
Appendix 3A. China and nuclear transparency

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I. Introduction

One approach to making nuclear weapons less threatening is to promote nuclear transparency. If the nuclear weapon states (NWS) provide publicly available information about the status of their nuclear weapons and if transparency is managed appropriately, the suspicions, fears and miscalculations among states and citizens about the use of nuclear weapons could be reduced. At the same time, the NWS consider some of this information as highly sensitive because of the mass destruction effects of nuclear weapons. They have to be very careful in drawing the line between transparency and secrecy in nuclear weapon activities. In general, China supports the concept of transparency in armaments but also calls for the thorough examination of different transparency measures and different treatment of them, depending on their implications for China's security.

China supports appropriate and feasible transparency measures in armaments in a bid to promote mutual trust between states and regions and to enhance world peace, security and stability. It should be emphasized that transparency in armaments is [a] means rather than [an end]. Under the current international situation, no country can support or achieve absolute transparency in armaments. When and at what stage a certain country can and should undertake what transparency measures must be guided by the basic principle of assured security for all states. Countries can define specific transparency measures consistent with their national or regional situation and requirements on the basis of voluntary choice or through consultations according to their specific surroundings and political, military and security conditions.¹

The Chinese position on nuclear transparency follows these principles. This appendix explores the security considerations and other factors that shape China's policy on different approaches to nuclear transparency.

Five kinds of nuclear weapon transparency can be discerned: transparency in nuclear strategy, qualitative transparency, quantitative transparency, clarification of nuclear activities and acceptance of site visits. Transparency in nuclear strategy means that a state provides information about its nuclear posture and strategy. Qualitative transparency means that a state provides information about its types of nuclear weapons, for example, on its possession of nuclear or thermonuclear warheads and on the major delivery systems for them. Quantitative transparency implies that a state provides data on the number of nuclear weapons in its possession or data from which such information could be

¹ Foreign Ministry of the People's Republic of China, 'Transparency in armaments', URL <<http://www.fmprc.gov.cn/eng/5382.html>>.

derived. With regard to the fourth kind of transparency, some nuclear or nuclear-relevant activities can be misinterpreted by other states and therefore cause dangerous reactions. Clarification of nuclear activities removes suspicions by explaining the purpose and the nature of these activities and/or by providing evidence that the explanations are accurate. Finally, the NWS occasionally allow foreign visitors to enter some of their nuclear sites, including their testing, production, research and launch sites. The acceptance of site visits can help other states to learn about the nuclear status of a state and thereby avoid overestimations of its nuclear capability. On the basis of their different implications for security, China takes different approaches to the five kinds of transparency.

II. Chinese attitudes towards nuclear transparency

China supports transparency in nuclear strategy. It clearly defined the principles of its nuclear strategy in 1964, when it conducted its first nuclear test explosion: ‘The Chinese Government hereby solemnly declares that China will never at any time or under any circumstances be the first to use nuclear weapons’.² This no-first-use commitment is not just a diplomatic gesture; it is a statement of domestic defence policy that has regulated the development and evolution of China’s nuclear arsenal since the beginning of its nuclear programme. The declaration of China’s nuclear strategy based on a no-first-use commitment has helped the rest of the world to understand the nature of China’s nuclear force. China has also declared some of the characteristics of its nuclear force which result from its no-first-use policy. These include keeping the nuclear force small and maintaining deterrence as its sole function.³ The first characteristic indicates that China will not develop a first-strike capability, which would rely on a large number of nuclear weapons. The second characteristic limits the categories of deployed nuclear weapons, meaning that China does not deploy nuclear weapons that are suitable for war-fighting but not for deterrence. Estimates provided by outside experts about the quantity and categories of Chinese nuclear weapons corroborate these statements.⁴ In the early period of nuclear development in China, the no-first-use declaration enhanced China’s security by reducing the incentives of the former Soviet Union and the United States to launch a pre-emptive strike against China. China’s firm commitment to no-first-use still plays an important role in maintaining nuclear stability.

