from this goal till such a time when it is able to secure a certain global pre-eminence for itself. India, on the other hand, has never showed its willingness to revise its territorial limits through military means. However, there are certain factors that complicate the India-China relations. Firstly, China still does not officially recognize India as a nuclear weapon state and hence has refused to undertake any nuclear arms control or nuclear stability negotiations with New Delhi. Secondly, China's NFU is believed not to apply to territories that it claims as its own (which would include Aksai Chin and the state of Arunachal Pradesh). Thirdly, Beijing is engaged in a process of strategic modernization. Though these developments are perceived to be in response to US moves towards deployment of ballistic missile defence (BMD) and other policies such as those of pre-emption and counter proliferation, the up-gradation of its nuclear capabilities do cause anxieties in India owing to lack of clarity about Chinese intentions.[6]

CHINA'S NUCLEAR DOCTRINE

The peaceful rise of China in the 21st century has become a cause of great concern among the academic circles for the past few years. In 1990s one witnesses a remarkable change in the Chinese behavior because of the newly acquired economic, military and technological might. Several Asian and other countries are closely following the Chinese rise and still assessing the short and long term implications on their national security interests. China's growing economic and military power have led to concerns over how it would readjust its politics and reshape the existing rules and regulations according to its newly acquired status.[7] Despite its repeated claims of peaceful rise, China's nuclear and missile modernization is a matter of great concern. China's military modernization and assertiveness in the Indian and the Pacific Ocean region have create security dilemmas for many Asian countries.

Since the Lop Nur test in 1964, when China became a declared nuclear power, it has never publicly discussed its nuclear doctrine. As Johnston put it, 'for about 30 years after China exploded its first nuclear weapon there was no coherent, publicly articulated nuclear doctrine.8 The official statement was that these weapons were to prevent blackmail and coercion by the other nuclear powers, particularly, the US and the Soviet Union. China's nuclear strategy has never been as profoundly stated as those of some other countries. But it is assumed that there are five explicit objectives of Chinese nuclear strategy These are: (i) secure super power status; (ii) preclude the possibility of intrusive diplomacy through nuclear coercion; (iii) deter other nuclear regimes (such as breakaway states from the former Soviet Union); (iv) retain a trump card for the eventually that Japan may rescind its current pacifist policies for a military option; and (v) maintain political and moral ascendancy over its regional rivals (such as India). Consequently, instead of counter force strategy, the Chinese have adopted a strategy of minimum deterrence.

In 2006 China published its "The Defence White Paper". Beijing took the unprecedented step of discussing China's nuclear strategy in a document intended for public consumption.[9] The document stressed the need of the PLA Navy in conducting "nuclear counterattacks" and the importance of the Second Artillery Force as a strategic deterrent. The document also described China's approach to nuclear weapons in the following terms:

China's nuclear strategy is subject to the state's nuclear policy and military strategy. Its policy is based on the objective to deter other countries from using or threatening to use nuclear weapons against China. China remains firmly committed to the policy of no first use of nuclear weapons at any time and under any circumstances. It unconditionally undertakes not to use or threaten to use nuclear weapons against non-nuclear-weapon states or nuclear-weapon-free zones, and stands for the comprehensive prohibition and complete elimination of nuclear weapons. China upholds the principles of counterattack in self-defense and limited development of nuclear weapons, and aims at building a lean and effective nuclear force capable of meeting national security needs. It endeavours to ensure the security and reliability of its nuclear weapons and maintains a credible nuclear deterrent force. China's nuclear force is under the direct command of the Central Military Commission (CMC). China exercises great restraint in developing its nuclear force. It has never entered into and will never enter into a nuclear arms race with any other country.[10]

It appears from the above document that Beijing's nuclear strategy is ambiguous. Some understanding may be seen from articles penned by senior military leaders and thinkers. Wang Zhongchun, a Senior Colonel and a Professor at the PLA's National Defence University laid out the importance of China's nuclear forces in a recent edition of China Security, arguing that "China's nuclear weapons play multiple strategic roles":

MINIMUM CREDIBLE DETERRENCE

China's official nuclear policy is to of maintain a declared minimum deterrence. The Chinese understanding of the nuclear strategy of minimum deterrence is, rather, dynamic. Its features are continuously adjusted to meet the changing strategic environment and threats at regional and

global levels.[11] The minimum deterrence broadly refers to China's interactions at the global level vis-à-vis other NWS.

