

II. Russian nuclear forces

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As of January 2015 Russia maintained an arsenal of approximately 4380 nuclear warheads assigned to operational forces. About 2430 of these are strategic warheads, including 1780 that are deployed on ballistic missiles and at bomber bases, and nearly 700 bomber and submarine warheads that are kept in storage. Russia also possessed nearly 2000 non-strategic (tactical) nuclear warheads. A further 3120 warheads were retired or awaiting dismantlement, for a total inventory of roughly 7500 warheads (see table 11.3).

Russia met the ceiling of 1550 deployed warheads mandated by the 2010 Russian-US Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START) in 2012, six years earlier than required by the treaty, but temporarily moved back above the ceiling in September 2014.¹ As of 1 September 2014, Russia had 1643 deployed warheads attributed to 528 treaty-accountable strategic launchers, including intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs) and heavy bombers.² This represented an increase of 131 deployed warheads and 23 accountable launchers since 1 September 2013.³ These changes do not reflect a build-up of the Russian nuclear arsenal but rather are the results of the deployment of new missiles and fluctuations caused by existing launchers moving in and out of overhaul.

The size of Russia's strategic forces is set to decline due to the gradual retirement of all Soviet-era missiles, which are being replaced by modern systems on a less than one-for-one basis. As this continues over the next decade, the overall size of Russia's strategic force will probably fall further even without a follow-on arms reduction treaty. However, Russia's strategic modernization is not motivated entirely by the need to replace old systems. Other motives include maintaining approximate overall parity with the United States, improving weapon survivability and efficiency, and national prestige.

¹ For a summary and other details of New START see annex A, section III, in this volume.

² US Department of State, 'New START Treaty aggregate numbers of strategic offensive arms', Fact Sheet, 1 Jan. 2015, <<http://www.state.gov/t/avc/rls/235606.htm>>. Under New START, each heavy bomber is counted as carrying only 1 warhead, even though the aircraft can carry larger payloads of nuclear-armed cruise missiles or nuclear gravity bombs.

³ Russia continued to abstain from publicly releasing the full unclassified data exchanged under New START, including a breakdown of deployed and non-deployed missiles and bombers at individual bases as well as the warheads attributed to them.

Table 11.3. Russian nuclear forces, January 2015

Type/ Russian designation (NATO designation)	No. deployed	Year first deployed	Range (km) ^a	Warhead loading	No. of warheads (deployed/ assigned) ^b
Strategic offensive forces					-1 780/2 430^c
<i>Bombers</i>	60/72 ^d				60/810 ^e
Tu-95MS6 (Bear-H6)	24/29	1981	6 500– 10 500	6 x AS-15A ALCMs, bombs	24/174
Tu-95MS16 (Bear-H16)	25/30	1981	6 500– 10 500	16 x AS-15A ALCMs, bombs	25/480
Tu-160 (Blackjack)	11/13	1987	10 500– 13 200	12 x AS-15B or AS-16 SRAMs, bombs	11/156
<i>ICBMs</i>	311				1 049/1 049
RS-20V (SS-18 Satan)	46 ^f	1992	11 000– 15 000	10 x 500–800 kt	460/460 ^f
RS-18 (SS-19 Stiletto)	30	1980	10 000	6 x 400 kt	180/180
RS-12M Topol (SS-25 Sickle)	99	1985	10 500	1 x 800 kt	99/99
RS-12M2 Topol-M (SS-27/silo)	60	1997	10 500	1 x 800 kt	60/60
RS-12M1 Topol-M (SS-27)	18	2006	10 500	1 x (800 kt)	18/18
RS-24 (SS-27 Mod 2)	54	2010	10 500	4 x (100 kt)	216/216
RS-24 (SS-27 Mod 2/silo)	4	2014	10 500	4 x (100 kt)	16/16
RS-26 (SS-27 Mod 3)	–	(2015)	5 500+	3 x (100 kt)	–/–
<i>SLBMs</i>	144				512/576 ^g
RSM-50 Volna (SS-N-18 M1 Stingray)	32	1978	6 500	3 x 50 kt	96/96
RSM-54 Sineva (SS-N-23 M1)	96	1986/2007	9 000	4 x 100 kt	320/384
RSM-56 Bulava (SS-N-32)	16	2014	>8 050	6 x (100 kt)	96/96
Non-strategic forces					–/(–1 950)^h
<i>ABM, air/coastal defenceⁱ</i>	–1 100				–/(–425)
53T6 (SH-08, Gazelle)	68	1986	30	1 x 10 kt	–/(68)
S-300 (SA-10/20)	1 000	1980	..	1 x low kt	–/(–340)
SSC-1B (Sepal)	34	1973	500	1 x 350	–/(–17)
<i>Air force weapons^j</i>	430				–/(–650)
Tu-22M3 (Backfire-C)	120	1974	..	3 x ASM, bombs	–/(–350)
Su-24M/M2 (Fencer-D)	250	1974	..	2 x bombs	–/(–250)
Su-34 (Fullback)	46	2006	..	2 x bombs	–/(–46)
<i>Army weapons</i>	140				–/(–140)
Tochka (SS-21 Scarab)	80	1981	120	(1 x 10 kt)	–/(–80)
Iskander-M (SS-26 Stone)	60	2005	500	(1 x 10 kt)	–/(–60)
<i>Navy weapons</i>					–/(–730)
Submarines/surface ships/air SLCM, ASW, SAM, depth bombs, torpedoes ^k					
Total deployed/assigned warheads					–1 780/4 380
Reserve and retired warheads awaiting dismantlement					–3 120
Total inventory					–7 500

