

## V. Chinese nuclear forces

HANS M. KRISTENSEN AND MATT KORDA\*

As of January 2024 China maintained an estimated total stockpile of about 500 nuclear warheads. This is around 90 more than SIPRI's estimate for the previous year—although an estimated 60 warheads are probably assigned to launchers that are still in production. China's warheads are assigned to its operational land- and sea-based ballistic missiles and to nuclear-configured aircraft (see table 7.6, end of section). Although the Chinese nuclear stockpile is projected to continue growing over the coming decade and the number of Chinese intercontinental ballistic missiles (ICBMs) is likely to reach or even exceed the numbers held by either the Russian Federation or the United States, China's overall nuclear warhead stockpile is still expected to remain smaller than those states' stockpiles. It has long been assumed that China stores its nuclear warheads separately from its deployed launchers during peacetime. However, the country's recent moves towards placing solid-fuelled missiles in silos, conducting sea-based deterrence patrols and, potentially, developing a launch-on-warning (LOW) capability suggest that China might have started mating a small number of its warheads (possibly around 24, corresponding to one missile brigade and one fully loaded ballistic missile submarine) with their launchers.

SIPRI's estimate of 500 warheads relies on publicly available information on the Chinese nuclear arsenal.<sup>1</sup> Since China has never declared the size of its nuclear arsenal, many of the assessments here rely on data from the US Department of Defense (DOD) and must therefore be treated with caution. For example, in its 2023 report to the US Congress on Chinese military and security developments, the US DOD projected that China might field a stockpile of roughly 1000 warheads by 2030.<sup>2</sup> This projection relies, however, on several assumptions about China's future force posture and plutonium production; it remains to be seen how accurate they are.<sup>3</sup> Notable developments in 2023 included significant construction at China's nuclear test site at Lop Nur, as well as the completion and operation of China's new

<sup>1</sup> Kristensen, H. M. and Korda, M., 'Estimating world nuclear forces: An overview and assessment of sources', SIPRI Commentary, 14 June 2021.

<sup>2</sup> US Department of Defense, *Military and Security Developments Involving the People's Republic of China 2023*, Annual Report to Congress (Office of the Secretary of Defense: Washington, DC, 19 Oct. 2023), p. 104.

<sup>3</sup> Sokolski, H. D. (ed.), *China's Civil Nuclear Sector: Plowshares to Swords?*, Nonproliferation Policy Education Center (NPEC) Occasional Paper no. 2102 (NPEC: Arlington, VA, Mar. 2021).

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CFR-600 fast-breeder reactors with Russian fuel assistance, which could be used to increase China's plutonium stocks.<sup>4</sup>

This section summarizes the role played by nuclear weapons in China's military doctrine and then describes the air-delivered, land-based and sea-based nuclear weapons that constitute the three legs of China's nascent nuclear triad.

### **The role of nuclear weapons in Chinese military doctrine**

The Chinese government's declared aim is to maintain China's nuclear capabilities at the minimum level required to safeguard national security, with the goal of 'detering other countries from using or threatening to use nuclear weapons against China'.<sup>5</sup> China has long maintained a policy of not using or threatening to use nuclear weapons against non-nuclear-armed states or nuclear weapon-free zones.<sup>6</sup>

The dramatic changes in China's nuclear posture, especially its deployment of quick-launch solid-fuelled missiles in silos and the possible development of a LOW capability, have triggered widespread discussions about long-standing elements of Chinese nuclear doctrine, including its stated nuclear 'no-first-use' (NFU) policy.<sup>7</sup> Since 2022 the US DOD has assessed that China is implementing an 'early warning counterstrike' strategy—akin to a LOW posture—using ground- and space-based sensors to enable rapid launch of missiles before an adversary can destroy them.<sup>8</sup> According to the US DOD, China has deployed at least three early-warning satellites to facilitate this posture.<sup>9</sup>

Despite the continuing increase in the sophistication and size of China's nuclear arsenal—and the absence of an explicit affirmation of an NFU policy in China's September 2023 proposal for 'Reform and Development of Global Governance'—there is no official public evidence that the Chinese government has deviated from its long-standing core nuclear policies, including its

