



Centre for Air Power Studies

CHINA'S SECOND ARTILLERY FORCE

Gp Capt Ravinder Singh Chhatwal (Retd)

Senior Fellow, CAPS



Second Artillery Ballistic Missile being test fired from an undisclosed location in China.

Photo: http://www.china.org.cn/photos/2013-03/18/content_28278973_24.htm

Introduction

PLA Second Artillery Force (PLASAF) is China's strategic rocket force equipped with nuclear and conventional missiles. The primary mission of Second Artillery is deterring other countries from using nuclear weapons against China, and for conducting **nuclear counterattacks and precision strikes with conventional missiles**¹. China has a large

ballistic and cruise missile force which it is expanding in both size and types of missiles. According to the U.S. National Air and Space Intelligence Centre's report on "Ballistic and Cruise Missile Threat" issued in 2013, "China has the most active and diverse ballistic missile development program in the world." The US Department of Defence, in a recent report on China stated that China's ballistic and cruise missile programs are "comparable to other international top-tier producers"². This article briefly studies the history and capabilities of PLASAF.

Origins of the Second Artillery Force

On October 16, 1964 China successfully tested its atom bomb at its Lop Nor test range. It was a significant event for a nation hamstrung by notions of "people's war" being the ultimate panacea in war. The nuclear bomb and development of missiles to deliver them provided China the technologically advanced deterrence which people's war could never do. China undertook a commitment to build a nuclear bomb in 1955 and in less than 10 years achieved their aim. The origins of the Second Artillery lie in the PLA artillery assigned to form the missile testing and missile launch battalions for the nuclear program. These missile battalions were formed almost simultaneously with the nuclear program.

Father of China's missile program

In 1956 China's missile program received a major thrust when Qian Xuesen, who was a well known missile scientist, returned to China from USA. Qian Xuesen is considered to be the father of China's missile program. Qian was an engineering graduate from Shanghai and in 1935 was sent to United States on a scholarship to study at the Massachusetts Institute of Technology (MIT). He later became a professor at the California Institute of Technology and was one of the founders of the Jet Propulsion Laboratory which was established in the 1940s. Qian was a leading expert in propulsion and aerodynamics and worked on a number of American advanced aircraft and missile projects. During World War-2 he was made a Lieutenant Colonel and advised the US Army on ballistic missile guidance technology in the European theatre. At the end of the war Qian was sent to examine Nazi Germany's V-2 rocket facilities and debrief Werner Von Braun designer of the German V-1 and V-2 missiles³. After the war Qian was suspected of being a communist by

the Americans and deported to China in 1955. Qian denied the charges against him and his American colleagues supported him but the U.S. government was bent on deporting him. Dan Kimball, an ex under secretary of the Navy termed Qian's deportation "the stupidest thing this country ever did⁴." Qian was given a hero's welcome in China and his arrival was a great boost for initiating China's missile and space program. In February 1956 Qian gave a formal proposal to make development of ballistic missiles, space launch vehicles and satellites a national priority. Chinese Prime Minister Zhou Enlai called a special conference to consider the proposal and in October 1956 cleared the establishment of the Fifth Academy, under the PLA, to develop strategic missile weapons. Qian Xuesen was made the first head of the Fifth Academy to oversee all R&D for space and missile development. The Fifth Academy was China's first guided missile technology research institute.

The Second Artillery was formally formed as an independent force on July 1, 1966 at Beijing⁵. Prime Minister Zhou Enlai named it Second Artillery Force (SAF) to distinguish it from the army's artillery regiment. PLASAF today has PLASAF has its headquarters in Qinghe on the outskirts of Beijing.

Organisation of the Second Artillery

PLASAF has strength of about 100,000 personnel and the Commander of PLASAF reports directly to the Central Military Commission (CMC), he is also a member of the CMC.

