Russian nuclear forces, 2008
BY ROBERT S. NORRIS & HANS M. KRISTENSEN

Russia reduced its total nuclear weapon stockpile by about 1,000 warheads during the last year; however, it still has the largest arsenal in the world. As of early 2008, we estimate that Russia has approximately 5,200 nuclear warheads in its operational stockpile and 8,800 in reserve or awaiting dismantlement, for a total of 14,000 nuclear weapons. Other nuclear-related developments in Russia include a resurgence of the importance of nuclear weapons in its security posture, an increase in force exercises and missile test-launches, and an upgrade to Moscow’s air defenses.

Policy and posturing. Russian officials continued and deepened what appears to be a revival of the prominence of nuclear weapons in Russian national security. Gen. Yury Baluyevsky, chief of the general staff of the armed forces and first deputy minister of defense, said in January that Russia’s “partners should clearly understand” that Russia would use force to protect its territory and allies, “including on a preventive basis, including the use of nuclear weapons,” a declaratory policy that resembles that of the Bush administration. In December 2007, First Deputy Prime Minister Sergei Ivanov, who at the time was considered a possible successor to President Vladimir Putin, declared an aggressive position on nuclear parity. “Military potential, to say nothing of nuclear potential, must be at the proper level if we want . . . to just stay independent,” Ivanov said. “The weak are not loved and not heard, they are insulted, and when we have parity they will talk to us in a different way.”

U.S. plans for building missile defense sites in Poland and the Czech Republic provoked nuclear threats from the Russian military. Col. Gen. Nikolai Solovtsov, chief of Russia’s Strategic Missile Command (SMC), repeatedly stated that such a system would be a potential target for Russian nuclear weapons. “We have to take appropriate measures to prevent the weakening of Russia's nuclear deterrence under any circumstances. And I do not rule out that . . . some intercontinental ballistic missiles could be aimed at these Polish and Czech facilities,” he said in December 2007. Putin echoed this attitude in February 2008, warning that if Ukraine joined NATO and decided to host missile defense sites, “Russia will have to point its warheads at Ukrainian territory.”

However, Solovtsov hinted in December that Moscow’s opposition could be softened if the United States limited the system’s size. “If the Americans signed a treaty with us that they would only deploy 10 antimissile rockets in Poland and one radar in the Czech Republic and will never put anything else there, then we could deal with this,” he said.

Russia has intensified both the visibility and magnitude of its military exercises. Russian strategic bombers resumed long-range exercises in the North Atlantic, Arctic, Pacific, and Black Sea, conducting more than 70 flights and 217 test-launches of air-launched missiles between August and December 2007. For the first time in 15 years, a Russian naval task force journeyed to the Mediterranean Sea and North Atlantic Ocean, headed by the aircraft carrier Admiral Kuznetsov. The nuclear-capable naval strike force conducted a two-month cruise that included the Slava-class guided-missile cruiser Moskva, launching nuclear-capable SS-N-12 cruise missiles and SA-N-6 surface-to-air missiles against simulated targets. The Russian Navy said the ships carried a full combat ammunition load; however, we do not believe this included nuclear weapons. The goal of the sorties was “to ensure a naval presence in tactically important regions of the world ocean,” said Defense Minister Anatoly Serdyukov.

Naval Commander-in-Chief Adm. Vladimir Vysotsky said Russia plans to carry out similar naval exercises every six months and “to do all we can to build up our presence where Russia has strategic interests.”

As the naval force made its way back to Russia in January 2008, more than 40 aircraft, including an unknown number of Tu-160 Blackjacks, six Tu-95 MS Bears, and eight Tu-22 M3 Backfires conducted simulated strikes against it in the Bay of Biscay.