In Chinese policy of minimalism and ambiguity, Mao favoured of an arsenal that would be just enough to inflict unacceptable damage. It was Mao's dictum to "build a few, keep the number small, and make the quality high" and he is also cited to have stated, "Six are enough"[12]. In Western literature, this came to be described as minimum nuclear deterrence. This was based on the assumption of the use of nuclear weapon as a political tool of deterrence, which clearly obviated the need for nuclear superiority, or even parity. Consequently, China has aimed for a capability that would be sufficient to deter threats of nuclear use against itself. Mao's logic to have such a doctrine was based on circumstantial resource constraints of funds and fissile material, as the astute understanding that Washington would never risk a nuclear exchange with China. Rather, Beijing found greater wisdom in setting an "example of moderation and prudence on the moral high ground, and seemingly proved its theory that small defensively oriented arsenals at once provided deterrence, reassurance and stability".13 Mutual vulnerability was believed to be good enough and China never strove for MAD. In fact, even in 1969, at the time of the Ussuri river conflict with the USSR – the first time ever that two neighbouring nuclear armed states engaged in armed conflict, and amid reports that the Soviets may be preparing for a disarming first strike against Chinese nuclear assets – Marshal Nie Rongzhen, in a report to the Central Committee concluded, "It is not an easy matter to use a nuclear weapon. When a country uses nuclear weapons to threaten another country, it places itself under the threat of the other country's nuclear weapons…"[14] The emphasis, therefore, was on building high-yield nuclear weapons for counter value targeting, so that destruction was assured even without accurate delivery systems. Consequently, the Chinese nuclear arsenal was never swayed by the superpower logic of large nuclear stockpiles. It sought rather an assured counter strike capability against value targets as a powerful deterrent because the Chinese measure of the effectiveness of its arsenal was the adversary's psychological fear of suffering retaliation, rather than a calculation based on its own force structure. It was truly a case of achieving deterrence through punishment rather than through any pretension of being able to fight a nuclear war in which China could deny victory to the adversary.[15]

With economic, techno-scientific advancements and change in threat perceptions the nature of China's nuclear deterrent, too, changed. China's development of advanced strategic capabilities is driven as much by the new threats such as the development and deployment of BMD by the US. Some Western experts on China describe this as graduation from minimum to limited nuclear deterrence. The essential difference lies in the fact that while minimum only required China to maintain a credible counter strike capability based on survivable nuclear forces, limited deterrence entails the possession of more sophisticated nuclear forces capable of controlling escalation during a conflict and bringing about intra-war deterrence.[16] This envisages a flexible nuclear response, including counterforce targeting, instead of basing deterrence on only counter-value punitive strikes. The emphasis, therefore, shifts to acquisition of "limited warfighting capabilities, improved command and control and early warning systems, smaller, survivable, mobile, more accurate and diverse cruise and ballistic missile nuclear delivery systems, possible abandonment of the NFU policy, and missile defence".[17] Evan S Medeiros believed that these moves were being driven by "sufficiency and effectiveness". It should be sufficient in size to resist enemy efforts to coerce China by threatening retaliation, and in case that fails, sufficient enough to survive an enemy's initial strike and effective enough to execute counter-attack and re-attack operations to inflict unacceptable damage, and to penetrate whatever differences the enemy may employ.[18]

