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Author

CHASE, Michael S.

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The PLA's Second Artillery Force as a Customer of China's Defense Industry

Michael S. CHASE

Summary

One of the key beneficiaries of China's defense industrial reforms is the Second Artillery Force of the People's Liberation Army (PLA). Once limited to a small and vulnerable nuclear ballistic missile capability, the Second Artillery now fields an impressive arsenal of nuclear and conventional missiles. The Second Artillery's rapid emergence as China's core force for nuclear deterrence and conventional precision strike operations underscores its importance as a customer of China's defense research, development, and acquisition system. The Second Artillery's growing technological sophistication highlights its increasingly diverse and complex requirements as a customer. Whereas it once received only rudimentary nuclear missile systems, it now demands not only a much broader range of more complex and capable nuclear and conventional missiles, but also advanced command, control, communications, computers, and intelligence, surveillance, and reconnaissance (C4ISR), electronic warfare, and command automation systems. Senior officers appear to be satisfied that the missile force's new equipment is strengthening its deterrence and war-fighting capabilities.

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SECOND ARTILLERY STRATEGY AND DOCTRINE AS DRIVERS OF THE RDA PROCESS

One important debate in the study of the interaction of the PLA with China's defense industries over time has centered on the relative importance of strategic and doctrinal "pull" as opposed to technology "push." Today, it generally seems that strategy and doctrine influence capability requirements, which in turn drive end user system requirements. For the Second Artillery, China's nuclear policy and strategy and its doctrine for conventional missile force operations create requirements for greater missile force survivability and enhanced nuclear deterrence and conventional precision strike capabilities. Such requirements drive the development of specific systems, such as conventional short-range ballistic missiles (SRBMs) and medium-range ballistic missiles (MRBMs), land-attack cruise missiles (LACMs), and road-mobile nuclear intercontinental ballistic missiles (ICBMs). Similarly, the PLA's focus on "informatized" warfare creates requirements for advanced C4ISR and command automation capabilities, which are translated into the development and deployment of systems like the "integrated command platform." The Second Artillery's conventional and nuclear strategy and doctrine should be seen as key drivers of its requirements for new weapons and equipment, and therefore as a basis for its role as a customer of the defense research, development, and acquisition (RDA) system.

SECOND ARTILLERY ORGANIZATION AND THE DEFENSE RDA SYSTEM

To understand the Second Artillery as an institution—and as a customer of the defense industry—one must first consider where it stands in relation to the rest of the PLA. The Second Artillery is an independent branch that is considered equal to the services. Further underscoring its equivalent status, its commander is now a member of the Central Military Commission (CMC), China's top military decision-making body, having been added along with the PLA Navy (PLAN) and PLA Air Force (PLAAF) commanders in 2004.

The Second Artillery has six organizational levels: Second Artillery Headquarters, missile bases, missile brigades, launch battalions, launch companies, and launch platoons. The most important of these six levels when it comes to the Second Artillery's role as a customer of China's defense industry is its headquarters. Like the PLAN and PLAAF Headquarters, the structure of the Second Artillery Headquarters mirrors that of the PLA's four general departments. Accordingly, Second Artillery Headquarters has four first-level departments: General Headquarters Department, Political Department, Logistics Department, and Armament Department.

Within its headquarters, the most important department from the perspective of Second Artillery's role as an end user is the Armament Department (装备部). Prior to the 1998 defense industrial reforms and the creation of GAD, the Second Artillery Headquarters had a Technical Equipment Department, which was primarily responsible for issues related to equipment research and development, maintenance and repair, and procurement. Following the creation of GAD, the new Armament Department replaced this department and took on some functions previously performed by other departments.

Like GAD and its counterparts in PLAN and PLAAF Headquarters, the Second Artillery's Armament Department is responsible for full life-cycle management of various types of weapons and equipment. Its responsibilities thus are not limited to RDA, but also include maintenance and repair, training, and retirement of weapons systems. The Armament Department's responsibilities also include "informatization" and upgrades of existing weapons and equipment, which can make weapons and equipment more serviceable and effective and prolong their service life. Chinese media reports indicate that it is also involved in addressing policy issues, promulgating guidance, and providing support to combat forces. In addition, the Armament Department oversees armament departments at lower levels for each of the Second Artillery's six missile bases and their subordinate missile brigades. It also manages the Second Artillery's military representative bureaus and offices. As in the PLAN and PLAAF, Second Artillery military representatives are responsible

for overseeing procurement contracts, assuring quality control at factories producing equipment for the missile force, dealing with maintenance problems, and checking on after-sales service and technical support.

