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## Russian nuclear forces, 2014

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### Abstract

Russia has taken important steps in modernizing its nuclear forces since early 2013, including the continued development and deployment of new intercontinental ballistic missiles (ICBMs), construction of ballistic missile submarines, and development of a new strategic bomber. As of March 2013, the authors estimate, Russia had a military stockpile of approximately 4,300 nuclear warheads, of which roughly 1,600 strategic warheads were deployed on missiles and at bomber bases. Another 700 strategic warheads are in storage along with roughly 2,000 nonstrategic warheads. A large number – perhaps 3,500 – of retired but still largely intact warheads await dismantlement.

### Keywords

ICBM, nonstrategic weapons, nuclear forces, Russia, SLBM, Strategic Rocket Forces, strategic weapons, warheads

Since our last Russian Notebook in early 2013, Russia has taken several important steps in modernizing its strategic and nonstrategic nuclear forces. These include continued development and deployment of new intercontinental ballistic missiles (ICBMs), construction of ballistic missile submarines, development of a new strategic bomber, and deployment of tactical ballistic and cruise missiles and fighter bombers. While much of this development continues well known programs that have been under way for many years, other developments are new. Combined, the steps contribute to growing concern in other countries about Russian intentions and help justify nuclear modernization programs and

political opposition to reductions in other nuclear weapon states. Those developments are not in Russia's long term interest.

As of March 2013, we estimate that Russia had a military stockpile of approximately 4,300 nuclear warheads, of which roughly 1,600 strategic warheads are deployed on missiles and at bomber bases.<sup>1</sup> Another 700 strategic warheads are in storage along with roughly 2,000 nonstrategic warheads. In addition to the military stockpile for operational forces, a large number – perhaps 3,500 – of retired but still largely intact warheads await dismantlement.<sup>2</sup>

Col. Gen. Sergei Karakayev, the head of the Russian Strategic Rocket Forces, explained in December 2013 that Russia

needs approximately 1,500 warheads for its strategic missiles and bombers “to resolve tasks of strategic deterrence.” This force level keeps approximate parity with the United States while also taking into consideration “the level of strategic forces of other nuclear powers the United Kingdom, France, China and nuclear weapons of new nuclear powers India, Pakistan and others,” Karakayev said (Interfax, 2013).

## ICBMs

Russia deploys an estimated 313 ICBMs that can carry approximately 976 war heads. The ICBMs are organized under the Strategic Rocket Forces in three missile armies with a total of 12 divisions.

Retirement of all Soviet era ICBMs is well under way and scheduled for completion in 2022. Deployment of the first generation SS 27 Mod. 1 (Topol M) is complete, deployment of the second generation SS 27 Mod. 2 well under way, and development of a follow on version is in progress. Despite the modernization, the ICBM force is expected to shrink to 220 to 250 missiles by 2022, depending on production and deployment rates for the new missiles. Because this force is significantly smaller than the 400 ICBMs the United States plans to retain, Russian planners compensate by increasing the share of the ICBM force that is equipped with multiple warheads from 35 percent today to approximately 70 percent by 2022. Although Russia by 2022 will deploy fewer ICBM warheads, roughly 90 percent of them will be multiple independently targetable reentry vehicles (MIRVs). That trend is unhealthy for strategic stability because relatively few warheads on more US

ICBMs can threaten many warheads on fewer Russian ICBMs.

## SS-27 (*Topol-M*)

Russia deploys two versions of the SS 27 missile: the SS 27 Mod. 1, a single war head missile that comes in either mobile (RS 12M1) or silo based (RS 12M2) variants, and the SS 27 Mod. 2 (RS 24), a road mobile missile equipped with MIRVs. Deployment of the SS 27 Mod. 1 was completed in 2012 at a total of 78 missiles: 60 silo based missiles with the 60th Missile Division in Tatishchevo and 18 road mobile missiles with the 54th Guards Missile Division at Teykovo, northeast of Moscow.