The strategy of minimum deterrence was criticised by certain section of Chinese society. Speculations are there whether China has moved from minimum deterrence to limited deterrence, and whether there is a shift from countervalue targeting to counterforce targeting. A shift from minimum to limited deterrence would mean that China is developing war fighting capability. Some analysts argue that China is now pursuing a three-pronged approach: (i) credible minimal deterrent against the United States and Russia; (ii) limited deterrence around its periphery where local conflict is conceivable; and (iii) offensively configured counterforce strategy, with even a pre-emptive hypothesis. The second and third approaches are of direct significance to Indian security.[19]

There is a remarkable shift in the Chinese nuclear posture today. As stated above nuclear deterrence was largely based on ambiguity and secrecy in numbers and capability (indicating greater reliance on existential deterrence), it is now more credibly derived from mobility, invulnerability and penetrability of nuclear forces. This change is the result of both China's perception that has been accommodated in the outside world, as well as an increase in the number, variety and quality of its nuclear forces.

The question revolves around whether China pursues either minimum deterrence or limited deterrence. Minimum deterrence refers to 'threatening the lowest level of damage necessary to prevent attack, with the fewest number of nuclear weapons possible'. Similarly, limited deterrence 'requires a limited war-fighting capability to inflict costly damage on the adversary at every rung on the escalation ladder, thus denying the enemy victory in a nuclear war'. Some hint of the outline of Beijing's philosophy vis-à-vis the question of minimal vs. limited deterrence may be inferred from the 'Five Musts' articulated by Jiang Zemin at the Central Military Commission's conference in July 2000. Jiang's 'Five Musts' point clearly in the direction of a policy of limited deterrence.[20] These were expressed as follows:

1. China must own strategic nuclear weapons of a definite quality and quantity in order to ensure national security;
2. China must guarantee the safety of strategic nuclear bases and prevent against the loss of combat effectiveness from attacks and destruction by hostile countries;
3. China must ensure that its strategic nuclear weapons are at a high degree of war preparedness;
4. When an aggressor launches a nuclear attack against China, China must be able to launch nuclear counterattack and nuclear re-attack against the aggressor;
5. China must pay attention to the global situation of strategic balance and stability and, when there are changes in the situation, adjust its strategic nuclear weapon development strategy in a timely manner.

OPACITY

Opaqueness has become the hallmark of Chinese nuclear doctrine. In the years to come, China's nuclear doctrine, despite its on-going evolution, will probably remain pivoted on ambiguity by design.21 There is another view in maintaining the credibility of a nuclear retaliatory force. It is constructive ambiguity. The approach is adopted by Israel since it became an unacknowledged NWS at some point shortly after China did. While the PRC is an openly-acknowledged NWS, it has adopted some of the same principles as Israel with respect to its nuclear forces, maintaining a high degree of secrecy and operational security, and refusing to confirm or deny details reported in open source literature. Imprecise knowledge about the size, shape and status of China's strategic forces suggests that, in time of war, an adversary contemplating a disarming first strike would never be able to be certain that he had located all of China's weapons. The ambiguity is also due to the variety of launch mechanisms China has adopted – fixed launch platforms, silo-based launchers, and road-mobile transport-erector-launcher (TEL) systems, in addition to SLBMs and aircraft-delivered cruise missiles and gravity bombs (for theatre missions), which taken altogether make it more difficult for a potential adversary to ensure that he has found and destroyed all potential threats. Some analysts have suggested that Beijing is comfortable with "the ambiguity surrounding the survivability of its nuclear forces".[22]

NO-FIRST USE (NFU) POLICY

China being the only NWS which to have advocated a no-first use policy of nuclear weapons. It comes from the statement issued by Beijing on the occasion of its first nuclear test on 16 October 1964: "The Chinese government hereby solemnly declares that China will never at any time or under any circumstances be the first to use nuclear weapons."23 Till 1980s, China used to support the views of other third-world countries by opposing the nuclear wepons development of the western countries. It also urged the other NWS to agree on an international treaty on the NFU policy. The latest defence White Paper released by China mentions that:

As a permanent member of the UN Security Council and a nuclear-weapon state signatory of the NPT, China has supported nuclear disarmament and at the same time pursued an open, transparent and responsible nuclear policy. It has adhered to the policy of no-first-use of nuclear weapons at any time and in any circumstances, and made the unequivocal commitment that under no circumstances will it use or threaten to use nuclear weapons against non-nuclear-weapon states or nuclear-weapon-free-zones. China has never deployed nuclear weapons in foreign territory and has always exercised the utmost restraint in the development of nuclear weapons, and has never participated in any form of nuclear arms race, nor will it ever do so. It will limit its nuclear capabilities to the minimum level required for national security[24].