On February 8, 2008, in the western Pacific south of Japan, a Tu-95 MS6 Bear bomber buzzed the U.S. carrier Nimitz twice, flying over it at the low altitude of about 2,000 feet as another bomber circled in the distance; both Russian aircraft were “escorted” by U.S. F/A-18 fighters. It was a type of action not uncommon during the Cold War, and U.S. Chief of Naval Operations Adm. Gary Roughead said, “I do not consider it to
## THE RUSSIAN ARSENAL

### STRATEGIC OFFENSIVE WEAPONS

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NAME</th>
<th>NO.</th>
<th>YEAR DEPLOYED</th>
<th>WARHEADS X YIELD (KILOTONS)</th>
<th>TOTAL WARHEADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICBMs</td>
<td>SS-18 Satan</td>
<td>75</td>
<td>1979</td>
<td>10 x 550/750</td>
<td>750</td>
</tr>
<tr>
<td></td>
<td>SS-19 Stiletto</td>
<td>100</td>
<td>1980</td>
<td>6 x 550/750</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>SS-25 Sickle</td>
<td>201</td>
<td>1985</td>
<td>1 x 550</td>
<td>201</td>
</tr>
<tr>
<td></td>
<td>SS-27 Topol-M (SILO)</td>
<td>48</td>
<td>1997</td>
<td>1 x 550</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>SS-27 Topol-M (MOBILE)</td>
<td>6</td>
<td>2006</td>
<td>1 x 550 (??)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>SS-27 Topol-M (RS-24)</td>
<td>0</td>
<td>(2009)</td>
<td>6 x 550 (??)</td>
<td>0</td>
</tr>
</tbody>
</table>

**Total for ICBMs:** 430

<table>
<thead>
<tr>
<th>SLBMs</th>
<th>TYPE</th>
<th>NAME</th>
<th>NO.</th>
<th>YEAR DEPLOYED</th>
<th>WARHEADS X YIELD (KILOTONS)</th>
<th>TOTAL WARHEADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS-N-18 M1 Stingray</td>
<td>5/80*</td>
<td>1978</td>
<td>3 x 200, MIRV</td>
<td>240</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS-N-23 Skiff</td>
<td>4/64</td>
<td>1986</td>
<td>4 x 100, MIRV</td>
<td>256</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS-N-23 M1 Sineva</td>
<td>2/32</td>
<td>2007</td>
<td>4 x 100, MIRV**</td>
<td>128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS-NX-30 Bulava</td>
<td>0</td>
<td>(2008)</td>
<td>6 x 100, MIRV</td>
<td>0</td>
<td></td>
<td></td>
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</tbody>
</table>

**Total for SLBMs:** 1,605

<table>
<thead>
<tr>
<th>Bombers/weapons</th>
<th>TYPE</th>
<th>NAME</th>
<th>NO.</th>
<th>YEAR DEPLOYED</th>
<th>WEAPONS</th>
<th>TOTAL WARHEADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tu-95 MS6 Bear H6</td>
<td>32</td>
<td>1984</td>
<td>6 x AS-15A ALCMs or bombs</td>
<td>192</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tu-95 MS16 Bear H16</td>
<td>32</td>
<td>1984</td>
<td>16 x AS-15A ALCMs or bombs</td>
<td>512</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tu-160 Blackjack</td>
<td>15***</td>
<td>1987</td>
<td>12 x AS-15B ALCMs, AS-16 SRAMs, bombs</td>
<td>180</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total for Bombers/weapons:** 624

### NONSTRATEGIC AND DEFENSIVE WEAPONS

<table>
<thead>
<tr>
<th>Missile defense</th>
<th>TYPE</th>
<th>NAME</th>
<th>NO.</th>
<th>YEAR DEPLOYED</th>
<th>WARHEADS X YIELD (KILOTONS)</th>
<th>TOTAL WARHEADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>51T6/53T6</td>
<td>Gorgon/Gazelle</td>
<td>32/68</td>
<td>1989/1986</td>
<td>1 x 1,000/10</td>
<td>100†</td>
<td></td>
</tr>
<tr>
<td>SA-10</td>
<td>Grumble</td>
<td>1,900</td>
<td>1980</td>
<td>1 x low yield</td>
<td>633</td>
<td></td>
</tr>
</tbody>
</table>