All new Russian ICBM deployments are MIRVed SS 27 Mod. 2 ICBMs, or RS 24 (Yars). Following deployment of the first two regiments with a total of 18 missiles at the 54th Guards Missile Division at Teykovo, preparations are under way to deploy the RS 24 at four to five other missile divisions: Novosibirsk, Nizhniy Tagil, Irkutsk, Kozelsk, and possibly Dombrovsky.

In late 2013, one regiment with nine RS 24 road mobile launchers was placed on “experimental combat duty” with the 39th Guards Missile Division at Novosibirsk, and another regiment (initially only with six launchers) with the 42nd Missile Division at Nizhniy Tagil. A second RS 24 regiment is planned for each base in 2014, replacing SS 25 launchers deployed there. Each division will probably be armed with three to four regiments. After Novosibirsk and Nizhniy, deployment of the road mobile RS 24 will follow at the 51st Guards Missile Division at Irkutsk to replace SS 25s currently deployed there.

**RUSSIAN NUCLEAR FORCES, 2014**

TYPE/NAME	RUSSIAN DESIGNATION	LAUNCHERS	YEAR DEPLOYED	WARHEADS X YIELD (KILOTONS)	TOTAL WARHEADS
<i>Strategic offensive weapons</i>					
<b>ICBMs</b>					
SS-18 M6 Satan	RS-20V	46	1988	10 x 500/800 (MIRV)	460
SS-19 M3 Stiletto	RS-18 (UR-100NUTTH)	30	1980	6 x 400 (MIRV)	180
SS-25 Sickle	RS-12M (Topol)	117	1988	1 x 800	117
SS-27 Mod. 1/mobile	RS-12M1 (Topol-M)	18	2006	1 x 800?	18
SS-27 Mod. 1/silo	RS-12M2 (Topol-M)	60	1997	1 x 800	60
SS-27 Mod. 2/mobile	RS-24 (Yars)	33	2010	4 x 100? (MIRV)	132 <sup>1</sup>
SS-27 Mod. 2/silo	RS-24 (Yars)	—	(2014)	4 x 100? (MIRV)	—
<b>SUBTOTAL</b>		<b>304</b>			<b>967</b>
<b>SLBMs</b>					
SS-N-18 M1 Stingray	RSM-50	3/48	1978	3 x 50 (MIRV)	144 <sup>2</sup>
SS-N-23 M1	RSM-54 (Sineva)	6/96	2007	4 x 100 (MIRV) <sup>3</sup>	384 <sup>4</sup>
SS-N-32	RSM-56 (Bulava)	(2/32)	(2014)	6 x 100 (MIRV)	(192)
<b>SUBTOTAL</b>		<b>9/160</b>			<b>528<sup>5</sup></b>
<b>Bombers/weapons</b>					
Bear-H6	Tu-95 MS6	29	1984	6 x AS-15A ALCMs, bombs	174
Bear-H16	Tu-95 MS16	30	1984	16 x AS-15A ALCMs, bombs	480
Blackjack	Tu-160	13	1987	12 x AS-15B ALCMs or AS-16 SRAMs, bombs	156
<b>SUBTOTAL</b>		<b>72</b>			<b>810<sup>6</sup></b>
<b>SUBTOTAL STRATEGIC OFFENSIVE FORCES</b>					<b>~2,300<sup>7</sup></b>
<i>Nonstrategic and defensive weapons</i>					
<b>ABM/Air/Coastal defense</b>					
S-300 (SA-10/12/20)		~1,000	1980/2007	1 x low	~340
53T6 Gazelle		68	1986	1 x 10	68 <sup>8</sup>
SSC-1B Sepal		34	1973	1 x 350	~17
<b>Land-based air</b>					
Bombers/fighters (Tu-22M3/Su-24M/Su-34)		~430	1974/2006	ASM, bombs	~730
<b>Ground-based<sup>9</sup></b>					
Short-range ballistic missiles (SS-21/SS-26)		~170	1981/2005	1 x ?	~170
<b>Naval</b>					
Submarines/surface ships/air				SLCM, ASW, SAM, DB, torpedoes	~700
<b>SUBTOTAL NONSTRATEGIC AND DEFENSIVE FORCES</b>					<b>~2,000<sup>10</sup></b>
<b>TOTAL</b>					<b>~4,300<sup>11</sup></b>