There are some critics who argue that China has modified and diluted its NFU policy. Over the years, NFU pledge against all countries, now directed towards NNWS Party to the NPT and nuclear weapons free zones. Thus, India and the other NWS have been excluded from this pledge. The revised posture,was released by the Ministry of Foreign Affairs in Beijing on 5 April 1995 and had been placed in the records of the Geneva-based Conference on Disarmament. It states that China's policy not to use or threaten to use nuclear weapons "naturally applies to non-nuclear-weapon states parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) or non-nuclear-weapon states that have undertaken any comparable internationally binding commitments not to manufacture or acquire nuclear explosive devices." The shift from an unconditional to a conditional NFU posture effectively left out only India, Israel and Pakistan. The policy change, however, could not be directed at close ally, Pakistan, or even Israel, with whom Beijing has collaborated in military-technology projects. The shift appeared aimed at sending a message to New Delhi.[25] Besides, there is criticism that the NFU lacks credibility as it is not verifiable and can be easily changed at a time of crisis.[26]

On 16 April 2013, China published a White Paper titled The Diversified Employment of China's Armed Forces. It updated the 2011 White Paper. While there are several elements of continuity, there are also important differences. According to the White Paper, PLA Second Artillery Force (PLASAF), PLA's nuclear force capabilities of "strategic deterrence, nuclear counterattack and conventional precision strike are being steadily elevated". For the first time, the White Paper did not explicitly mention the "no first use" doctrine but it laid emphasis on strategic deterrence and counter attack. Non-mention of the No First Use has led many observers to debate whether China is beginning to dilute its NFU commitment. This will need to be watched.[27]

NUCLEAR PROLIFERATION

In the past, China has supplied missiles or missile components to Iran, Iraq, Libya, North Korea, Saudi Arabia and Syria, and nuclear materials or technology to Algeria, Argentina, Brazil, Iran, Iraq, North Korea and South Africa. The U.S. intelligence regards China the "most significant supplier" of WMD goods and technology. China's proliferation policy to Pakistan occupies an important place in regional politics. As such, China have transferred have included nuclear-warhead blueprints, complete missiles and technologies for local production. It is evident that as long as Pakistan survives, China will use it to countervail India.

There are three different theories that have emerged in China : (i) it is on a learning curve, and is gradually becoming more responsible, as seen by China's entry into the nonproliferation regime; (ii) profit motives; and (iii) it also at the same time consciously plays the proliferation card for leverage and containment. There is contradiction in Chinese policy. On the one hand, China certainly wants to present itself as a responsible state by signing international agreements and, on the other hand, it often prefers not to meet its obligations under these agreements. While commercial motivations are, no doubt, important China regards horizontal proliferation as an indispensable component of balance-of-power politics. The objectives of its proliferation activities are threefold: (i) countervailing or gaining leverage on the United States, India and Japan; (ii) building client states; and (iii) obtaining advanced military technology in exchange. These objectives explain why China has constantly broken its nonproliferation pledges to Washington since 1993.28