.. = not available or not applicable; – = zero; () = uncertain figure; ABM = anti-ballistic missiles; ALCM = air-launched cruise missile; ASM = air-to-surface missile; ASW = Anti-

submarine warfare; ICBM = intercontinental ballistic missile; kt = kiloton; NATO = North Atlantic Treaty Organization; SAM = surface-to-air missile; SLBM = submarine-launched ballistic missile; SLCM = sea-launched cruise missile; SRAM = short-range attack missile.

^a Aircraft range is for illustrative purposes only; actual mission range will vary according to flight profile and weapon loading.

^b In this column, the first number is the estimated number of deployed warheads attributed to the bomber type by the New START Treaty, and the second number is the estimated number of warheads assigned to the delivery system.

^c The number listed for deployed warheads does not match the number counted by the New START Treaty because it excludes heavy bomber aircraft but includes roughly 200 bomber weapons that are thought to be present at bomber bases. The number assigned—the second column—is the total number of warheads estimated to be assigned to the particular delivery system. This includes 700 strategic warheads that are estimated to be in reserve for SSBNs and bombers.

^d The first number is the number of bombers estimated to be counted under New START. The second number is the total number of bombers in the inventory.

^e Of the 810 weapons estimated to be assigned to long-range bombers, only 200 are thought to be present at the bomber bases. The rest are thought to be stored at central storage facilities.

^f This figure assumes 46 missiles in 7 regiments. It is possible that an 8th regiment is still operational, in which case the number of RS-20Vs would be 52, with 520 warheads.

^g Two or three of the SSBNs are being overhauled at any given time and do not carry their assigned nuclear missiles and warheads. Only one of the three newly launched Borei SSBNs has been loaded with missiles.

^h All non-strategic nuclear warheads are in storage, according to the Russian Government, and are not counted in the total number of deployed warheads.

ⁱ The A-135 ABM system around Moscow is being upgraded. The S-300 system is thought to have some nuclear capability, but there is uncertainty about which and how many of the different interceptors (SA-10 Grumble, SA-12 Gargoyle, SA-12A Gladiator, SA-12B Giant) have nuclear capability. It is also not clear whether the new S-400 (SA-21) system is nuclear-capable.

^j These figures assume that only half the land-based strike aircraft have nuclear missions.

^k Surface ships are not thought to be assigned nuclear torpedoes.

Sources: Russian Ministry of Defence press releases; US Department of State, START Treaty Memoranda of Understanding, 1990–July 2009; New START aggregate data releases, various years; US Air Force, National Air and Space Intelligence Center (NASIC), *Ballistic and Cruise Missile Threat* (NASIC: Wright-Patterson Air Force Base, OH, May 2013); BBC Monitoring; Russian news media; Russian Strategic Nuclear Forces, <<http://www.russianforces.org/>>; International Institute for Strategic Studies, *The Military Balance* (Routledge: London, various years); Cochran, T. B. et al., *Nuclear Weapons Databook*, vol. 4, *Soviet Nuclear Weapons* (Harper & Row: New York, 1989); *Jane's Strategic Weapon Systems*, various issues; *Proceedings*, US Naval Institute, various issues; 'Nuclear notebook', *Bulletin of the Atomic Scientists*, various issues; and authors' estimates.