1. Fifteen of these missiles are on "experimental combat duty," and it is uncertain if they carry nuclear warheads.  
 2. Only 96 of these warheads are deployed on two of the three Delta IIIs.  
 3. The Sineva is a modified SS-N-23 and probably carries four MIRVed warheads. US intelligence in 2006 estimated that the missile could carry up to 10 warheads but lowered the estimate to four warheads in 2009.  
 4. Only 256 of these warheads are deployed on four of the six Delta IVs.  
 5. Two to three of the 10 SSBNs are in overhaul and do not carry nuclear weapons. As a result, only 416 of the 528 warheads are deployed.  
 6. The bomber weapons are kept in storage, not deployed on the aircraft. We estimate that only a couple of hundred weapons are present at the two bomber bases, with the remainder in central storage.  
 7. Only about 1,600 of these warheads are deployed on missiles and at bomber bases. New START counts fewer deployed warheads because it does not count weapons stored at bomber bases and because some SSBNs are not fully loaded at any given time.  
 8. All 32 Gorgon missiles apparently have been removed from the ABM system.  
 9. NATO's International Military Staff briefed the North Atlantic Council in November 2009 that the Russian Zapad and Ladoga exercises in August and September 2009 included "missile launches, some of which may have simulated the use of tactical nuclear weapons" (Aftenposten, 2011).  
 10. Numbers may not add up due to rounding. All nonstrategic warheads are in central storage. The 2,000 listed make up the estimated nominal load for nuclear-capable delivery platforms.  
 11. In addition to these warheads, we estimate that an additional 3,500 retired warheads are awaiting dismantlement, for a total inventory of nearly 8,000 warheads.

ABM: antiballistic missile  
 ALCM: air-launched cruise missile  
 AS: air-to-surface  
 ASM: air-to-surface missile  
 ASW: antisubmarine weapon  
 DB: depth bomb  
 ICBM: intercontinental ballistic missile  
 MIRV: multiple independently targetable reentry vehicle  
 SAM: surface-to-air missile  
 SLBM: submarine-launched ballistic missile  
 SLCM: sea-launched cruise missile  
 SRAM: short-range attack missile

Following completion of the deployment of silo based SS 27 Mod. 1s, preparations are now under way to begin deploying silo based RS 24s with the 28th Guards Missile Division at Kozelsk in 2014 to replace the remaining SS 19s. It is unknown how many of the original 60 SS 19 silos will be converted to RS 24.

Once deployment at Kozelsk is completed, RS 24 deployment in silos might follow at the 13th Missile Division at Dombarovsky to replace the remaining SS 18s currently deployed there. A statement by Rocket Forces commander Karakayev in late 2013 left some uncertainty about whether the missile to be deployed at Dombarovsky in the future will be the RS 24 or another missile (Itar Tass, 2013).

### *SS-18 (RS-20 V)*

The SS 18 is a silo based, 10 warhead heavy ICBM first deployed in 1988. The missile is being gradually retired with approximately 46 SS 18s with 460 warheads remaining in the 13th Missile Division at Dombarovsky and the 62nd Missile Division at Uzhur. The SS 18 is scheduled to remain in service until 2022.

### *SS-19 (RS-18 or UR-100NUTTH)*

The silo based, six warhead SS 19 entered service in 1980 and is gradually being retired. We estimate that a total of 30 missiles remain in service with 210 warheads with the 60th Missile Division at Tatishchevo and the 28th Guards Missile Division at Kozelsk. The SS 19 is scheduled to be retired in 2019.

### *SS-25 (RS-12 M or Topol)*

Russia has been retiring SS 25 missiles for several years, each year removing

between one and three regiments (nine to 27 missiles) from service. During the past few years, six SS 25 regiments have been retired, leaving 117 launchers in five divisions. Dismantlement has begun at Yoshkar Ola, and SS 25 regiments at Novosibirsk and Nizhniy Tagil are being replaced with RS 24s. The last SS 25s will be withdrawn from service in 2021.