In addition to its mission and size, China’s nuclear force has other characteristics that are consistent with a no-first-use policy. A Chinese journal described

² ‘Chinese government statement on the complete prohibition and total destruction of nuclear weapons’, available on the official Internet site of the Chinese Ministry for Foreign Affairs, URL <<http://www.fmprc.gov.cn/eng/5741.html>>.

³ Chinese Ministry of Defence, *China’s National Defense 2000* (Information Office of the State Council of the People’s Republic of China: Beijing, Nov. 2000), p. 2, available at URL <<http://www.nti.org/db/china/engdocs/wpnd2000.htm>>.

⁴ See estimates in, e.g., the *SIPRI Yearbook*, available at URL <<http://projects.sipri.org/nuclear/index.html>>, and the NRDC ‘Nuclear Notebook’ section of *The Bulletin of the Atomic Scientists*, available at URL <<http://www.bullatomsci.org/issues/nukenotes/nukenote.html>>.

a military exercise in which the Chinese Second Artillery simulated launching a retaliatory strike several days after a simulated nuclear attack on China.⁵ This indicates that China's nuclear weapons are not on high alert, in contrast to normal Russian and US practice. A delayed nuclear response policy makes an accidental launch of Chinese nuclear weapons impossible.

China has not disclosed data with regard to its nuclear strategy because its nuclear deterrence relies on 'quantitative ambiguity', as discussed below.

China often releases information about the characteristics of its nuclear forces. China has announced nearly all of its major advances in qualitative nuclear development, for example, the first explosive test of a nuclear device, the first test flight of a missile equipped with a nuclear warhead, the first explosive test of a thermonuclear device and the first test flight of an intercontinental ballistic missile (ICBM). The declarations have provided updates of available information about the quality of its nuclear weapons. China has also exhibited its nuclear delivery systems in parades, for example, on the 35th and 50th anniversaries of the People's Republic of China, thus demonstrating its declared capabilities. Qualitative transparency enables the outside world to assess Chinese nuclear weapons and helps to avoid miscalculations in this regard.

China has never declared the number of its nuclear weapons, the amount of its stockpiled fissile materials or the production rate of new nuclear warheads. When other states make estimates pertaining to China, China neither confirms nor denies these figures. China will most probably maintain a policy of quantitative ambiguity as a way of protecting its nuclear deterrence until it has built a survivable nuclear retaliatory force that relies on geographical ambiguity.

China is ambivalent about clarifying its nuclear activities. On the one hand, if it provides information on nuclear weapon-related activities, such as missile test flights, this could contribute to avoiding suspicion and false alerts in other states. On the other hand, China is concerned that the declaration of such activities would reveal sensitive information to the military intelligence agencies of other states. During the 2000 Review Conference of the 1968 Treaty on the Non-proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT), China initially opposed the commitment to increased transparency in nuclear weapon capabilities by the NWS as a voluntary confidence-building measure. It wanted to link transparency to a nuclear no-first-use commitment and to make it dependent on negotiated arms limitation agreements.⁶ Based on these considerations, China will clarify the nature of most of its nuclear weapon-related activities after they have taken place. Objections could be raised that some activities could be misinterpreted if advance information about them is not provided, as in the case of missile test flights. Here, China tries to minimize the negative

⁵ Dong, J. and Wu, X.: 'True story: China's mysterious strategic missile forces on rise', *Guangzhou Ribao* (Internet edn), 1 July 2001, in 'PRC strategic missile forces mature into "strong shield"', Foreign Broadcast Information Service, *Daily Report—China Program Product* (FBIS-CPP), FBIS-CPP-000-044, 3 July 2001.