CHINA'S NUCLEAR ARSENAL

Nuclear Warheads. Like some of the nuclear weapon states, China, too, is increasing the size of its nuclear arsenal. China conducted a comprehensive series of missile trials

consolidating its road-mobile, land-based and submarine-based nuclear deterrent

Missile Forces. China has been made aware of the fact that the survivability of its nuclear forces is of utmost priority. The survivability of its strategic nuclear force is enhanced through greater mobility; including deployment of solid-fuelled and road-mobile intercontinental ballistic missiles (ICBMs) and nuclear submarines.[29] Chinese strategic forces are made up of a triad of land-based missiles, submarines-launched missiles and bombers. The modernization of its missile and submarine forces, in turn, strengthens China's overall conventional forces vis-à-vis US. The US Department of Defence (DoD) reports that since 2000, China has shifted from a largely vulnerable, strategic deterrent based on liquid fuelled ICBMs fired from fixed platforms, to a more survivable and flexible strategic force.[30] "China is developing and testing missiles, forming additional missile units, upgrading qualitatively certain missile systems, and developing methods to counter ballistic missile defenses".[31]

China's modernization programme includes a third generation of solid propellant, mobile and land-based ICBMs. The Chinese land based missile inventory includes two varieties of ICBMs, namely DF-5A (CSS-4), a three-stage liquid-propellant missile with a range of 13,000 km and DF-31A (CSS-9), a three-stage, solid fuelled ICBM with a range of 11,200 km. The DF-31A is an improved version of DF-31 (three-stage, solid fuel and range 8000 km).[32] The DF-31A can carry a warhead of 1 MT with MIRV capability.[33] In addition, China is also believed to be developing a three-stage solid propellant DF-41 (CSS-X-10) ICBM with a range more than 12000 km.34 Some reports claim that the missile is likely to be operational by 2015 and China would field about 50-100 DF-41s.[35]

The survivability of these forces is higher than its other strike forces which can be destroyed in a pre-emptive strike. According to the International Institute for Strategic Studies, (IISS) Military Balance 2010, the breakup of these missiles are DF-31 (12); DF-31 A (24), DF-5A (20) and DF-4 (10) making a total of 66. However, there was no mention of DF-41 ICBMs in the report. The mainstay of the Chinese IRBM inventory is the DF-21 which is a two-stage solid propellant road-mobile missile. Though the DF-21 deployment started in the late 1980s, the process gained momentum from 2005. The inventory also includes DF-3A (two stage CSS-2) which was inducted in 1971. The DF-3A is a liquid-propellant missile with a range of about 3000 km. China has deployed several hundreds of short-range ballistic missiles like DF-15 (CSS-6 or M-9) and DF-11 (CSS-7 or M-11) missiles.

Naval Forces. In the field of navy China nowhere lags behind any major power. The primary objective of China's naval modernization is to build advanced sea-based strike as well as anti-access capabilities. China's naval modernization programme began in 1990s, It included a broad array of weapon acquisition programs such as programmes for anti-ship ballistic missiles (ASBMs), anti-ship cruise missiles (ASCMs), land-attack cruise missiles (LACMs), surface-to-air missiles (SAM), manned aircraft, unmanned aircraft, submarines, destroyers and frigates, strike capability including the Type 092 nuclear submarine that carries twelve single-warhead JL-1 SLBMs.36 The Jin class 094 SSBN contributes to the deterrent capability. According to the IISS' Military Balance 2010, China has two Jin-class submarines, each equipped with 12 JL-2 SLBMs, though the full-operational status is unknown. The report also mentions that two more Jin class submarines are under development. In 2008, the Federation of Atomic Scientist reported that the SSBN was deployed near the Hainan Island on the South China Sea. The report stated,

> "The Chinese navy has deployed a Jin-class (Type 094) ballistic missile submarine to a new base near Yulin on Hainan Island on the South China Sea, according to a satellite image obtained by FAS. The image shows the submarine moored at a pier close to a large sea-entrance to an underground facility."[37]

As part of showcasing its capabilities, the PLA Navy (PLAN) demonstrated its capabilities in April 2009 SSBNs. In order to build more such Type 094 SSBNs, it has modified its structure by reducing the number of carriage missiles to twelve rather than sixteen which is standard practice in other navies.38 The reduced size adds more stealth to the submarine. In this way, China can build more 094 to increase the probability that some can survive a pre-emptive strike. The exact number of submarines being built by China is not known though there was speculation that China would build six such SSBNs. According to a report from the Office of Naval Intelligence (ONI), China will build at least five 094 strategic nuclear submarines.39 A Naval War College study on China's new SSBN program predicts a fleet of six 094 submarines.40