<sup>4</sup> Lewis, J., 'Nuclear test sites are too damn busy', *Arms Control Wonk*, 23 Sep. 2023; Babiarz, R., 'Satellite imagery of the Lop Nur site', *New York Times*, 20 Dec. 2023; Kobayashi, Y., 'China's fast breeder reactor operating? Possibility of accelerating nuclear arms race', *SPF China Observer*, 30 Nov. 2023; and Zhang, H., 'China started operation of its first CFR-600 breeder reactor', *IPFM Blog*, International Panel on Fissile Materials, 15 Dec. 2023.

<sup>5</sup> Chinese State Council, *China's National Defense in the New Era* (Information Office of the State Council: Beijing, July 2019), chapter 2.

<sup>6</sup> 'China reiterates non-first-use principle of nuclear weapons', *Xinhua*, 18 Feb. 2018; and US Department of Defense (note 2), p. 105.

<sup>7</sup> See, e.g. Havrán, S. A., 'China's no first use of nuclear weapons policy: Change or false alarm?', *Royal United Services Institute (RUSI)*, 13 Oct. 2023; and Kulacki, G., 'Would China use nuclear weapons first in a war with the United States?', *The Diplomat*, 27 Apr. 2020.

<sup>8</sup> US Department of Defense (note 2), p. 112.

<sup>9</sup> US Department of Defense (note 2), p. 112.

NFU policy.<sup>10</sup> Additionally, in its 2023 report the US DOD stated that China ‘seems to believe a LOW posture is consistent with its no first use policy’.<sup>11</sup>

The Chinese nuclear posture has traditionally involved procedures for loading warheads on to launchers in a crisis, but with warheads, missiles and launchers kept separate during peacetime.<sup>12</sup> However, according to the US DOD’s 2023 report, China’s ballistic missile submarines conduct ‘near-continuous at-sea deterrence patrols’ and a small number of land-based missile units conduct ‘combat readiness duty’ and ‘high alert duty’ drills, which ‘apparently includes assigning a missile battalion to be ready to launch and rotating to standby positions as much as monthly for unspecified periods of time’.<sup>13</sup> The US DOD also noted that this readiness posture allows the People’s Liberation Army (PLA) Rocket Force (PLARF) ‘to maintain a portion of its units on a heightened state of readiness while leaving the other portion in peacetime status with separated launchers, missiles, and warheads’, suggesting that a few of China’s warheads are deployed on launchers.<sup>14</sup>

### Aircraft and air-delivered weapons

From the 1960s to 2017 some of China’s medium-range Hong-6 or H-6 (B-6) bombers probably served an inactive back-up contingency nuclear mission.<sup>15</sup> In 2018, however, the US DOD reported that the PLA Air Force (PLAAF) was ‘newly re-assigned a nuclear mission’.<sup>16</sup> The H-6N (B-6N), first fielded in 2020, is apparently China’s ‘first nuclear-capable air-to-air refuelable bomber’.<sup>17</sup> In addition, the PLAAF has been developing its first long-range strategic bomber, the H-20 (B-20), with an anticipated range of more than 10 000 kilometres, a stealthy design and dual-capability—that is, able to deliver both conventional and nuclear weapons.<sup>18</sup>

<sup>10</sup> Chinese Ministry of Foreign Affairs, Proposal of the People’s Republic of China on the Reform and Development of Global Governance, 13 Sep. 2023.

<sup>11</sup> US Department of Defense (note 2), p. 112.

<sup>12</sup> Stokes, M. A., *China’s Nuclear Warhead Storage and Handling System* (Project 2049 Institute: Arlington, VA, 12 Mar. 2010), p. 8; Li, B., ‘China’s potential to contribute to multilateral nuclear disarmament’, *Arms Control Today*, vol. 41, no. 2 (Mar. 2011); and US Department of Defense, *Military and Security Developments Involving the People’s Republic of China 2022*, Annual Report to Congress (Office of the Secretary of Defense: Washington, DC, 29 Nov. 2022), p. 95.