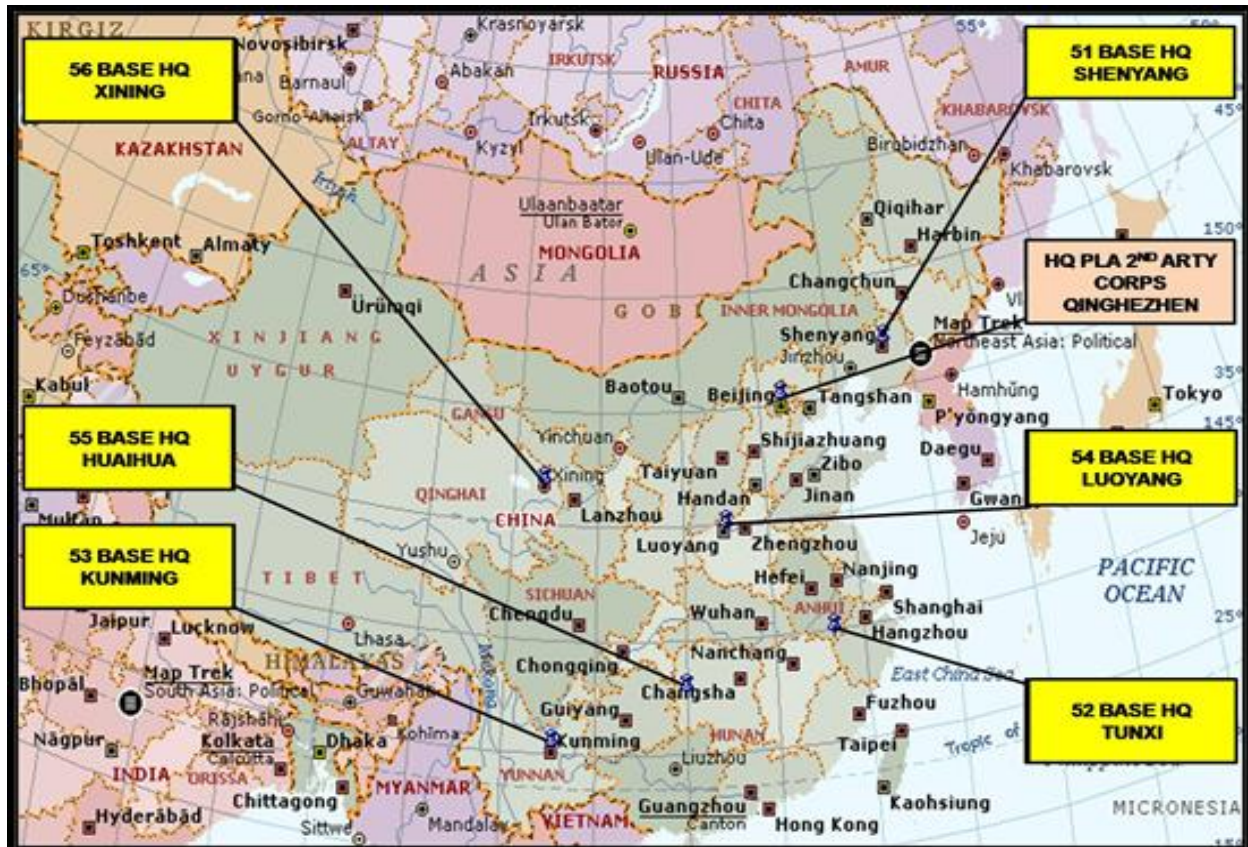
Second Artillery is organised in six operational missile bases and one central storage complex. These operational missile bases are roughly of the status of a division and are commanded by a Major General rank officer and each base has three or more launch brigades under it. Each brigade consists of six launch battalions and two companies⁶. The number of launchers in each company depends on the type of missile held in the battalion.