China test fired a long-range SLBM in June 2005 which is believed to be a JL-2, though PLA officials did not made any comment..41 China's JL-2 SLBM has a range of 8000 km and can carry multiple independently targetable reentry vehicle (MIRV).42 The missile was reportedly fired by a nuclear submarine off the coast of Qingdao and landed in a Chinese desert. It may be concluded that the JL-2 is still under development. The new SSBN and SLBM capabilities have increased the Chinese nuclear capability because it has provided China, for the first time, with a deterrent theory with diffused capabilities.

Anti-Ship Ballistic Missile Programme (ASBM). The US Department of defence believes that China is developing and testing anti-ship ballistic missile equipped with maneuverable reentry vehicles designed to hit moving ships at sea.

Ballistic Missile Defense Capability. For many years, both China and Russia opposed US ballistic missile defence systems. Both viewed the US ballistic missile defence system as undermining their nuclear deterrence. China is quite perturbed about the decision of US sale of weapons to Taiwan including the PAC-3 air defence missiles. Thus, the Chinese anti-satellite test of January 11, 2007 came as a shock to many countries. It successfully intercepted and destroyed an aging weather satellite, Fengyun-1C at a height of 850 km in the lo-earth orbit using a two-stage intermediate-range ballistic missile (SC-19) a derivative of DF-21 MRBM. The test was criticized by many countries and concerns were expressed on the large debris created by this test. There were reports suggesting that the PLA had earlier tried the same test at a North Western desert in March 2006.43

Exactly after three years, China announced that it had conducted a ground-based midcourse missile interception technology from within its territory. China said that the test

has achieved the expected objective and that the test was defensive in nature and not targeted at any country. Chinese experts were quoted to have defended the test by stating that China has always followed a defensive strategy and that the present test also reinforces the strategy.[44] without providing details on the purpose of the test and employed missiles (both target and interceptor), China allowed others to guess the capability and purpose of the test. It was well anticipated that China will embark on building ballistic missile defence capabilities. Experts are debating whether the missile defense system tested by China was the HQ-9 surface-to-air missile system or other.45 In any case, the development of the Chinese ballistic missile defence system is likely to impinge negatively on the stability in the region and could trigger a potential arms race.

Maximization of Aero-Space Dominance. China is also known to be modernizing its air force with fourth-generation fighters, which can carry visual range (BVR) missiles. The PLA Air Force (PLAAF) operates numerous airborne early warning and control (AEW&C) and electronic warfare (EW) aircraft. China operates atleast a dozen AEW&C aircraft. Many strike aircraft are now equipped with precision-guided munitions (PGMs). China's EW capabilities have improved substantially too46. There has been a marked shift in Chinese thinking on air power which is reflected in its two white papers. The 2004 National Defense White Paper clearly stipulates that the role of Air power is no more that of auxiliary force to the ground and missile forces are meant for offensive operations. The thinking has clearly evolved further and the 2008 National Defense White Paper stipulates that the PLAAF have clear mission of "strategic projection". Though the word 'power' is missing in strategic projection it could be anybody's guess as to PLAFF has a clear role in power projection and has developed certain capabilities to execute long-range precision strikes and strategic projection operations.47

J-20 Stealth Aircraft. Chinese the missile interception test coincided with the visit of the US Defence Secretary, Robert Gates to Beijing. China flight-tested its new stealth fighter J-20 in January 2011 from an airfield in the city of Chengdu. The fighter flew for abour 15 minutes. Earlier, the flight underwent high-speed taxing tests. The test of the stealth fighter is seen as the increasing role of China in military modernization.