Missile production is increasing in order to facilitate the transition to a post-Soviet strategic arsenal. In February 2012, Vladimir Putin (then Russia's prime minister) stated that the Russian military would receive 'more than 400 advanced ground- and sea-based intercontinental ballistic

missiles' over the coming decade, or an average of 40 missiles per year.⁴ Most of that is production of SLBMs and replacement of test-launch missiles. In his formal remarks to the Defence Ministry Board in late 2014, however, President Putin declared that 'the strategic nuclear forces will receive more than 50 intercontinental ballistic missiles' in 2015.⁵

The Russian Government has pledged firm financial and organizational support for nuclear modernizations, but the effort competes for funding with modernization of Russia's general military, which is still dominated by Soviet-era equipment. The modernization programme is based on a defence plan that was drawn up using fiscal assumptions that are no longer valid. Sanctions imposed after Russia's intervention in Ukraine and the decline in oil prices have significantly reduced Russian revenues, although the financial decline was already under way even before these events. According to Russia's finance minister, Anton Siluanov, speaking in October 2014: 'When we were adopting the defence programme, the forecasts for the economy and budget revenues were completely different. Right now, we just cannot afford it.'⁶

In December 2014, Putin approved a new military strategy that stated, in part, that Russia 'shall reserve for itself the right to employ nuclear weapons in response to the use against it and/or its allies of nuclear and other kinds of weapons of mass destruction, as well as in the case of aggression against the Russian Federation with use of conventional weapons when the state's very existence has been threatened'.⁷ This formulation is almost identical to the previous version from 2010.⁸

Like its predecessor, the 2014 strategy identifies the North Atlantic Treaty Organization (NATO) as the top item on the list of main external military dangers facing Russia. This includes what the Russian Government sees as a 'buildup of force potential of . . . NATO and its endowment with global functions being realized in violation of rules of international law'; and 'an approach of the military infrastructure of NATO member

⁴ Putin, V., [Being strong: national security guarantees for Russia], *Rossiyskaya Gazeta*, 20 Feb. 2012. English translation: <<http://rt.com/politics/official-word/strong-putin-military-russia-711/>>.

⁵ President of Russia, 'Expanded meeting of the Defence Ministry Board', 19 Dec. 2014, <<http://eng.kremlin.ru/transcripts/23410>>.

⁶ Kelly, L. 'Finance minister warns Russia can't afford defense spending plan', Reuters, 7 Oct. 2014, <<http://www.reuters.com/assets/print?aid=USKCN0HWI420141007>>.

⁷ President of Russia, [Military Doctrine of the Russian Federation, approved by Russian Federation President V. Putin], previously published on the Russian presidential website on 26 Dec. 2014, section 27. Translation from Russian, BBC Monitoring.

⁸ President of Russia, [Military Doctrine of the Russian Federation, approved by Russian Federation presidential edict on 5 Feb. 2010], previously published on the Russian presidential website on 8 Feb. 2010. Translation from Russian by the Open Source Center via World News Connection. This doctrinal language is from the public version of the documents. It is not known what is contained in the classified version or other supporting documents.

countries to [the] borders of the Russian Federation, including by further bloc expansion'.⁹

In his annual address to the Defence Ministry Board, Putin noted: 'the situation in the world around us is not becoming any simpler', and specifically highlighted 'the USA's plans to build a missile defence system' and that 'NATO has stepped up its activity too, including in Europe, especially in Eastern Europe'. Even so, Putin argued, 'our military doctrine nevertheless remains unchanged and is exclusively defensive in nature, as you know. But we will defend our country's security firmly and consistently'.¹⁰

Strategic bombers

Russia's Long-range Aviation Command consists of approximately 13 Tu-160 (Blackjack), 30 Tu-95MS16 and 29 Tu-95MS6 (Bear) bombers. Some of these may not be fully operational. The maximum loading on these bombers is about 810 nuclear weapons, of which approximately 200 might be stored at the two strategic bomber bases.¹¹ The Tu-160s and about 15 of the Tu-95s are based at the Engels Air Base (AB) near Saratov in western Russia. The remaining Tu-95s are based at the Ukrainka Air Base near Belogorsk in eastern Russia.