⁶ See, e.g., Simpson, J., 'The 2000 NPT Review Conference', *SIPRI Yearbook 2001: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2001), p. 495.

effects by taking other approaches. It does not maintain its nuclear weapons on high alert and signed de-targeting agreements with Russia in 1994 and with the USA in 1998.⁷ China is an active participant in crisis- and suspicion-reduction activities. It maintains hotline links with Russia and the USA in order to be able to clarify misunderstandings and misinterpretations during and after nuclear weapon-related events.

China has two approaches to visits to its nuclear facilities and favours strict rules to regularize such site visits in order to avoid abuse. For example, in the negotiations on the 1996 Comprehensive Nuclear Test-Ban Treaty (CTBT), China and a number of other concerned states insisted on the need for a large majority of votes to trigger on-site inspections.⁸ However, in practice, China is generous about hosting site visits on a voluntary basis. As revealed in 2001, scientists from US nuclear weapon laboratories have ‘recorded detailed histories of the Chinese program from top scientists, inspected nuclear weapons labs and bomb testing sites, interviewed Chinese weapons designers, [and] photographed nuclear facilities’ in the past 10 or more years.⁹ The US scientists even witnessed preparations for a Chinese underground nuclear test.¹⁰ In addition, the Chinese nuclear complex hosts arms control conferences, which have included site visits by foreign civilian experts. For example, during the International School on Disarmament and Research on Conflicts—Beijing Seminar on Arms Control in 1996, the participants of the conference were taken on a tour of ‘Science City’ in Mianyang, which is a part of a Chinese defence research institute, the China Academy of Engineering Physics. The acceptance of site visits by foreign experts promotes transparency in Chinese nuclear development.

III. Reasons for transparency

There are various reasons for providing transparency in nuclear weapons. The first is to reduce suspicions, the most serious of which are overestimations of nuclear capabilities, misinterpretation of state activities and uncertainties regarding the future of states’ nuclear forces. All such suspicions have been a concern for China. If the nuclear capability of China is overestimated by other states, the perceptions of China as a threat would be exacerbated, which in turn could disrupt China’s economic relations and economic development.

⁷ United Nations, ‘Implementation of the comprehensive nuclear-test-ban treaty: general and complete disarmament’, URL <<http://www.un.org/documents/ga/docs/51/plenary/a51-127.htm>>; and ‘Joint Statement on South Asia’, The White House, Office of the Press Secretary, Washington, DC, 27 June 1998, in ‘US–China summit’, *Disarmament Diplomacy*, no. 27 (June 1998), available on the Acronym Institute Internet site at URL <<http://www.acronym.org.uk/dd/dd27/27china.htm>>.

⁸ Johnson, R., *A Comprehensive Test Ban Treaty: Signed But Not Sealed*, Acronym Report no. 10, May 1997, available on the Acronym Institute Internet site at URL <<http://www.acronym.org.uk/acrorep/acro10.htm>>. The compromise that was reached is presented in paragraph 46 and calls for at least 30 affirmative votes by members of the Executive Council for a decision to approve on-site inspections.

⁹ Coll, S., ‘The man inside China’s bomb labs, US blocks memoir of scientist who gathered trove of information’, *Washington Post*, 16 May 2001, p. 1.

¹⁰ Coll (note 9).

There are two kinds of nuclear activity in China which could be misinterpreted by other states. A treaty-compliant activity could be suspected of being a violation, which could damage China's international reputation. In addition, a routine or civilian activity in China could be wrongly regarded by other states as a hostile military action, which could trigger aggressive reactions. Because China maintains its nuclear forces at a very low state of alert, the latter kind of misinterpretation is rarely made. The uncertainties in predicting the future of Chinese nuclear forces have been used in some quarters as arguments to criticize China. For example, some advocates of the US National Missile Defense (NMD) programme argue that the USA should disregard China's reactions to NMD development and deployment because China will modernize its nuclear force in any case.¹¹ This argument uses the uncertainties to minimize the effect that a US NMD deployment could have on Chinese nuclear development.¹²

The second reason for nuclear transparency is to reduce concerns over nuclear proliferation. On many occasions, China has been accused of transferring sensitive nuclear technologies and components to other states. This has put a burden on its diplomatic resources. China now pursues a much more transparent policy by submitting all bilateral nuclear cooperation with other states to International Atomic Energy Agency (IAEA) safeguards. Transparency in this area should help reduce suspicions about Chinese nuclear transfers.