**Total for Missile defense:** 2,079

<table>
<thead>
<tr>
<th>Land-based air</th>
<th>TYPE</th>
<th>NO.</th>
<th>WEAPONS</th>
<th>TOTAL WARHEADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bombers/fighters</td>
<td>~524</td>
<td>ASMs or bombs</td>
<td>648</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Naval</th>
<th>TYPE</th>
<th>WEAPONS</th>
<th>TOTAL WARHEADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submarines/surface ships/air</td>
<td>SLCMs, ASWs, SAMs, ASMs, DBs, or torpedoes</td>
<td>698</td>
<td></td>
</tr>
</tbody>
</table>

**Total for Naval:** 698

**GRAND TOTAL:** 5,192††

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* One Pacific-based Delta III has been converted to missile test-launch platform.

** As a Skiff replacement, the Sineva probably carries four MIRVs, but U.S. intelligence sets the capability at "up to 10" warheads per missile.

*** A sixteenth Tu-160 is undergoing trials.

† Two Gorgon launch sites may no longer be operational, in which case 84, not 100, ABM warheads remain.

†† An additional 8,908 intact warheads are estimated to be in reserve or awaiting dismantlement, making the total stockpile approximately 14,000 weapons.

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**ABM**: Antiballistic missile  
**ACM**: Advanced cruise missile  
**ALCM**: Air-launched cruise missile  
**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
be provocative.” “What we are seeing is a Russian military or Russian Navy that is emerging and, in the case of the navy, desiring to emerge as a global navy,” he said. Vice Chairman of the Joint Chiefs of Staff Gen. James Cartwright called the operations a “return to a Cold War mind-set” and said the Pentagon was assessing “what message was intended by this overflight.”

Between August and December 2007, more than 120 NATO planes intercepted Russian aircraft. Despite the Russian government’s nuclear rhetoric and posturing, an independent 2007 poll conducted for the University of Maryland found that 63 percent of Russians support elimination of nuclear weapons and that 59 percent support the removal of Russian and U.S. nuclear weapons from high alert.

Intercontinental ballistic missiles (ICBMs). Putin described successful ICBM and submarine-launched ballistic missile (SLBM) flight-tests as “pleasant and spectacular holiday fireworks,” and the SMC announced that Russia will increase flight-testing of long-range ballistic missiles in the future. “The number of launches will almost double after 2009 or 2010,” according to Solovtsov. Russia plans 11 ICBM test-launches for 2008, and if that doubles, it is far more than the handful of similar tests the United States conducts. With this many scheduled tests, the Russian military might be trying to highlight its capabilities—or it could indicate that Russian missiles require more test-launches for development and certification than do U.S. missiles.

The total number of Russian ICBMs dropped by 63 compared with a year ago; Russia now deploys approximately 1,600 nuclear warheads on 430 ICBMs of five types. The number of silo-based Topol-M ICBMs reached 48 across five regiments; deployment will be completed in 2010 with a total of 50 missiles. Slow deployment of the mobile Topol-M missiles continued at the 54th missile regiment in Teykovo northeast of Moscow, with a total of six operational single-warhead missiles. By 2015, the Russian government plans an operational force of 34 mobile Topol-Ms, which will require the yearly deployment (on average) of four missiles.

Russia announced in 2007 that it would begin deploying a new ICBM with multiple independently targetable reentry vehicles (MIRVs) in a few years. It conducted two flight-tests of MIRVed Topol-Ms in 2007. In order to avoid violating START, which prohibits increasing the number of warheads on existing missiles but not building new missiles, Russia calls the modified Topol-M the “RS-24,” instead of RS-12M1 or RS-12M2, its respective names for the mobile- and silo-based Topol-Ms. The MIRVed Topol-M is scheduled to become operational in 2009.

Russia continued to downsize its SS-25 ICBM force in 2007, withdrawing about 40 missiles from service and leaving approximately 200 deployed. The weapon may remain in operation till 2015. Russia conducted two SS-25 service life extension flight-tests in 2007, on October 18 and December 8, as well as an SS-19 test-launch late in the year.