Modernization of the ageing Tu-160 and Tu-95MS bombers is under way, with several improved bombers already deployed. Only a few of the 59 remaining Tu-95MS aircraft will be modernized and the rest will be retired, while 'at least 10' Tu-160s will be modernized by 2020.¹² The first modernized Tu-160s arrived at Engels AB in 2014.

Development of a next-generation bomber known as PAK-DA has begun. The contract was awarded to the Tupolev Company in February 2014. The new subsonic wing-shaped bomber is scheduled to begin replacing Tu-160 and Tu-95 bombers in the mid-2020s.

The number of long-range patrols by Russian bombers increased during 2014. A formation of four Tu-95MS bombers flew a mission over the Baltic Sea in early December—the first time such an operation has taken place since the 1980s. The long-range bombers were accompanied by two intermediate-range Tu-22M3 bombers. The incident followed other bomber operations over the North Sea, North Atlantic and North Pacific.

⁹ President of Russia (note 7).

¹⁰ President of Russia (note 5).

¹¹ Kristensen, H. M., *Trimming Nuclear Excess: Options for Further Reductions of US and Russian Nuclear Forces*, Federation of Atomic Scientists (FAS) Special Report no. 5 (FAS: Washington, DC, Dec. 2012).

¹² Mikhailov, A., [Strategic bomber 'Bear' is left in service], *Izvestiya*, 20 Sep. 2012 (in Russian); and 'Russia to upgrade over 10 Tu-160 bombers by 2020', RIA Novosti, 7 Feb. 2012, <<http://sputniknews.com/military/20120207/171200584.html>>.

According to US Northern Command, ‘Russian heavy bombers flew more out-of-area patrols in 2014 than in any year since the Cold War. We have also witnessed improved interoperability between Russian long-range aviation and other elements of the Russian military, including air and maritime intelligence collection platforms. While these patrols serve a training function for Russian air crews, some are clearly intended to underscore Moscow’s global reach and communicate its displeasure with Western policies, particularly with regard to Ukraine.’¹³

Land-based ballistic missiles

As of January 2015 Russia’s Strategic Rocket Forces (SRF)—the branch of the armed forces that controls land-based ICBMs—consisted of 12 missile divisions grouped into three armies, deploying 311 ICBMs of seven different types and variations. The ICBM force carries approximately 1000 warheads, nearly 60 per cent of Russia’s deployed strategic warheads.

The ICBM force is undergoing rapid transformation due to the gradual retirement of Soviet-era missiles and the introduction of newer (but fewer) ICBMs. By 2015, nearly half the force consisted of post-Soviet era ICBMs. All remaining Soviet-era ICBMs will be retired by 2024.

Taking into account current plans announced by the Russian military, the ICBM force could potentially decline to under 300 missiles over the next decade. To maintain approximate parity with the larger US ICBM force (planned at 400 missiles under New START, see section I), the Russian military is prioritizing the deployment of multiple warheads on its new ICBMs. By the early 2020s, the ratio of silo to road-mobile missiles would be roughly equal, but with mobile missiles carrying a greater portion of the ICBM warheads (57 per cent compared to 32 per cent in 2015) because of the addition of multiple independently targetable re-entry vehicles (MIRVs) to mobile missiles. Before 2010, all Russian road-mobile missiles were single-warhead weapons.

The liquid-fuelled, silo-based RS-20V (SS-18) ICBM is armed with 10 warheads. RS-20V missiles carry nearly 44 per cent of the warheads deployed on the ICBM force. Around 46 missiles, down from 108 a decade ago, are still deployed at two missile fields: 28 missiles in four regiments at Uzhur in Krasnoyarsk Krai, and 18 missiles in three regiments at

¹³ Gortney, W. E. (Admiral), US Navy, Commander United States Northern Command and North American Aerospace Defense Command, Prepared statement before the US Senate, Armed Services Committee, 12 Mar. 2015, pp. 5–6, <http://www.armed-services.senate.gov/download/gortney_03-12-15>.

Dombarovsky in Orenburg oblast.¹⁴ The RS-20V is expected to remain in service until 2022.¹⁵

Approximately 30 liquid-fuelled, silo-based RS-18s (SS-19s) remain in service—down from 130 missiles a decade ago. Each missile carries an estimated 6 warheads, giving a total of 180 warheads. The last RS-18 is scheduled to be withdrawn from service by 2019. Of the 30 remaining RS-18s, an estimated 20 are deployed at Kozelsk in Kaluga oblast, and perhaps 10 with the 60th Missile Division at Tatishchevo in Saratov oblast.¹⁶

The third Soviet-era ICBM, the solid-fuelled road-mobile RS-12M Topol (SS-25), is also being rapidly withdrawn from service. There are around 99 RS-12Ms left, down from 315 a decade ago. The missile is scheduled to be retired by 2021.¹⁷ Several intermediate-range test launches of the RS-12M in recent years may have been related to the development of a new ICBM payload, possibly designed to evade ballistic missile defence systems.