Missile Bases

The forces deployed with each of the six missile bases are given below: -

Base 51: This base has its HQ in Shenyang, Liaoning province, in north eastern China. The base has more than four brigades under it, these are 806, 810, 816, and 822 Brigade. These brigades are located in the provinces of Liaoning, Shaanxi, Jilin and

Shandong. 51 Base has one DF-21 brigade with conventional capabilities and one ICBM brigade with DF-31/DF31A missiles. The other brigades probably include DF-4, DF-15 and one more DF-21 brigade⁷. The deployment the missile bases are shown in Map-1 below:-



Map-1: Deployment of Second Artillery Missile Bases

Base 52: This Base HQ is located at Tunxi in Anshui province in south eastern China. The Base has 7-9 brigades under it and these are located in the provinces of Anhui, Jiangxi, Fujian, Zhejiang, and Guangdong. The Base is equipped with conventional missiles of two or more DF-21 brigades, two or more DF-15/ DF-16 brigades and two DF-11 brigades. In addition there are two nuclear armed DF-21 brigades. This is the largest and most powerful missile base deployed opposite Taiwan.

Base 53: This base HQ is at **Kunming**, Yunan province in south China. The base has 4-5 brigades located in the province of Yunan, Guizhou, Guangxi and Guangdong. This base is equipped with diverse type of equipment like LACMs and different types of ballistic missiles. The conventional brigades under this base include one DH-10 LACM, one brigade

probably with DF-21D ASBM and one more conventional brigade probably DF-21. In addition the brigade has two nuclear brigades one with DF-21 and one with DF-31. This base covers south East Asia and **India**.

Base 54: This base is in eastern China with its HQ at Luoyang in Henan province. This base has three ICBM brigades with one of them equipped with DF-5 silo based nuclear missiles and the other two probably equipped with DF-31 nuclear missiles.

Base 55: This base has its HQ in Huaihua in Hunan province and is located in southern China. The base consists of two ICBM brigades with one of them equipped with DF-5/5A and one with DF-31 nuclear missiles. In addition it has one brigade probably conventional armed LACM.

Base 56: The base 56 has its HQ at Xining in Qinghai province north central China. The base consists of three brigades located at Gansu, Qinghai, and Xinjiang province. This is the main base which caters for any conventional contingency against **India**. This base has probably one or two brigades equipped with conventional armed DF-21C missiles and in addition has one ICBM brigade equipped with DF-31A nuclear missiles. The location of the brigades for contingency against India is likely to be near Korla in Xinjiang province⁸.

Force Structure

In the last two decades China has greatly improved its nuclear and conventional ballistic missile capabilities. The force structure of Second Artillery with strength and type of missiles is shown in Table 1 below.

System	Missiles	Launchers	Estimated Range
Ballistic Missiles			
ICBM DF-5, DF-31	50 - 75	50 - 75	5500 + km
IRBM DF-4	5 - 20	5 - 20	3000 – 5500 km
MRBM DF-21	75 - 100	75 - 100	1000 – 3000 km
SRBM (DF-11= 700-750; DF-15=350-400) Ref dod2010.	1,000 - 1200	200 - 250	<1000 km
Cruise Missiles			
GLCM (Ground launched cruise missile) DH-10/CJ- 10	200 - 500	40 - 55	1500 + km
ALCM (Air Launched Cruise Missile) YJ-63 and KD-88 (KD-88 is a derivative of YJ-63).	Not known	Not known	200 km

Table 1: China's Missile Force ⁹

Assessment of Second Artillery Capabilities

China's 53 Missile Base at **Kunming**, and 56 Missile Base at **Xining** are the ones which are of concern to India due to their location and capability of striking at India. Indian targets in the north, east and central India are within reach of their DF-21 ballistic missile and DH-10 land attack cruise missile (LACM). No missile brigade has been observed to be permanently located in Tibet but the MRBM, SRBM and cruise missiles are mobile systems and can be moved to Tibet if required. The missile brigades at Delingha and Da Qaidam near Golmud are connected to Tibet by the Qinghai-Tibet Railway (QTR) line and the road network to Lhasa. They can easily be moved up to Tibet to enhance their reach into India. To monitor these developments the IAF needs to have **long range persistent ISR** capabilities with systems like high altitude long endurance (HALE) UAVs.