In March 2006, U.S. intelligence reported that Russia was developing a new ICBM that has not been test-launched but could be deployed in both land- and sea-based versions. In December 2007, an SMC spokesman said that the forces “may adopt a new, more advanced [than the Topol-M] ballistic missile system” for possible deployment by 2017.

Nuclear-powered ballistic missile submarines (SSBNs). Russia has 11 Delta-class SSBNs of two types, Delta IV and Delta III, which are deployed in two of Russia’s four fleets. We estimate that these boats are equipped with 176 SLBMs carrying a total of 624 warheads.

Deputy Defense Minister Gen. Nikolai Makarov declared in December 2007 that after more than a decade under construction, the first Borey-class SSBN, Yuri Dolgoruki, will finally become operational in 2008. “At the moment, routine tests are under way, they are finishing,” he said. Russia aims to someday have six Borey-class SSBNs, but the second one will probably not be ready until 2010.

Each Borey-class submarine will be equipped with 16 Bulava SLBMs, which are not operational but will have a range of 8,000–9,000 kilometers (5,000–5,600 miles) and are declared by Russia under START to carry six warheads.
In early 2008, the 

Bryansk, a Delta IV 

sub, completed a six-year upgrade to the 

Sineva SLBM, which is a modernized 

version of the SS-N-23 Skiff. The Sineva 

first became operational in July 2007 on 

the Delta IV sub Tula, which later test- 

launched two Sinevas on December 17 

and 25, 2007. All Delta IVs will be up- 

graded to carry the Sineva.

According to Defense News, in late 

2007 Norwegian military intelligence 

saw “an increase in submarine activi- 

2007 Norwegian military intelligence 

reported for a fleet of 30 Tu-160 air- 

construction. Unconfirmed plans were 

by one Tu-160. Another may be under 

maintenance and could be operational for delivery by antiballistic 

missiles, air-defense missiles, tactical aircraft, or naval cruise missiles and torpedoes. The remaining 3,310 weapons are in reserve or awaiting dismantlement.

Of the approximately 2,000 nonstrategic warheads for delivery by aircraft, we estimate that roughly 650 are operational. This includes air-to-surface missiles and bombs for delivery by Tu-22 M3 Backfire bombers, and bombs for delivery by Su-24 Fencer fighter-bombers and possibly other tactical aircraft.

Unlike other nuclear weapon states, Russia retains a relatively large inventory of nonstrategic nuclear weapons for delivery by nuclear-powered submarines and land-based maritime aircraft. We estimate that approximately 608 of 2,270 naval warheads are operational for delivery by approximately 280 submarines, major surface ships, and naval aircraft. The warheads include cruise missiles, antisubmarine rockets, anti-air missiles, torpedoes, and depth bombs. The number of nuclear-capable ships and submarines has declined from approximately 400 in the 1990s to slightly more than 100 today. We no longer believe that surface ships are assigned nuclear torpedoes, and tactical naval nuclear weapons are not thought to be carried onboard ships and submarines under normal circumstances.

We estimate that Russia has about 1,120 warheads under the “missile defense” category, for use with its A-135 antiballistic missile system surrounding Moscow and the SA-10 Grumble (S-300) air-defense system; however, only about 730 of these warheads are estimated to be operational. Uncertainty abounds about the operational status of parts of the A-135 system; rumors persist that at least two of four Growler submarine launch sites are no longer operational. All five Growler launch sites appear operational, however, and test-launches of the Gazelle, an interceptor missile with a range of 80 kilometers (50 miles), were conducted in 2006 and 2007.

Moreover, in early 2008 the Russian military announced that at sites in northwest Russia, the SA-10 Grumble will soon be replaced by the SA-21 Growler (S-400), which has a range of 400 kilometers (250 miles) and a reported antiballistic missile capability. One Growler regiment is already deployed outside Moscow, with a second to become operational in 2008. Each SA-21 system has about eight launchers, 32 missiles, and a command center; Russia wants at least 18 systems to form the core of its anti-air and missile defenses through at least 2020.