The solid-fuelled, single-warhead RS-12 Topol-M (SS-27 Mod 1) has been deployed in both road-mobile (RS-12M1) and silo-based (RS-12M2) versions. Deployment of the RS-12M2 started at Tatishchevo in 1997, a deployment that was completed in 2012 after 60 missiles were installed. Deployment of the RS-12M1 followed in 2007–10 at Teykovo, to the north-east of Moscow.

Deployment of the MIRVed version of the RS-24 Yars (SS-27 Mod 2) began in 2010 on road-mobile launchers at Teykovo, and its introduction is currently under way at the Novosibirsk and Tagil divisions, where the first RS-24s went on ‘experimental combat duty’ in December 2013.¹⁸ A second regiment at each base became operational in late 2014, and deployment will follow at the Yoshkar-Ola division in the near future.

Deployment of the first silo-based RS-24s has begun at the 28th Guard Missile Division at Kozelsk, where the first four missiles became operational in late 2014.¹⁹ It is not known how many RS-24s will be installed at Kozelsk but at least 30 seems likely.

Russia has also been developing a third modification of the Topol-M, known as the RS-26 or Yars-M. Like the Topol-M, the RS-26 has been test-

¹⁴ It is possible that a 4th regiment at Dombarovsky is still active, in which case 52 RS-20Vs with 520 warheads are deployed.

¹⁵ ‘Russia’s Voyeroda ICBM to remain in service for another decade—commander’, Interfax-AVN, 15 Dec. 2012, Translation from Russian, BBC Monitoring International Reports.

¹⁶ Satellite images indicate that all the SS-19s at Tatishchevo may have been withdrawn from service, and that some of the SS-19s at Kozelsk are no longer operational to make room for the deployment of the RS-24 (SS-27 Mod 2).

¹⁷ [SRF will be armed with Soviet ballistic missiles until 2021], Novosti-Kosmonavtiki, 17 Dec. 2013, <<http://novosti-kosmonavtiki.ru/news/14702/>> (in Russian).

¹⁸ [SRF commander: missile forces in an intensive process of rearming], ITAR-TASS, 18 Dec. 2013, <<http://itar-tass.com/politika/841474>> (in Russian).

¹⁹ ‘First regiment of strategic missile troops’ Kozelsk Missile Division to be rearmed with Yars system before end of year: Russian Federation Ministry of Defence’, Interfax, 21 Nov. 2014. Translation from Russian, BBC Monitoring.

launched at both intercontinental and shorter ranges. According to the commander of the SRF, Colonel-General Sergei Karakaev, the RS-26 is a road-mobile 'prototype intercontinental ballistic missile based on Yars and Topol-M' but significantly lighter at about 80 tonnes, whereas the RS-24 weighs about 120 tonnes, which will improve manoeuvrability during field deployments.²⁰ The missile will enter service in 2016.²¹

Russia is also developing a new 'heavy' liquid-fuelled, silo-based ICBM, known as Sarmat, as a replacement for the RS-20V. Development was authorized in 2012, and deployment of the 100-tonne missile is intended to begin around 2020. According to Deputy Defence Minister Yuriy Borisov, the Sarmat 'will be able to carry equipment for surmounting missile defence and will have a sufficient power reserve to fly over the North or South Pole'. Borisov added that 'the new heavy weapon will be equipped with manoeuvrable warheads'.²² According to Colonel-General Viktor Yesin, former Chief of the SRF Main Staff, the Sarmat 'will be deployed in two divisions which are presently armed with RS-20V ICBMs' (Dombrovsky and Uzhur).²³

The Russian Government has also ordered development of a rail-mobile missile with MIRVs known as Barguzin, which would be another version of the RS-24. The missile is expected to be deployed by 2020.²⁴

Ballistic missile submarines and sea-launched ballistic missiles

The Russian Navy has a fleet of nine operational nuclear-armed and nuclear-powered ballistic missile submarines (SSBNs). A new class is under construction that will gradually replace all Soviet-era SSBNs by the middle of the next decade.