<sup>13</sup> US Department of Defense (note 2), pp. 106, 108.

<sup>14</sup> US Department of Defense (note 2), p. 106.

<sup>15</sup> For the aircraft, missiles and submarines discussed here, a designation in parentheses (in this case B-6) following the Chinese designation (in this case H-6) is that assigned by the USA.

<sup>16</sup> US Department of Defense, *Military and Security Developments Involving the People’s Republic of China 2018*, Annual Report to Congress (Office of the Secretary of Defense: Washington, DC, 16 May 2018), p. 75.

<sup>17</sup> US Department of Defense (note 2), pp. 62–63.

<sup>18</sup> US Department of Defense (note 2), p. 92; and US Office of the Deputy Assistant Secretary of Defense for Nuclear Matters, *Nuclear Matters Handbook 2020* (US Department of Defense: Washington, DC, Mar. 2020), figure 1.1, p. 3.

To arm the H-6N, China has been developing two new air-launched ballistic missiles (ALBMs), one of which is assessed by the USA to be potentially nuclear-capable.<sup>19</sup> The US DOD stated in its 2023 report that the PLAAF's operational airborne nuclear capability was still 'developing tactics and procedures' to conduct the nuclear mission and noted that this capability gave China a 'nascent nuclear triad'.<sup>20</sup> SIPRI estimates that, as of January 2024, around 20 nuclear warheads were assigned to PLAAF aircraft.

### Land-based missiles

SIPRI estimates that approximately 346 nuclear warheads were assigned to China's nuclear-capable land-based ballistic missiles as of January 2024. This arsenal has been undergoing significant modernization as China complements its ageing silo-based, liquid-fuelled missiles with large numbers of new mobile and silo-based, solid-fuelled models.<sup>21</sup> However, the reliability of some of these newer missiles is in question after reports emerged in 2023 that widespread corruption in the PLARF may have undermined the modernization programme. There were several purges of senior PLARF officials in 2023 and US intelligence assessments suggested that the high level of corruption meant that some of the silos had been poorly constructed, affecting their ability to launch missiles effectively.<sup>22</sup>

#### *Intercontinental ballistic missiles*

In 2021 commercial satellite imagery revealed that China had started construction of hundreds of new missile silos across northern China.<sup>23</sup> By January 2024 the number of new silos under construction was approximately 350, spread out among three large fields in northern China and three mountainous areas in east-central China. The northern silo fields are thought

<sup>19</sup> US Department of Defense (note 2), p. 63; Ashley, R., Director, US Defense Intelligence Agency, 'Worldwide threat assessment', Statement for the record, US Senate, Armed Services Committee, 6 Mar. 2018, p. 8; US Air Force, National Air and Space Intelligence Center (NASIC), *Ballistic and Cruise Missile Threat 2020* (NASIC: Wright-Patterson Air Force Base, OH, July 2020), p. 7; and Stewart, V. R., Director, US Defense Intelligence Agency, 'Worldwide threat assessment', Statement for the record, US Senate, Armed Services Committee, 9 Feb. 2016. See also Kristensen, H. M. and Korda, M., 'Chinese nuclear forces', *SIPRI Yearbook 2022*, pp. 384–85.

<sup>20</sup> US Department of Defense (note 2), p. 63.

<sup>21</sup> Missile ranges specified here refer to Western definitions. China defines missile ranges differently: short, <1000 kilometres; medium, 1000–3000 km; long, 3000–8000 km; and intercontinental, >8000 km.

<sup>22</sup> 'China's defense purge strikes at heart of Xi's military reforms', Bloomberg, 4 Jan. 2024; and Martin, P. and Jacobs, J., 'US intelligence shows flawed China missiles led Xi to purge army', Bloomberg, 4 Jan. 2024.