### *New ICBMs*

The Strategic Rocket Forces apparently are working on developing several new ICBMs, although some may be modifications of existing versions. A lightweight version of the RS 24 tentatively known as Yars M, RS 26, or Rubezh has been flight tested and might be deployed within the next two to three years. The missile was tested at intercontinental range in 2012 and intermediate range later in 2012 and in 2013 as were other ICBMs (Kristensen, 2013). The RS 26 apparently weighs 40 tons less than the 120 ton RS 24, carries a modified warhead payload, and might be deployed in 2015 (RIA Novosti, 2013a).

In 2014, Russia is also expected to begin production of the liquid fuel Sarmat or heavy ICBM intended to replace the SS 18. With a rumored throw weight of about five tons, the Sarmat would be able to deliver a similar number of MIRVs as the SS 18, or an advanced payload with countermeasures against missile defenses. The Sarmat is scheduled for deployment in 2018 to 2020 but will first have to undergo a series of flight tests. Soviet liquid fuel ICBMs such as the SS 18 were produced in Ukraine, and given the reliability problems with the Bulava SLBM, it remains to be seen whether Russia can develop and produce

a new liquid fuel missile or whether the Sarmat will be a modified or life extended version of the SS 18.

Six ICBMs were test launched in 2013, well short of the 11 ICBM launches officially predicted for the year in January 2013 (Interfax AVN, 2013); the tests included the first ever launch of a silo based RS 24.

### SSBNs/SLBMs

Technical problems continue to hamper modernization of the Russian nuclear submarine fleet. After two decades of design, development, and construction of the Borei class boats (Project 955), half a dozen flight tests of the SS N 32 (Bulava 30) missile, and transfer of the first two boats to the Russian navy, the Borei/Bulava weapon system is still not operational. A Bulava malfunctioned during a test launch from the *Alexander Nevsky* on September 3, 2013, further delaying the program. After the failed test, Russian defense minister Sergei Shoygu reportedly ordered an additional five Bulava flight tests (RIA Novosti, 2013c).

On December 30, 2013, the first two Borei class boats *Yuri Dolgoruki* and *Alexander Nevsky* arrived at the Northern Fleet base at Yagel'naya (Gadzhievo). The base is also the homeport of Russia's fleet of Delta IV nuclear missile submarines and includes a submarine launched ballistic missile (SLBM) depot and underground warhead storage facility. The *Yuri Dolgoruki* will be permanently based at Yagel'naya, while the *Alexander Nevsky* will be transferred to the Pacific Fleet nuclear submarine base at Rybachiy (near Petropavlovsk) in late 2014 or 2015 to begin replacing the Delta III boats at the base.

A total of eight Borei class nuclear submarines are planned, each armed with 16 SS N 32 (Bulava) SLBMs that can carry up to six warheads apiece. The third boat, the *Vladimir Monomakh*, was launched in late 2012 and is undergoing ship builder sea trials. Handover to the navy has been delayed until later in 2014 as a result of the problems with the Bulava missile. This boat will also be based in the Pacific Fleet.

The fourth and subsequent Borei class submarines will be of an improved design known as Borei II (Project 955A). The first improved Borei, expected to be named *Knyaz Vladimir*, began construction in July 2012 and is scheduled to enter service in 2015 to 2017. The keels for the fifth boat, the *Alexander Suvorov*, will be laid in late 2014 for possible completion in 2018. The schedule of the last three boats means that the eight boat program will probably not be completed until the early 2020s.

There is considerable uncertainty about how the improved Borei submarine will be armed. Numerous articles over the past several years have reported that each Borei II will be equipped with 20 missile tubes, four more than each of the first three boats (Interfax AVN, 2012a). But in February 2013, a senior defense industry source told RIA Novosti that the number of tubes would not be increased. "The Project 955A differs significantly from the original Borei (Project 955) but not in the number of missiles carried there will still be 16 on board," the source was quoted as saying (RIA Novosti, 2013b).