In any future conflict against India SAF is likely to use its conventional missiles in pre-emptive strikes, as part of the PLA's "Anti Access Strategy", in an attempt to degrade IAF forward airfields, military bases and vital targets. China's ballistic and cruise missiles will be a **major** threat to the IAF. To counter this threat IAF needs to upgrade its terminal air defences. Long range SAMs (as and when they are inducted), should provide some ABM (Anti Ballistic Missile) capability against China's ballistic missiles. Cruise missiles fly at low

levels and to counter them the first requirement is detection. IAF needs to consider development of low cost aerostat radars to pick up cruise missiles. To destroy cruise missiles, deployment of CIWS (Close in Weapon Systems) of Phalanx class needs to be considered. These CIWS guns coupled with modern SAMs and interceptor aircraft having “look down shoot down” capability will strengthen air defences against cruise missiles. IAF also needs to use passive methods to absorb damage by any missiles which get through the defences. IAF needs adequate number of hardened aircraft shelters (HAS) to park fighter aircraft. Another passive method which needs to be explored is deployment of modern means of runway repair material in the form of aluminum mats which can keep runway down time to minutes instead of hours. IAF also has the advantage of a large number of airfields in the east and west, so even if some airfields are down, operations can continue from other locations. They cannot take out all our airfields. The best defensive strategy against China’s missiles is to deter them by developing similar capabilities so that India can strike targets in China. India needs to step up its plans to develop the hypersonic Brahmos-2 cruise missile and subsonic 1000 km range Nirbhay cruise missile.

Conclusion

PLASAF has developed into a formidable strategic nuclear and conventional force from its humble origins in the mid 1950s. Qian Huesen, who was trained in USA, was instrumental figure in the development of China’s missile program. China’s conventional

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ballistic and cruise missiles pose a threat to regional countries, including India. To counter the Chinese missile challenge India must develop adequate capabilities to attack Chinese targets with precision at long range. India needs to develop persistent ISR capabilities to monitor Chinese missile movements and provide targeting information for IAF retaliatory strikes. IAF also needs to upgrade its active and passive air defence systems to intercept and absorb Chinese missile attacks.

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

End Notes

¹ “The Second Artillery Force of the PLA”, <http://eng.mod.gov.cn/ArmedForces/second.htm>, accessed on November 14, 2014.

² US. DOD “Annual Report to Congress : Military and Security Developments Involving the People’s Republic of China 2014” at http://www.defense.gov/pubs/2014_DoD_China_Report.pdf , p. 13, accessed on November 19, 2014.

³ Mark A. Stokes, “The People’s Liberation Army and China’s Space and Missile Development:Lessons from the Past and Prospects for the Future”, in [Ms. Laurie Burkitt, Dr. Andrew Scobell, Dr. Larry M. Wortzel](#), eds. *The Lessons of History: The Chinese people's Liberation Army at 75*(Carlisle:United States Army War College Press, 2003), pp 193-198.

⁴ “Qian Xuesen, Father of China’s Space Program, Dies at 98,” http://www.nytimes.com/2009/11/04/world/asia/04qian.html?_r=0&pagewanted , November 04,2009, accessed on July24, 2014.

⁵ “The Second Artillery Force of the PLA”, <http://eng.mod.gov.cn/ArmedForces/second.htm> , accessed on July30, 2014.

⁶ Mark Stokes, “The Second Artillery Force and the Future of Long Range Precision Strikes” in” *Strategic Asia 2012-2013 China’s Military Challenge*, ed.Ashley J. Tellis and Travis Tanner (Seattle and Washington,D.C. NBR 2012).

⁷ N6 *ibid.* and Sean A Connor in *Air Power Australia*.

⁸ N6, *ibid.*

⁹ U.S. D.O.D. “Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2012” http://www.defense.gov/pubs/pdfs/2012_cmpr_final.pdf

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