<sup>23</sup> Lewis, J. and Eveleth, D., 'Chinese ICBM silos', Arms Control Wonk, 2 July 2021; Korda, M. and Kristensen, H. M., 'China is building a second nuclear missile silo field', FAS Strategic Security Blog, Federation of American Scientists, 26 July 2021; and Lee, R., 'PLA likely begins construction of an intercontinental ballistic missile silo site near Hanggin Banner', China Aerospace Studies Institute, 12 Aug. 2021.

to be intended for solid-fuelled Dongfeng (DF) ICBMs—most likely a siloed version of the DF-31A (CSS-10 Mod 2) at first as well as possibly the DF-41 (CSS-20)—while the more mountainous sites are thought to be intended for liquid-fuelled DF-5B (CSS-4 Mod 3) and DF-5C (CSS-4 Mod 4) ICBMs.<sup>24</sup> By January 2024 silo construction at the northern fields had been largely completed, along with inner and outer perimeter fences, electrical and radio towers, and air defence systems.<sup>25</sup> In its 2023 report the US DOD assessed that China had ‘loaded at least some ICBMs into these silos’.<sup>26</sup> Notably, China’s new northern silo fields are located deeper inside China than any other known ICBM base, including the new silos in east-central China, making them less vulnerable to long-range conventional strikes.<sup>27</sup>

The US DOD estimated in its 2023 report that China possessed approximately 500 ICBM launchers with 350 missiles in its inventory, although SIPRI assesses that these probably included training launchers and launchers under construction, in addition to operational launchers.<sup>28</sup>

If China eventually fills each of its new silos under construction with a single-warhead missile, it will have the capacity to deploy approximately 650 warheads on its ICBMs within another decade. If each silo were filled with a missile equipped with three multiple independently targetable re-entry vehicles (MIRVs), this number could rise to more than 1200 warheads. However, as of January 2024 it remained unclear how China ultimately plans to operate the new silos: whether they will all be filled, whether they will be loaded with DF-31-class or DF-41 ICBMs or a mixture of the two, how many warheads each missile would carry, and whether some of the missiles could potentially have a conventional strike role.<sup>29</sup>

China has three basic classes of ICBM: the DF-5, the DF-31 and the DF-41, with variants of each type. Most have a single warhead, while a smaller but growing number can deliver multiple warheads.

As of January 2024 SIPRI assesses that the numbers of deployed missiles in the DF-5 (CSS-4) family of ICBMs were around the same as the previous year but may be starting to increase as China has probably begun to deploy upgraded versions in the new silos currently under construction in east-central China. The DF-5B version can reportedly carry up to five warheads per missile, while the DF-5C has a multi-megaton yield.<sup>30</sup>

<sup>24</sup> US Department of Defense (note 2), p. 104; and authors’ estimates.

<sup>25</sup> Authors’ assessment based on analysis of satellite imagery.

<sup>26</sup> US Department of Defense (note 2), p. 104.

<sup>27</sup> Korda and Kristensen (note 23).

<sup>28</sup> US Department of Defense (note 2), p. 67.

<sup>29</sup> The assessment of a potential partial conventional strike role is based on circumstantial evidence in Lee, R., ‘A case for China’s pursuit of conventionally armed ICBMs’, *The Diplomat*, 17 Nov. 2021, as well as the US DOD’s assessment that China ‘may be exploring development of conventionally-armed intercontinental range missile systems’. US Department of Defense (note 2), p. 67.

<sup>30</sup> US Department of Defense (note 2), pp. 67, 107.

In its 2023 report the US DOD confirmed non-governmental organization findings that China appeared to be doubling the number of launchers in some mobile ICBM brigades from 6 to 12, although some new bases appear to have only 8 launchers.<sup>31</sup> China is believed to have deployed at least 2 mobile DF-41 brigades, and a third base appears to have been completed—giving a total of around 28 launchers.<sup>32</sup> Preparations for the integration of additional DF-41 brigades into the PLARF also seem to be under way. The US DOD has assessed that China might ultimately plan to deploy the DF-41 in road-mobile and silo-based modes, in some or all of China's new missile silo fields, and potentially in a rail-based mode as well.<sup>33</sup> According to the US DOD, the DF-41 can carry no more than three warheads.<sup>34</sup>