An important organization affiliated with the Second Artillery's Armament Department is its Science and Technology (S&T) Committee (二炮科技委). The role of this committee presumably mirrors that of GAD's S&T Committee, but with a focus on the requirements of the missile force. Still another part of the Second Artillery that plays an important part in RDA and the missile force's interaction with the defense industry is its Equipment Research Academy (第二炮兵装备研究院), which was established in 2004.

FORCE STRUCTURE AND PROJECTS DURING THE TWELFTH FIVE-YEAR PROGRAM

The Second Artillery's conventional missile force has grown rapidly since it was created in the early 1990s and is increasingly enabling China to implement the Second Artillery's concepts to employ it for deterrence, intimidation, and conventional firepower strike operations. The Second Artillery's conventional missile force appears likely to remain its most dynamic component, with several important new developments on the horizon.

Today, China's conventional ballistic missile force includes DF-15 (CSS-6) and DF-11 (CSS-7) SRBMs and DF-21 (CSS-5) MRBMs. China has deployed the DH-10 LACM to enhance the PLA's regional precision strike capabilities. China is also developing and deploying an anti-ship ballistic missile (ASBM) based on a variant of the DF-21 (CSS-5) MRBM. Beyond these capabilities, Taiwan officials have stated publicly that China is deploying the new DF-16 ballistic missile, with a range of about 1,000–1,500 km. In addition, PRC media indicates that China is developing a conventional missile with a range of 4,000 km, which would allow the Second Artillery to strike Guam with conventional weapons. China aims to further enhance these capabilities, as indicated by recent Chinese media articles advocating further development of long-range conventional precision strike weapons and suggesting that strengthening

such capabilities would bolster China's ability to deter U.S. military intervention.

The Second Artillery's theater and strategic nuclear missile forces serve as a backstop for its growing arsenal of short-range and theater conventional missiles. Its capabilities provide the ultimate escalatory or counter-escalatory threat and thus serve as an important element of China's strategic deterrence posture. Beijing is modernizing these forces to enhance their survivability, increase their striking power, and counter missile defense developments. China currently maintains the DF-3 (CSS-2) intermediate-range ballistic missile (IRBM) and DF-21 and DF-21A (CSS-5 Mod 1 and CSS-5 Mod 2) MRBMs for theater nuclear deterrence missions. The PLA's ICBM force consists of limited-range DF-4 (CSS-3) ICBMs, silo-based DF-5 (CSS-4) ICBMs, and the recently deployed DF-31 (CSS-10 Mod 1) and DF-31A (CSS-10 Mod 2) road-mobile ICBMs. A new road-mobile ICBM, possibly capable of carrying multiple independently targetable reentry vehicles (MIRVs), may also be under development.

Considering developmental programs in terms of planning cycles is useful, in that armament work in the Second Artillery appears to track closely with China's Five-Year Programs (previously termed Plans). This is clearly the case with armament work in other parts of the PLA. As with other institutions, for the Second Artillery the period at the end of a five-year program provides an occasion for reviewing the work of the past five years and looking ahead to the major projects it will undertake over the course of the next Five-Year Program (FYP).

The Eleventh FYP covered 2006 to 2010, and the Twelfth FYP began in 2011 and will run through 2015. Chinese military media reports indicate that the Second Artillery held various meetings in 2010 and 2011 to review armament work carried out during the Eleventh FYP and discuss plans for the Twelfth FYP. For example, at one armament work meeting held during a larger session of the Second Artillery's Party Committee in late 2010, Department Director Zhang Qihua reviewed armament work in the last year of the Eleventh FYP and outlined goals for 2011 and further tasks to be completed during the Twelfth FYP. Another overview of Second Artillery armament work

during the Eleventh FYP reportedly highlighted accomplishments in areas such as refitting and lifespan extension of existing systems, R&D of new models of weapons and equipment, strengthening the full lifecycle management of weapons and equipment and battle positions, and improvements in support capabilities. These achievements reportedly made an important contribution to the development of the Second Artillery's deterrence and actual combat capabilities. The same article also stated that during the Eleventh FYP, the Second Artillery made major progress in tackling critical technological issues, achieved breakthroughs in weapons and equipment R&D, and advanced its upgrades of information systems and equipment. In addition, according to the article, "a large amount of 'silver bullet' equipment was delivered to units, ensuring the rapid formation of the troops' combat capability."

Meetings about armament work plans also reveal at least the broad outlines of possible future developments. According to a November 2010 report, during the Twelfth FYP Second Artillery armament organizations are tasked with contributing to the development of the missile force's "information system-based system-of-systems operations capabilities." Beyond such general descriptions of objectives, Chinese military media reports and other official Chinese sources are circumspect in discussing specific developmental armament projects for the missile force, but they make it clear that the Second Artillery can be expected to continue to modernize and upgrade its nuclear and conventional missile force capabilities. Possible key projects could include further work in areas such as ASBMs, long-range conventional strike capabilities, and road-mobile ICBMs.