The current backbone of the Russian SSBN fleet is made up of six Project 667BDRM Delfin (Delta IV class) submarines assigned to the Northern Fleet, each carrying 16 RSM-54 Sineva (SS-N-23 M1) SLBMs. Each liquid-fuelled RSM-54 carries four MIRVs. The Sineva replaced the original RSM-54 (SS-N-23 Skiff) between 2007 and 2012, and a third modification of the missile, known as Layner, is now being introduced. The Layner

²⁰ 'Russia's new ballistic missile can become operational in 2016: SMF Commander', Sputnik News, 25 Dec. 2014, <<http://sputniknews.com/russia/20141225/1016243403.html>>; and 'Russia designing "new" rail-mobile ICBM system, troops getting new missiles', Interfax, 18 Dec. 2013, Translation from Russian, Open Source Center.

²¹ 'Russian general discusses ICBM upgrade, development plans', Interfax, 16 Dec. 2014. Translation from Russian, BBC Monitoring.

²² 'Sarmat ICBM design to end Russian missile troops' dependence on Ukraine', *Rossiyskaya Gazeta*, 2 June 2014. Translation from Russian, BBC Monitoring.

²³ 'Russia to design new liquid-fuel ICBM by 2020-expert', Interfax, 25 Feb. 2014. Translation from Russian, BBC Monitoring.

²⁴ Bodner, M., 'Russia looks to revive nuclear missile trains to counter US attack capability', *Moscow Times*, 27 Nov. 2014.

appears to be a 'modest' modification of the Sineva with a payload that may be designed to improve the missile's capability to penetrate missile defence systems.²⁵

Two old Project 667BDR Kalmar submarines (designated Delta III class by NATO) are still operational with the Pacific Fleet, each carrying 16 RSM-50 Volna (SS-N-18 M1) SLBMs. The liquid-fuelled RSM-50 is armed with three MIRVs. The submarines will be retired in the near future.

To replace the Soviet-era SSBNs, Russia is building eight Borei class SSBNs. The first Borei submarine was delivered to the Northern Fleet in January 2013 and now carries a full load of missiles. The second and third boats are undergoing sea trials. The first boat will be based with the Northern Fleet. The next two boats will be transferred to the Pacific Fleet, where they will replace the last of the Kalmar SSBNs. The fourth and subsequent hulls of the Borei class will be of an improved design known as Project 955A.

Technical problems with its solid-fuelled RSM-56 Bulava-30 (SS-N-32) SLBM delayed operational service of the Borei class but the issues now appear to have been resolved. Each Borei SSBN is equipped with 16 launch tubes for the Bulava, each of which is estimated to carry 4 MIRVs. There are unconfirmed and contradictory reports that the improved Borei class SSBNs will each be equipped with 20 missiles.

Non-strategic nuclear weapons

Like the USA, Russia does not provide information about the number and types of non-strategic nuclear weapons it possesses. As a result, estimating the size and composition of the inventory comes with significant uncertainty. The estimate made here is that nearly 2000 warheads are assigned for potential use by Russian non-strategic forces. Many more warheads have been retired and are awaiting dismantlement (see table 11.3). This estimate is based on previous estimates of the Soviet non-strategic warheads arsenal, information released in connection with the 1991–92 Soviet/Russian and US Presidential Nuclear Initiatives (PNIs), statements by Russian officials on the progress of non-strategic weapon reductions under the PNIs, and analyses of the Russian order of battle and of a nominal delivery platform warhead loading.²⁶ The estimate is consistent with a statement made in November 2011 by the US Department of Defense that

²⁵ See e.g. 'Russian Navy takes into service Layner ICBM', Interfax, 2 Apr. 2014, Translation from Russian, BBC Monitoring.

²⁶ For more information see Kristensen, H. M., *Non-Strategic Nuclear Weapons*, Federation of American Scientists (FAS) Special Report no. 3 (FAS: Washington, DC, May 2012), pp. 51–65. See also Kristensen (note 11), pp. 26–27.

unclassified estimates set the Russian inventory at approximately 2000–4000 non-strategic nuclear weapons.²⁷

Most of the Russian non-strategic nuclear arsenal consists of weapon systems developed and deployed during the Soviet era, and many may be retired over the next decade. Nonetheless, unlike most other nuclear-armed states, Russia continues to attribute importance to non-strategic nuclear weapons, partly as military compensation for inferior conventional forces. As a result, modernizations of several non-strategic systems are under way.