The US DOD's 2023 report stated that China has also begun developing a new missile called the DF-27, which could have a range of 5000–8000 km.<sup>35</sup> However, public information about this new missile is scarce and its purported range can already be covered by China's other ICBMs. One possibility is that the DF-27 could eventually be used in a conventional strike role, a capability that the US DOD assesses that China might be exploring.<sup>36</sup>

In August 2021 China reportedly conducted a test of what appeared to be a fractional orbital bombardment system (FOBS) equipped with a hypersonic boost-glide system.<sup>37</sup> According to the US DOD, the tested system came close to striking its target after flying completely around the world for approximately 40 000 km and over 100 minutes.<sup>38</sup> While details about this new system are scarce, if the initial reporting is accurate, then it may be intended to counter advances in US missile defences. China has disputed that it is developing such a system, instead calling it a 'space vehicle'.<sup>39</sup>

### *Intermediate- and medium-range ballistic missiles*

China has deployed nuclear-capable intermediate- and medium-range ballistic missiles since the 1960s, including a modernized version of the medium-range DF-21 (CSS-5) since the early 1990s and the intermediate-range DF-26 (CSS-18) since at least 2016. In recent years, however, China has converted several DF-21 brigades to brigades for longer-range missiles.

<sup>31</sup> US Department of Defense (note 2), p. 107; Decker Eveleth (@dex\_eve), Twitter, 3 Nov. 2021, <[https://twitter.com/dex\\_eve/status/1456009540982374404](https://twitter.com/dex_eve/status/1456009540982374404)>; and assessments based on the authors' observations.

<sup>32</sup> US Department of Defense (note 2), p. 107; Rod Lee (@roderick\_s\_lee), Twitter, 28 Dec. 2021, <[https://twitter.com/roderick\\_s\\_lee/status/1475885536254599172](https://twitter.com/roderick_s_lee/status/1475885536254599172)>; and authors' estimates.

<sup>33</sup> US Department of Defense (note 12), p. 65; and US Department of Defense (note 2), p. 107.

<sup>34</sup> US Department of Defense (note 2), pp. 67, 107.

<sup>35</sup> US Department of Defense (note 2), p. 67.

<sup>36</sup> US Department of Defense (note 2), p. 67.

<sup>37</sup> Sevastopulo, D., 'China conducted two hypersonic weapons tests this summer', *Financial Times*, 20 Oct. 2021. See also Raju, N., 'Developments in space security', *SIPRI Yearbook 2022*, pp. 573–74.

<sup>38</sup> US Department of Defense (note 2), p. 103.

<sup>39</sup> 'China denies report of hypersonic missile test, says tested space vehicle', Reuters, 18 Oct. 2021.

In 2023, for the first time, the US DOD's annual report to the US Congress did not include the DF-21 in a nuclear role, implying that only conventional DF-21Cs and DF-21Ds remain in service.<sup>40</sup> The dual-capable DF-26 is therefore assessed to be the sole intermediate- or medium-range missile type with a nuclear strike role in China's arsenal. With an estimated range of 3000–4000 km, the missile can reach targets in India, Russia, the South China Sea and the western Pacific Ocean, probably including US bases on Guam.<sup>41</sup> The missile is equipped with a manoeuvrable re-entry vehicle (MaRV) that can be rapidly swapped with another warhead. This theoretically allows the PLARF to switch the missile's mission between precision conventional strikes and nuclear strikes against ground targets—and even conventional strikes against naval targets—relatively quickly.<sup>42</sup>

Given the apparent ending of the DF-21's nuclear mission, it seems likely that the DF-26 now covers the targets previously assigned to the DF-21. In its 2023 report the US DOD noted that, among China's nuclear forces, the DF-26 is the weapon system that is most likely to be fielded with a lower-yield warhead 'in the near-term', although it remains unclear whether such options have been produced for China's nuclear forces, and what would constitute a 'lower' yield (which is not necessarily the same as a 'low-yield warhead').<sup>43</sup>

The US DOD estimated in its 2023 report that China might have up to 250 DF-26 launchers and 500 or more DF-26 missiles in its inventory.<sup>44</sup> However, this is a larger number than is indicated by the apparent operational base infrastructure; the US DOD's estimate may thus include launchers that are in production or otherwise not yet fully operational. There were sightings of the missile at several PLARF brigade bases during 2023, and SIPRI assesses that six DF-26 brigades appear to be operational, with around 216 launchers in total, although only about half of those are assumed to have a nuclear mission.