The project that has received the greatest external attention is China's development of a medium-range ASBM known as the DF-21D. According to Taiwan's 2011 National Defense Report, China started deploying this ASBM in small numbers in 2010. Research by Mark Stokes suggests that after the deployment of the DF-21D, the logical next step for China would be to develop a longer-range ASBM capable of threatening U.S. aircraft carriers out to a distance of at least 3,000 km, possibly by the end of the current Five-Year

Program.

Another possibility is that Beijing might choose to pursue new longer-range conventional strike missions and capabilities for Second Artillery. Specifically, future developments may include further expansion of its conventional MRBM and IRBM forces.

As for the Second Artillery's nuclear force, according to a 2010 U.S. Department of Defense report on military and security developments involving the PRC, "China may also be developing a new road-mobile ICBM, possibly capable of carrying a multiple independently targeted re-entry vehicle (MIRV)." This would further enhance its growing strategic deterrence capabilities. This statement followed many years of speculation about possible follow-on ICBM systems. Indeed, rumors about a possible DF-41 ICBM program have been in circulation for many years, and photos of an eight-axle transporter erector launcher that appeared on the Internet in 2007 have contributed to renewed discussion about a developmental road-mobile ICBM.

CONCLUSION

The Second Artillery has been a major beneficiary of advances in the capabilities of the Chinese defense industry since the 1998 reforms. The missile systems and related equipment it has received increasingly enable it to fulfill its mission as China's strategic missile force. The deployment of road-mobile ICBMs gives China the survivable nuclear force and assured retaliatory capability it has long sought as a strategic deterrent. The increasingly accurate and lethal conventional ballistic and cruise missiles the Second Artillery has received are bolstering the PLA's conventional precision strike capabilities. New command automation and communications capabilities allow the missile force to prepare itself to fight more effectively in future "informatized" local wars and to conduct operations in a "complex electromagnetic environment." While there is undoubtedly room for further improvement, the leadership of the Second Artillery has ample reason to be satisfied with the weapons and equipment the defense industry has delivered in recent years.

These trends are likely to continue. The central role of the strategic missile force in deterrence and combat operations indicates that it will remain a high priority for the PLA and Party leadership, which should mean that the Second Artillery and the defense industry components that provide it with weapons and equipment will remain well-funded. Moreover, the fact that the two major sectors most relevant to the requirements of the strategic missile force—the missile and space industry and the information technology and defense electronics industry—are among the most advanced and successful components of China’s defense industrial complex also suggests quite strongly that the Second Artillery will continue to receive weapons and equipment that meet its requirements. As a result, the Second Artillery is likely to continue fielding the capabilities it needs to fulfill its mission as China’s core force for strategic deterrence and conventional precision strike operations.

As China continues to modernize its missile force, future research on the Second Artillery’s role as a customer of China’s defense industry not only has the potential to yield new insights into China’s growing missile capabilities, but also to enhance the China-watching community’s understanding of the defense RDA process in China. There are a number of specific topics that merit further study, such as the nature of the interaction between the Second Artillery and various other key players, including GAD, SASTIND, defense industrial research institutes, and universities. Case studies of current or historical weapons development programs might offer insight into such issues, and might also shed light on how important projects are managed. Comparative case studies from different periods (such as before and after

the creation of GAD and the 1998 defense industry reforms) could also offer insights into the extent to which practices have changed over time. Furthermore, the importance of information technology in Chinese military modernization suggests quite strongly that future research on the missile force as a customer of the defense industry should focus not only on the development of nuclear and conventional missile systems, but also on the Second Artillery’s requirements for advanced C4ISR, command automation, and information and electronic warfare capabilities.

Another useful research topic would be an assessment of how missile force strategy and doctrine link to desired weapons system capabilities and specific attributes of missile systems, such as mobility, accuracy, and warhead lethality. In addition, future scholarship should attempt to analyze the inner workings of the process that allows the Second Artillery to translate its system requirements into demand signals for the defense industrial base. Finally, future research should provide a more detailed assessment of how satisfied the leadership of the Second Artillery is with the defense industry’s products. Researchers especially should attempt to ascertain how satisfied the Party leadership is with the defense industry’s ability to produce the weapons and equipment it sees as required to support China’s broader diplomatic, economic, and security objectives.

Michael S. CHASE is an associate professor in the Warfare Analysis and Research Department at the U.S. Naval War College in Newport, Rhode Island. The views expressed in this paper do not necessarily reflect those of the Naval War College, U.S. Navy, or Department of Defense.