Unmanned Space Shuttle. Closely following on the heels of the US, unconfirmed reports in January 2011 suggested that China successfully conducted a flight-test of a prototype aircraft that can fly through the atmospheric layer.48

CHINESE MODERNISATION IN THE 21ST CENTURY

It seems that the trends in Chinese modernization were clearly visible towards the end of 1990s. The US Department of Defence undertook an assessment of the ability of some countries to produce advanced equipment such as command, control, communications, computers, intelligence, information (C4I2) systems; high-performance computing; intelligent systems; signal processing: transmission system; opto-electronics, etc. It rated countries' capabilities on a scale of zero to four. While the US was at four, China received one, indicating a minimum level of proficiency.49 The focus, is on "informationization" in its WPND 2004, 2006 and 2009. Efforts have been made by China to enhance the credibility. Some of its elements of nuclear deterrence are mentioned below:

(a) Increase in Size of Nuclear Arsenal. The most obvious response to BMD would be to increase the number of warheads and strategic missiles to saturate and defeat the missile defence. Estimate of the numbers of its nuclear warheads vary from 200 to 450. For instance, the Bulletin of Atomic Scientist derives numbers on the basis of delivery vehicles to calculate that China deploys approximately 176 warheads (about 121 on land-based missiles, none yet on SLBNs and 55 on nuclear capable aircraft). Along with some additional warheads in storage, the total conservatively placed at 240.50 Some others, though, report about 300 strategic and 150 tactical nuclear weapons. Meanwhile, a leaked Defence Intelligence Agency (DIA) estimate from 1999 stated that China's total nuclear inventory would increase to 358-464 warheads by 2020.51 Another source reveals plans to deploy 500 nuclear warheads by 2015, with 300 on MIRVed and the rest on SLBMs.52 The US officialdom also predicts an increase of ICBMs from 20 to 75-100 by 2015, some of which would have multiple warheads.53 In fact, according to the National Resource Defence Council estimates, China should have enough fissile material stockpiles to double or even treble its nuclear warheads and even the RAND Corporation finds it feasible for the warheads to increase to anything between 600-1,500.

(b) Improvements in Mobility and Survivability of delivery Systems. Survivability depends on concealment and that was always central to Chinese nuclear deterrence. China has been extensively engaged in transcending to more solid fuelled, rail and road mobile missiles. China has begun deploying a new generation of solid fuelled mobile missiles, the DF-21A which is credited to have global positioning system (GPS) or radar-based terminal guidance for greater accuracy. Meanwhile, the development of the DF-31 and DF-31A ICBMs formed the core of its future strategic land-based missile force.

(c) Development of MIRV Technology. A report in December 2002 announced the test of DF-21 medium range ballistic missile (MRBM) with multiple warheads, a capability necessary to enhance China's nuclear deterrence against BMD.54

(d) Rapid Enhancement of Space-Based Capabilities. It is evident that China is modernising its space-based capabilities to make a direct on the attack enemy's space-based infrastructure with anti-satellite (ASAT) weapons, and also to attack the enemy's ground-based radars or other electronic components of the command, control, communications, computers, intelligence, surveillance, reconnaissance (C4ISR) structure. China has determined that a robust ASAT capability could counter the United States by disabling the "complex" exposed network of command, control, communications, and computer-based systems that provide intelligence [and] reconnaissance" to American Forces.55 China has also developed high altitude electro-magnetic pulse (EPM) with a nuclear device capable of exploding at 40 km altitude to parlayse electronic system of the adversary. In August 2006, a Chinese ground-based laser has blinded a US reconnaissance satellite over China. As Ashley Tellis has aptly concluded, "…China's counterspace efforts are devise, comprehensive, rapidly improving, and deadly serious – exceeding even those of the Soviet Union as its peak. Taken together, Beijing space denial programs leave no doubt that it is determined to negate the operational advantages to Washington's space-enabled conventional military dominance.56 He, therefore,

argues that China will continue to invest in space-denial technology rather than subscribe to any arms control agreement that eliminates its chance of asymmetrically defeating superior American military power.