For the remainder of this decade, the mainstay of Russia's nuclear submarine force will continue to be the six third generation Delta IVs built between 1985 and 1992, each equipped with 16 SLBMs. All Delta IVs are part of the Northern

Fleet and based at Yagel'naya Bay on the Kola Peninsula. Since 2007, Russia has been upgrading the Delta IVs to carry a modified SS N 23 SLBM known as the Sineva. Each missile carries up to four warheads. All six boats have now completed an overhaul and conversion to Sineva. The *Yekaterinburg* was damaged by a fire in December 2011 and will not return to service until 2014 at the earliest. As a result, only four of the six Delta IVs are currently operational.

There are also rumors of a modified version of Sineva, called Layner or Liner, that will be deployed on the Delta IVs over the next several years. One unnamed Navy General Staff official reportedly said that "while the Sineva can carry four warheads, the Layner will carry 10" (*Izvestia*, 2012). But another source in the Russian General Staff said that the Layner is not a new missile but a modified Sineva: "It is in fact a Sineva. Only the warhead is new." The Layner has an improved penetration capability achieved by, among other things, "a greater number of re entry vehicles (*boyevoy blok*) in the war head [sic]" (*Interfax AVN*, 2012b). Instead of more than twice the number of warheads, it seems more likely that the modified payload includes modified warheads and additional penetration aids.

Three Delta III nuclear submarines remain in service on the Kamchatka Peninsula as part of Russia's Pacific Fleet. Each boat is equipped with 16 SS N 18 Mr Stingray (RSM 50) SLBMs with three warheads each. One of the Delta IIIs the *Georgiy Pobedono sets* launched an SS N 18 on October 30, 2013. In preparation for the Pacific Fleet's upcoming transition from Delta III to Borei SSBNs, Russian defense minister Sergei Shoygu visited the Pacific SSBN base in April 2013 and said the

modernization "will significantly increase the possibilities for utilizing submarines in the context of strategic deterrence" and is of "special significance in maintaining strategic stability and Russia's military security in the Far East." During the visit, Shoygu also visited the Delta III submarine *Podolsk* (Russian Federation Ministry of Defense, 2013).

An Itar Tass news agency report in June 2013 quoted an unnamed source in the Russian General Staff saying the navy would expand its strategic submarine patrols, starting in 2014. According to the source, once the Borei class boat comes into service, the navy "will not only continue the patrolling of the Arctic, Atlantic and Pacific Oceans," but also return to the regions in the southern hemisphere that were patrolled by Soviet subs until the dissolution of the USSR in the 1990s. "This would serve to solve the tasks of strategic nuclear deterrence not only across the North Pole but also the South Pole," the source was quoted as saying (*Russia Today*, 2013). It is not clear that the Soviet Union ever operated its nuclear submarines south of the equator, but exposing Russian subs to the wear, tear, and risks of operating so far from their bases makes no sense. Moreover, there is no strategic need for such operations; Russian SLBMs can reach all continents from northern waters. We suspect Itar Tass misunderstood the source. The Russian Navy declared in 2012 that continuous nuclear submarine deterrent patrols would resume by mid year (*RIA Novosti*, 2012), but so far we have seen no indication this has happened.

### Strategic bombers

Russia operates two types of nuclear capable heavy bombers: the Tu 160

Blackjack and the Tu 95MS Bear H. Both types can carry the nuclear AS 15 Kent (Kh 55) air launched cruise missile (ALCM)<sup>3</sup> and possibly gravity bombs;<sup>4</sup> the Tu 160 can also carry the nuclear AS 16 Kickback (Kh 15) short range attack missile.<sup>5</sup> A new long range nuclear cruise missile, designated the Kh 102, is under development.