### Sea-based missiles

In 2023 China continued to pursue its strategic goal from the early 1980s of developing and deploying sea-based nuclear weapons. The PLA Navy (PLAN) currently fields six Type 094 (Jin class) nuclear-powered ballistic missile submarines (SSBNs), two of which are Type 094As—upgraded variants

<sup>40</sup> US Department of Defense (note 2), pp. 66–67.

<sup>41</sup> US Department of Defense (note 2), p. 66.

<sup>42</sup> Pollack, J. H. and LaFoy, S., 'China's DF-26: A hot-swappable missile?', Arms Control Wonk, 17 May 2020; Deng, X., 'China deploys Dongfeng-26 ballistic missile with PLA Rocket Force', *Global Times*, 26 Apr. 2018; and US Department of Defense (note 2), p. 67.

<sup>43</sup> US Department of Defense (note 2), pp. 111–12.

<sup>44</sup> US Department of Defense (note 2), p. 67.

of the original design.<sup>45</sup> The US DOD's 2023 report assessed that these six operational SSBNs constitute China's 'first credible, sea-based nuclear deterrent'.<sup>46</sup> China's SSBN fleet is based at Hainan Island in the South China Sea.

Each of China's Type 094 submarines can carry up to 12 three-stage, solid-fuelled Julang (JL) submarine-launched ballistic missiles (SLBMs), which exist in two types: the JL-2 (CSS-N-14) and the JL-3 (CSS-N-20). China has probably begun replacing the JL-2s with JL-3s and it is possible that this process had already been completed by January 2024.<sup>47</sup> The JL-3 is capable of carrying multiple warheads and has an estimated range of more than 10 000 km.<sup>48</sup> However, unless the range is significantly more than 10 000 km, the JL-3 would not be able to strike the continental USA if fired from the South China Sea. Moreover, an SSBN carrying the missile would not be able to target Washington, DC, without first passing north-east Japan where it would be especially vulnerable to US anti-submarine defences.

There has been considerable speculation about whether the missiles on China's SSBNs are routinely fitted with nuclear warheads. The US DOD stated in its 2022 report to the US Congress that China 'likely began near-continuous at-sea deterrence patrols' in 2021. It noted in its 2023 report that China 'probably continued' such patrols throughout 2022.<sup>49</sup> This wording implies that China may have begun intermittent patrols with nuclear weapons onboard, which would constitute a significant change to its long-standing doctrine.

As the Type 094 SSBN is of a relatively noisy design, it was assumed that China would end production of that class and begin construction of its next-generation Type 096 class, which is expected to be larger and quieter and could potentially be equipped with more missile-launch tubes. The US DOD's 2023 report, however, stated that China has continued to build Type 094 SSBNs, possibly due to delays in the development of the Type 096 class.<sup>50</sup> Given the expected lifespans of the current Type 094 and the next-generation Type 096 SSBNs, the PLAN is expected to operate both types concurrently.<sup>51</sup>

It remains unclear how many SSBNs the PLAN ultimately intends to operate. Commercial satellite imagery from July 2023 showed that China was nearing completion of two new piers at the Longpo Naval Base. This would raise the total number of potential submarine berths at the base from 8 to 12, although some of these could be intended for attack submarines.

<sup>45</sup> Chan, M., 'China's new nuclear submarine missiles expand range in US: Analysts', *South China Morning Post*, 2 May 2021.

<sup>46</sup> US Department of Defense (note 2), p. 55.