The modernizations include the Iskander-M (SS-26) solid-fuelled, road-mobile short-range ballistic missile (SRBM), which is replacing the Tochka (SS-21) SRBM in 10 missile brigades. Deployment started in 2004 and five brigades have been upgraded, primarily in the western and southern military districts. Rumours that the Iskander-M has been permanently deployed to the Kaliningrad oblast are inaccurate.²⁸ Various Russian articles in December 2014 reported that Iskander missiles had been temporarily deployed to Kaliningrad as part of a ‘snap’ exercise but had returned to their bases inside mainland Russia.²⁹ It is estimated that there are approximately 140 nuclear warheads assigned to Russian SRBMs.

Non-strategic nuclear aircraft modernizations involve the upgrade of the old Tu-22M3 (Backfire) intermediate-range bomber, the upgrade of the Su-24M (Fencer-D) fighter-bomber and the introduction of the new Su-34 Fullback fighter-bomber. The Su-34, which will eventually replace the Su-24M, is already being deployed in Western military districts and during military exercises and operations. It is estimated that approximately 650 warheads are assigned to these aircraft.

Russia has reduced its inventory of warheads for air-, missile- and coastal-defence forces by approximately 60 per cent since 1991. There is significant uncertainty about the number of warheads remaining, and which defence force they are allocated to. It is estimated that there are

²⁷ Miller, J. N., Principal Deputy Under Secretary of Defense for Policy, Statement before the US House of Representatives, Armed Services Committee, 2 Nov. 2011, p. 2, <<http://armedservices.house.gov/index.cfm/2011/11/the-current-status-and-future-direction-for-u-s-nuclear-weapons-policy-and-posture>>. A study published in 2012 suggests that the number of Russian ‘operationally assigned’ non-strategic nuclear warheads may be as low as c. 1000, with the total stockpile being c. 1900. This study assumes that non-strategic nuclear warheads are assigned not to individual delivery vehicles but to nuclear-capable military units, which have a fixed number of nuclear warheads assigned to them. Sutyagin, I., *Atomic Accounting: A New Estimate of Russia’s Non-Strategic Nuclear Forces*, Occasional Paper (Royal United Services Institute: London, Nov. 2012), pp. 2–3.

²⁸ For claims about Iskander-M missiles in Kaliningrad and their rebuttal see Solms-Laubach, F., ‘Putin stationiert raketen für atomsprengköpfe’ [Putin deploys missiles for nuclear warheads], *Bild*, 14 Dec. 2013; and ‘Putin says no Iskanders deployed in Kaliningrad’, *Novosti*, 19 Dec. 2013, <http://en.ria.ru/military_news/20131219/185723285/Putin-Says-No-Iskanders-Deployed-in-Kaliningrad.html>.

²⁹ ‘Iskanders missiles pulled back from Russia’s westernmost region after drill’, *Novosti*, 16 Dec. 2014. Translation from Russian, BBC Monitoring.

approximately 425 warheads for the anti-ballistic missile defence system around Moscow, the S-300 air-defence units and coastal-defence missiles.

The Russian Navy appears to be the service most heavily reliant on non-strategic nuclear weapons, with an estimated 730 warheads assigned to submarines, surface ships and maritime aircraft and helicopters.

A new Project 885M Yasen class (Graney) attack submarine is under construction. The first boat, the K-560 *Severodvinsk*, is undergoing sea trials. At least six Yasen boats are planned by 2020. The Yasen is thought to be equipped with a new long-range sea-launched cruise missile, a version of the Kalibr land-attack cruise missile, which may be nuclear-capable.

In July 2014 the USA publicly accused Russia of violating the 1987 Soviet-US Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles (INF Treaty) by developing and testing a new ground-launched cruise missile to a range banned by the treaty. Russia has denied the accusation. The new cruise missile, which has not been identified by the US Government, appears to be nuclear-capable but it is not clear whether the missile has been deployed.³⁰

³⁰ Kristensen, H. M., 'The INF crisis: bad press and nuclear saber rattling', FAS Strategic Security Blog, Federation of American Scientists 26 Feb. 2015, <<http://fas.org/blogs/security/2015/02/inf-crisis/>>. For background discussion of the INF Treaty dispute see chapter 12, section II, in this volume. For a summary and other details of the INF Treaty see annex A, section III, in this volume.