There is growing uncertainty about the number of bombers and their operational status because Russia and the United States no longer disclose the number of aircraft counted under arms control treaties. Our current estimate of roughly 60 deployed nuclear bombers is based largely on commercial satellite images, which show an average of 51 to 54 bombers typically present at the two strategic bomber bases (Engels and Ukrainka). Another 23 to 26 bombers are typically present at the Ryazan training base, the Kazan production plant, and the Zhukovsky design plant, for a total inventory of 74 to 80 bombers. This number is probably a little high because some of the visible bombers may have been retired and because the satellite images were not all taken on the same day. Nevertheless, by averaging the numbers visible on all of the images we can arrive at a rough estimate of 72 nuclear capable bombers in service. In addition to the 51 to 54 deployed bombers normally visible at Engels and Ukrainka, another half a dozen or so aircraft from the bases might be on training flights or temporarily at other bases, for an estimated force of perhaps 60 deployed nuclear bombers.

The 60 deployed bombers would only be counted as 60 weapons under the New START counting rule, but the aircraft could in fact carry a maximum load of 676 weapons (all 72 bombers could

carry an estimated 810 weapons). The weapons are not loaded on the bombers under normal circumstances, and most bomber weapons have probably been moved from the bases to central storage facilities. We estimate that only a small number of the air delivered nuclear weapons perhaps 200 might be present at Engels and Ukrainka. This deployment would be similar to the US deployment of a few hundred nuclear weapons at its bomber bases.

The Russian Air Force in November 2013 approved the conceptual design of a replacement heavy bomber. The new design, currently known as PAK DA, apparently is a subsonic stealthy flying wing aircraft designed by Tupolev (Russian Aviation, 2013). The new bomber is intended to replace the Tu 160 and Tu 95MS sometime in the 2020s, but upgrades continue to be made to the old bombers.

Russian heavy bombers continued their long range training exercises during 2013, with periodic sorties flown over the Arctic, North Atlantic, and North Pacific, where they were intercepted by NATO and Japanese fighter aircraft in scenarios reminiscent of the Cold War. The most noticeable Russian deployment occurred in October 2013, when two Tu 160s from Engels Air Base deployed to Venezuela and Nicaragua.

### **Nonstrategic (tactical) weapons**

We estimate that Russia has approximately 2,000 nonstrategic nuclear war heads assigned for delivery by air, naval, and various defensive forces.<sup>6</sup> As with the US government, the Russian government does not provide any information about how many nonstrategic



nuclear weapons it possesses. We estimate that the Russian inventory is declining and will continue to decline over the next decade with or without an arms control agreement. The Russian government has repeatedly stated that all its nonstrategic nuclear weapons are in central storage.

We estimate that Russia's tactical air forces are assigned approximately 730 AS 4 air to surface missiles and bombs. Tu 22M<sub>3</sub> (Backfire C) intermediate range bombers can deliver both the missiles and bombs, whereas Su 24M (Fencer D) and Su 34 (Fullback) fighter bombers deliver bombs only. Russia is modernizing some of its Fencers, but the aircraft will be replaced by Su 34 (Fullback) fighter bombers; deployment of the Fullback has started at bases in western Russia. It is possible that other types of fighter bombers also have nuclear capability, but we have not found authoritative information to that effect.

The approximately 700 warheads assigned to Russia's naval nonstrategic delivery platforms arm cruise missiles, antisubmarine weapons, anti air missiles, torpedoes, and depth bombs. The first new nuclear capable Severodvinsk class (Yasen class) nuclear powered guided missile attack submarine (SSGN) was delivered to the Russian navy in December 2013. A second sub is under construction, and the keel of the third sub was laid down in July 2013. A total of eight to 10 Yasen subs are planned. The submarine is equipped for nonstrategic nuclear weapons, including antisubmarine rockets, and has eight vertical launch tubes for cruise missiles.

We estimate that Russia maintains around 430 warheads for air defense, ballistic missile defense, and coastal

defense forces. The warheads are used in Gazelle ballistic missile defense interceptors at five sites around Moscow, in parts of the S 300 air defense system, and in the SSC 1B Sepal coastal defense system. The ballistic missile defense system (A 135) is being upgraded, and Russia has begun introduction of S 400 air defense regiments (with about eight launchers and 32 missiles each) around Moscow to replace the S 300 system. There is considerable uncertainty about which of the S 300 air defense interceptors (SA 10, SA 12, SA 20) are nuclear capable, whether the new S 400 also has a nuclear capability, and how many warheads are assigned to each unit.