<sup>47</sup> Capaccio, A., 'China has put longer-range ICBMs on its nuclear subs, US says', *Bloomberg*, 19 Nov. 2022; and US Department of Defense (note 2), p. 55.

<sup>48</sup> US Department of Defense (note 2), p. 59.

<sup>49</sup> US Department of Defense (note 12), p. 96; and US Department of Defense (note 2), p. 108.

<sup>50</sup> US Department of Defense (note 2), p. 108.

<sup>51</sup> US Department of Defense (note 2), p. 59.

**Table 7.6.** Chinese nuclear forces, January 2024

All figures are approximate and some are based on assessments by the authors.

Type/Chinese designation (US designation)	No. of launchers	Year first deployed	Range (km) <sup>a</sup>	Warheads x yield <sup>b</sup>	No. of warheads <sup>c</sup>
<i>Aircraft</i>	20 <sup>d</sup>				20
H-6K (B-6)	10	2009	3 100	1 x bomb	10
H-6N (B-6N)	10	2020	3 100	1 x ALBM	10
H-20 (B-20)	–	[2030]	.. ..		–
<i>Land-based missiles</i>	350				346
DF-5A (CSS-4 Mod 2)	6	1981	12 000	1 x 4–5 Mt	6
DF-5B (CSS-4 Mod 3)	12	2015	13 000	5 x 200–300 kt	60
DF-5C (CSS-4 Mod 4)	..	[2024]	13 000	1 x multi-Mt	..
DF-21A/E (CSS-5 Mod 2/6)	..	2000/2016	>2 100 <sup>e</sup>	1 x 200–300 kt	– <sup>f</sup>
DF-26 (CSS-18)	216	2016	>3 000	1 x 200–300 kt	108 <sup>g</sup>
DF-27 (CSS-X-24)	–	[2026]	5 000– 8 000	..	– <sup>h</sup>
DF-31 (CSS-10 Mod 1)	..	2006	7 200	1 x 200–300 kt	.. <sup>i</sup>
DF-31A/AG (CSS-10 Mod 2) <sup>j</sup>	88	2007/2018	11 200	1 x 200–300 kt	88
DF-41 (mobile version) (CSS-20)	28 <sup>k</sup>	2020	12 000	3 x 200–300 kt	84
DF-41 (silo version) (CSS-20)	..	[2025]	12 000	[up to 3 x 200–300 kt]	..
<i>Sea-based missiles (SLBMs)</i>	6/72 <sup>l</sup>				72
JL-2 (CSS-N-14)	–	2016	>7 000	1 x 200–300 kt	–
JL-3 (CSS-N-20)	72 <sup>m</sup>	2022	>10 000	[Multiple]	72
<i>Other stored warheads<sup>n</sup></i>					[62]
<b>Total stockpile</b>	<b>442</b>				<b>500<sup>n</sup></b>

.. = not available or not applicable; – = nil or a negligible value; [ ] = uncertain SIPRI estimate; ALBM = air-launched ballistic missile; kt = kiloton; Mt = megaton; SLBM = submarine-launched ballistic missile.

<sup>a</sup> For aircraft, the listed range is for illustrative purposes only; actual mission range will vary according to flight profile, weapon payload and in-flight refuelling.

<sup>b</sup> Warhead yields are listed for illustrative purposes. Actual yields are not known, except that older and less accurate missiles were equipped with megaton-yield warheads. Newer long-range missile warheads probably have yields of a few hundred kilotons, and it is possible that some warheads have even lower yield options.

<sup>c</sup> Figures are based on estimates of 1 warhead per nuclear-capable launcher, except for the DF-5B (CSS-4 Mod 3), which is thought to be equipped with multiple independently targetable re-entry vehicles (MIRVs) and can carry up to 5 warheads, and the MIRV-capable DF-41 (CSS-20), which is estimated to carry up to 3 warheads. All estimates are approximate.

It has long been assumed that China's warheads are not deployed on launchers under normal circumstances but are instead kept in storage facilities; however, as of Jan. 2024, SIPRI assesses that China might have started to mate a small number of its warheads (c. 24) with their launchers.