**Nuclear force projection.** In May 2006, Putin said, “Over the next five years, we will have to significantly increase the number of modern long-range aircraft, submarines, and launch systems in our strategic nuclear forces.” But public statements from Russian military officials suggest growth far less robust than that described by Putin.

Based on these statements, it is possible to make a best estimate of the likely evolution of Russia’s strategic nuclear forces over the next 12 years (with the caveat that such projections are fraught with uncertainties). We estimate that in 2015, Russia will have a total of 2,490 strategic nuclear weapons, a 20 percent decrease from today. This comprises 844 ICBM warheads (depending on future ICBM loadings), which is a 47 percent reduction; 896 SLBM warheads, a 23 percent increase; and 878 warheads on the bomber force, a slight decrease.

FOR NOTES, PLEASE SEE P. 62.

Nuclear Notebook is prepared by Robert S. Norris of the Natural Resources Defense Council (NRDC) and Hans M. Kristensen of the Federation of American Scientists. Inquiries should be directed to NRDC, 1200 New York Avenue, N.W., Suite 400, Washington, D.C., 20005; 202.889.6868.
Control Today, vol. 37, no. 2, pp. 6–11.


8. A detailed description of the disablement steps and photos of the disabled equipment was posted by Siegfried S. Hecker at cisac.stanford.edu/news/hecker.

9. All three reactors are gas-graphite reactors patterned after the British reactor first built at Calder Hall, Britain. However, design and construction of all three was done independently. These reactors are able to burn natural uranium fuel, thus not requiring uranium enrichment, which was beyond the Democratic People’s Republic of Korea’s technical means in the 1980s. Only the 200-megawatt-electric reactor would have had substantial electricity generating capacity, but all three of them would make very good bomb-grade plutonium if the reactor burn cycle is kept to less than approximately four years.


13. The IRT-2000 research reactor is a light water cooled and moderated pool-type reactor supplied by the Soviet Union in the 1960s. The reactor’s fuel was gradually upgraded from low-enriched uranium to highly enriched uranium over the years. The reactor has only operated sparingly in the past 16 years because North Korea has not been able to obtain new fuel. The reactor is not part of the current negotiations process, although it had been monitored by the International Atomic Energy Agency in the past.

14. Under the January 19, 1992 Joint Declaration, the Democratic People’s Republic of Korea and the Republic of Korea agreed not to test, manufacture, produce, receive, possess, store, deploy, or use nuclear weapons; to use nuclear energy solely for peaceful purposes; and not to possess facilities for nuclear reprocessing and uranium enrichment.

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**In review: Genetic sequencing**

CONTINUED FROM P. 53


5. Ibid.


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**Russian nuclear forces, 2008**

CONTINUED FROM P. 57

1. Essential resources for tracking Russian nuclear forces include: START memorandum of understanding; the website of Russia’s Ministry of Defense (www.mil.ru/eng/); the U.S. Open Source Center, Russian news articles; Pavel Podvig’s website (www.russianforces.org); and the database on “Russia: General Nuclear Weapons Developments,” maintained by the Monterey Institute’s James Martin Center for Nonproliferation Studies (www.nti. org/db/nisprofs/russia/weapons/gendevs.htm).


4. The organization maintaining the Russian ICBM force is widely known as the Strategic Rocket Forces, but the Russian Ministry of Defense refers to it as the Strategic Missile Command.


12. U.S. Department of the Navy, Office of Naval Intelligence, personal e-mail message to Hans M. Kristensen, January 4, 2008.


18. Our estimate for nonstrategic warheads is 250 warheads fewer than last year, reflecting a recound of platforms rather than an actual decrease in warheads.


28. Our estimate for nonstrategic warheads is 250 warheads fewer than last year, reflecting a recound of platforms rather than an actual decrease in warheads.


30. Ibid.