Despite Russia's declaration in 1991 and 1992 that it would eliminate all ground launched nonstrategic nuclear warheads, it has not done so. We estimate that approximately 170 warheads are assigned to SS 21 Scarab (Tochka) and SS 26 Stone (Iskander) short range ballistic missiles. The SS 26 will replace the SS 21 completely over the next decade, eventually arming 10 tactical missile brigades.

Rumors resurfaced in 2013 suggesting that Russia had deployed SS 26s in the Kaliningrad region. The German magazine *Bild* claimed the deployment was revealed by satellite images, but did not show any (Solms Laubach, 2013). The report was wrong, and President Putin later stated that Russia had not made a decision on whether to deploy the missile in Kaliningrad. At the same time, he reiterated that such a deployment potentially could become a response to NATO's missile defense system: "We have said many times that the missile shield threatens our nuclear potential, and so we must respond. One possible

response would be to station Iskanders in Kaliningrad” (RIA Novosti, 2013d).

The *New York Times* reported in January 2014 that Russia had test fired a new ground launched cruise missile that might constitute a violation of the 1987 Intermediate Nuclear Forces (INF) treaty (Gordon, 2014). While hardliners called the test a violation, the United States has not formally declared Russia in violation of the INF treaty. The test probably involved the R 500 cruise missile being developed for the Iskander launcher. The 2013 Ballistic and Cruise Missile Threat report by the USAF National Air and Space Intelligence Center (NASIC) did not list a Russian INF range cruise missile.

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### Notes

1. The New START aggregate data from March 2013 attributes 1,480 warheads on 492 deployed launchers. The number is lower than our estimate because it does not count weapons stored at bomber bases, but instead attributes an artificial number of one weapon per bomber. In reality, Russian bombers can carry six to 16 nuclear weapons each.
2. We estimate that Russia stores its nuclear weapons at 48 permanent storage sites across Russia, including about 10 national-level central storage sites (Norris and Kristensen, 2009). Other essential references for following Russian strategic nuclear forces include the general New START aggregate data that the US and Russian governments release biannually; the Open Source Center ([www.opensource.gov](http://www.opensource.gov)); Pavel Podvig’s website on Russian strategic nuclear forces ([www.russianforces.org](http://www.russianforces.org)); and the Russia profile maintained by the James Martin Center for Nonproliferation Studies for the Nuclear Threat Initiative ([www.nti.org/country-profiles/russia/nuclear/](http://www.nti.org/country-profiles/russia/nuclear/)).
3. The Tu-95MS is equipped with the AS-15A and the Tu-160 with the AS-15B, which has a longer range. Depending on aircraft type, Russian bombers can carry up to 16 weapons; hence, it would be possible for 72 bombers to be loaded with 820 warheads but only be attributed 72 warheads under New START.
4. One normally well-informed source says there are no nuclear gravity bombs for the Tu-95MS and Tu-160 aircraft (Podvig, 2005).
5. There are rumors that the AS-16 may have been retired or placed in storage.
6. A US Embassy cable stated in September 2009 that Russia had 3,000 to 5,000-plus non-strategic nuclear weapons (Hedgehogs.net, 2010), a number that comes close to our estimate at the time (Kristensen, 2009). US Principal Deputy Under Secretary of Defense for Policy James Miller stated in 2011 that Russia was estimated to have 2,000 to 4,000 nonstrategic nuclear weapons (Miller, 2011). We estimate that the number is at the lower end of that range with the rest awaiting dismantlement. For a more in-depth overview of Russian and US nonstrategic nuclear weapons, see Kristensen (2012). Some analysts estimate that Russia has significantly fewer warheads assigned to non-strategic forces. See, for example, Sutyagin (2012).

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