<sup>d</sup> The number of bombers only counts those estimated to be assigned a nuclear role. H-6 (B-6) bombers were used to deliver nuclear weapons during China's nuclear weapon testing programme (1 test used a fighter–bomber) and models of nuclear bombs are exhibited in military museums. It is thought (but not certain) that a small number of H-6 bombers previously had a secondary contingency mission with nuclear bombs. The United States Department of Defense (DOD) reported in 2018 that the People's Liberation Army Air Force has been reassigned a

nuclear mission, which is expected to revolve primarily around China's new dual-capable ALBM.

<sup>e</sup> The range of the previously nuclear-armed DF-21 variants (see note f), the DF-21A (CSS-5 Mod 2) and the DF-21E (Mod 6), is thought to be greater than the 1750 km reported for the original DF-21 (CSS-5 Mod 1), which has been retired. The US Air Force (USAF) has reported the range as 2150 km.

<sup>f</sup> In recent years China has converted several DF-21 brigades to brigades for longer-range missiles. In 2023, for the first time, the US DOD's annual report to the US Congress did not include the DF-21 in a nuclear role, implying that all of China's remaining DF-21s now serve exclusively in conventional strike roles.

<sup>g</sup> The DF-26 (CSS-18) is a dual-capable launcher. It is believed that some DF-26 brigades have inherited the nuclear mission from the DF-21A/E (see note f) and perhaps up to half had been assigned nuclear warheads as of Jan. 2024. Only 1 nuclear warhead is assumed for each of the DF-26's missiles that have been assigned a nuclear mission, with any reloads assumed to be conventional.

<sup>h</sup> The range class of the DF-27 (CSS-X-24) is somewhat redundant for the nuclear strike mission as these distances can be easily covered by China's intercontinental ballistic missiles (ICBMs). This, coupled with the US DOD's 2023 assessment that China 'may be exploring development of conventionally-armed intercontinental range missile systems', suggests that the DF-27 could serve in an exclusively conventional strike role—although this is unconfirmed.

<sup>i</sup> The DF-31 (CSS-10 Mod 1) was not listed in the US DOD's 2023 report to the US Congress and is believed to have been retired.

<sup>j</sup> The DF-31AG is thought to carry the same missile as the DF-31A (both have the US CSS-10 Mod 2 designation). A siloed version of the DF-31A/AG, possibly carrying the same designation, is believed to be nearing completion for eventual loading into China's new solid-fuel silo fields.

<sup>k</sup> This number assumes that at least 2 brigades were operational as of Jan. 2024.

<sup>l</sup> The first figure is the total number of operational nuclear-powered ballistic missile submarines (SSBNs) in the Chinese fleet; the second is the maximum number of missiles that they can carry.

<sup>m</sup> In Nov. 2022 the commander of the US Pacific Fleet stated that China was replacing its deployed JL-2 SLBMs with JL-3 SLBMs. This is likely taking place on a rotational basis as each submarine returns to port for routine maintenance and overhaul. It is thought that the system is also intended to arm future Type 094 SSBNs as well as the future Type 096 SSBN, which will not be ready for several years.

<sup>n</sup> In addition to the c. 438 warheads estimated to be assigned to operational forces, SIPRI estimates that c. 62 warheads might have been produced for missiles nearing operational status, for a total estimated stockpile of c. 500 warheads. China's warhead stockpile is expected to continue to increase.

*Sources:* US Air Force (USAF), National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat*, various years; USAF Global Strike Command, various documents; US Central Intelligence Agency, various documents; US Defense Intelligence Agency, various documents; US Department of Defense, *Military and Security Developments Involving the People's Republic of China*, Annual Report to Congress, various years; Kristensen, H. M., Norris, R. S. and McKinzie, M. G., *Chinese Nuclear Forces and US Nuclear War Planning* (Federation of American Scientists/Natural Resources Defense Council: Washington, DC, Nov. 2006); *Bulletin of the Atomic Scientists*, 'Nuclear notebook', various issues; Google Earth satellite imagery; and authors' estimates.