The need to make nuclear deterrence credible constitutes a third reason for nuclear transparency. The nuclear deterrence of a state relies on the adversary's perception of the state's nuclear retaliatory capability. It is therefore important for China to be able to prove its nuclear capability by demonstrating that it can explode nuclear devices, by having the means to deliver them to a certain range and by showing that its nuclear weapons could survive a first strike. If an NMD system is finally deployed by the USA, China will also need to demonstrate that its nuclear weapons can penetrate such defences.

Finally, the fourth reason for nuclear transparency is to promote arms control. Chinese experts have suggested that the excess fissile materials which have resulted from the dismantling and reduction of Russian and US warheads should be subject to international monitoring to prevent Russia and the USA from reversing the reductions.¹³ In turn, China may be asked to provide evidence that it is not producing new fissile materials at the same time as Russia and the USA are reducing their nuclear arsenals to a very low level. Such exchanges are integral to compromises in global arms control negotiations.

¹¹ Perlez, J., 'China likely to modernize nuclear arms, US believes', *New York Times*, 12 May 2000.

¹² The changes in Chinese nuclear development which might be made as a result of NMD deployment are discussed in Li, B., 'The effects of NMD on the Chinese strategy', *Jane's Intelligence Review*, vol. 13, no. 3 (Mar. 2001), pp. 49–52.

¹³ Chen, X. and Tian, D., 'The key is to verify and control nuclear explosive materials', *Arms Control Collected Works* (Program for Science and National Security Studies, Institute of Applied Physics and Computational Mathematics: Beijing, 1995), pp. 53–56.

IV. Concerns over transparency

There are two major concerns regarding nuclear transparency. First, certain facets of nuclear transparency may facilitate hostile intelligence activities aimed at identifying the weakness of a nuclear weapon system, thereby helping to exploit such weaknesses through the design of countermeasures. This is a genuine concern for all the NWS. For example, the survivability of a mobile nuclear weapon system, a land-based ICBM or a submarine-launched ballistic missile (SLBM) relies on the geographical ambiguity of the system. If the manoeuvring strategy of the system is known, a potential attacker could increase the kill probability by narrowing the targeting area. China has not acquired operational long-range mobile nuclear weapons; the survivability of its current ICBM force therefore relies on ambiguity surrounding numbers. Because China will not confirm or deny reports on the number of its ICBMs, other states cannot have confidence in any estimates. An attacker considering launching a first strike against China would be uncertain of China's retaliatory capacity. This is how China's nuclear deterrent works today.¹⁴

Second, some transparency measures could result in the leakage of information about nuclear weapon designs, which may, in turn, lead to nuclear proliferation. The nuclear facilities in all the NWS are regarded as highly sensitive and their nuclear weapon complexes are strictly protected from intrusion. Approaches to protecting sensitive nuclear weapon technologies are always in opposition to approaches to nuclear transparency. If there is no way to find a compatible solution, transparency is sacrificed because nuclear proliferation is regarded as a serious threat by all the NWS. China shares this concern and has developed a system of regulations to protect sensitive information as well as the hardware to prevent illegal access to its facilities.¹⁵

V. Changing factors in the shaping of China's transparency policy

Some of the factors that shape China's policy on nuclear transparency are changing. First, China is acquiring more survivable nuclear weapons. When China has deployed a mobile nuclear force, it will be much less concerned about the problem of survivability and will be able to rely for its retaliatory capacity on geographical ambiguity instead of quantitative ambiguity. This would constitute a major change in the nature of Chinese nuclear deterrence and give China some leeway to allow greater quantitative nuclear transparency.