SINO-PAK RELATIONS

China's nuclear weapons supply to Pakistan poses a big challenge before the international non-proliferation regime. China's nuclear cooperation with Pakistan include conducting a nuclear explosion test for Pakistan, providing a nuclear weapon design, highly enriched uranium, setting up of a plutonium-production reactor at Khushab, reprocessing facility at Chashma, supply of crucial components like 5000 ring magnets (worth $ 70,000) and other critical components.

China's exports of M-11 short-range missiles (range 300 km and pay-load 500 kg) to Pakistan in 1990s created a major foreign policy challenge for the US on whether to impose sanctions on China or not. The US took a long time (till the year 2000) to conclude that China had transferred complete missile systems and technology to Pakistan. The 1990s were dominated by US sanctions on Chinese for violating the MTCR Category II guidelines. However, this was followed by waivers. In 1994, China signed a joint statement with the US that stated that it would not export ground-to-ground missiles in return for a waiver of sanctions by the US. On November 21, 2000 when the US government got the information about Chinese missile transfers to Pakistan and Iran in 1990s China diplomatically issue another commitment not to export ballistic missile components and technology restricted by the MTCR in exchange for a US sanctions for past missile transfers to Pakistan and Iran.

From the above examination, the intention of Chinese policy is clear. China on, one hand, makes statements about maintaining the sanctity of the non-proliferation regime while on, the other hand, gradually violates its obligations. Chinese nuclear and missile proliferation to Pakistan, Iran and North Korea cannot be done without government approval. China's proliferation to Iran is directed towards obtaining oil resources and oil exploration rights on a preferential basis while Iran relies on China for missile technology and support in easing sanctions. It gets oil from Saudi Arabia for exchange of missiles. China's protection to the North Korean military regime is also to further its strategic interests in the region. China's pursuit of its own interest over the larger global non-proliferation goals has significantly weakened the nuclear non-proliferation regime. China's selective adherence to the NPT in the future would not only erode its credibility as a responsible player but would also destabilise the regional order in Asia.57

CONCLUSION

China's economic and technological growth and the transfer of necessary technologies in the past three decades have been debated seriously by international community. How China will behave in the coming years is difficult to say. Hence the question arises whether China will be a responsible and cooperative player or will it use its military and economic might to safeguard its national interest thereby giving rise to challenges and threats to various countries? China's military and space modernization programmes have already serious security challenges for various countries. It is possible these actions might force some countries like South Korea, Japan to review their nuclear and space policies. The 2007 ASAT test, ballistic missile test of 2010, successful flight-test of the space plane and anti-ship ballistic missile test in 2011 have caused doubts and suspicion on Chinese intentions.

Moreover, the Sino-Pakistan nuclear and missile co-operation continues to create problem for to India. The Chinese open policy of supporting Pakistan and its non-compliance with its obligation under the multilateral regimes like the NSG raise serious concerns about its future behaviour for other countries in general and India in particular support to expose the Pak-China nexus.

China has managed to receive advanced technology transfers together with import of nuclear power reactors to its civil programme. It is also eyeing the growing nuclear reactor market and plans to emerge as a major exporter of these technologies. India should not lag behind in this area.

China has always supported global nuclear disarmament, but it is doubtful that China will unilaterally reduce the size of its nuclear arsenal. China interest lies that the US and Russia nuclear arsenal to be reduced to a significant level and then only it will join the nuclear arms reduction talks. On the issue of FMCT too, though China supports the treaty, it is believed that it is supporting Pakistan.

Furthermore, there is a no mutual trust between China and India on security issue. China views India's relations with the US as an Indian strategy to contain China. Many Indian experts feel that China's effort is to limit India to South Asian region through its association with Pakistan. What is important for India is to develop required capabilities in order to strengthen its nuclear deterrent vis-à-vis China, and at the same time it should continue diplomatic engagements with Beijing. Despite the having several similarities both but India and China should make serious effort to foster greater strategic stability and it understanding each other's nuclear threat perceptions and capabilities.

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