¹⁴ For a more detailed discussion of the quantitative ambiguity of the Chinese nuclear arsenal see Li, B., 'China's nuclear disarmament policy', ed. H. A. Feiveson, *The Nuclear Turning Point: A Blueprint for Deep Cuts and De-Alerting of Nuclear Weapons* (Brookings Institution Press: Washington, DC, 1999), pp. 325–32.

¹⁵ Yu, J., ['A brief introduction to the National Bureau of Nuclear Safety'], *Fushe Fanghu Tongxun*, vol. 15, no. 2 (1995), pp. 59–62 (in Chinese).

Second, China is involved in the process of globalization, which requires greater transparency in the commercial area. This challenge extends to the nuclear area, where the transformation of routines associated with the old system of secrecy is accelerating. For example, most Chinese defence-related institutes have used post office box numbers as addresses for the sake of secrecy. However, over the past two decades they have begun to provide street addresses to the public and replace the ordinal numbers which previously stood for their departments and institutes with names denoting the activities of these units.

Some defence institutes are increasing their transparency in the process of conversion to civilian purposes. For example, the China Academy of Launch Technology (CALT) is a company engaged in missile production and civilian space-launch services. In order to join the global information network, CALT provides detailed technical parameters of its launch vehicles on its Internet site.¹⁶ This helps those outside China to understand the technical characteristics of some of its missile products. A number of Chinese defence institutes are also using the Internet to describe their work.¹⁷ In addition, China can be expected to introduce many new transparency arrangements after it has joined the World Trade Organization.

Third, new technologies promote increased transparency. The Internet provides a quick and easy way of sharing information. It could also enhance nuclear transparency and help build trust. The Chinese–US laboratory-to-laboratory cooperation project, for example, demonstrated a technology for remote monitoring of fissile materials via the Internet.¹⁸ Unfortunately, this joint project was terminated in the wake of the Cox Report.¹⁹ It would otherwise have enhanced mutual trust in the physical protection of materials and thereby have contributed to non-proliferation efforts.

Another significant factor is commercial satellite imagery, which now has very high resolution and can provide almost global coverage. Past approaches, such as not showing some sensitive areas on maps, are no longer meaningful.

¹⁶ Information on the activities of the China Academy of Launch Technology is available (in Chinese) at URL <<http://www.calt.com>>.

¹⁷ The brief introduction on the Internet site of the China Academy of Engineering Physics states: ‘The China Academy of Engineering Physics, founded in 1958, an independent account in the national planning, is a complex of theoretical, experimental, designing, and production work for developing advanced defence science and technology’ (author’s translation), URL <<http://www.caep.ac.cn>> (in Chinese). The China Academy of Engineering Physics presents a map of its ‘science city’ at URL <<http://www.caep.ac.cn/jj/weizhi.htm>> (in Chinese).

¹⁸ Prindle, N., ‘The US–China lab-to-lab technical exchange program’, *Nonproliferation Review*, vol. 5, no. 3 (spring–summer 1998), pp. 111–18, available at URL <<http://cns.msiis.edu/pubs/npr/vol05/53/prindl53.pdf>>.

¹⁹ US Congress, House of Representatives, Select Committee on US National Security and Military/Commercial Concerns with the People’s Republic of China, *Final Report*, House Report 105-851 (US Government Printing Office: Washington, DC, 25 May 1999), URL <<http://www.gpo.gov/congress/house/hr105851>>; and May, M. (ed.), *The Cox Committee Report: An Assessment* (Center for International Security and Cooperation: Stanford, Calif., 1999), available at URL <<http://ldml.stanford.edu/cisac/pdf/cox.pdf>>.

VI. Conclusions

China's approach to nuclear transparency is based primarily on security considerations, including the maintenance of effective nuclear deterrence and the reduction of suspicions by other states regarding Chinese nuclear forces and activities. China is currently increasing the survivability of its nuclear weapons and continuing its efforts to implement reform and openness. These factors will increase its confidence that transparency in nuclear weapons is the right policy.