



The New START Treaty

In the late 1980s the United States and Soviet Union began negotiations on a treaty to reduce their nuclear arsenals. These discussions led to the Strategic Arms Reduction Treaty (START), which was ratified in 1991. START limited the number of nuclear warheads and delivery vehicles (bombers and land- and submarine-based missiles) that the United States and Russia could deploy to 6,000 warheads and 1,600 delivery vehicles.

The treaty includes a strong set of verification measures the two nations rely on to monitor each other's nuclear arsenals.

The United States and Russia signed an additional arms control agreement in 2002. The Strategic Offensive Reductions Treaty (SORT), also known as the Moscow Treaty, obligates the United States and Russia to reduce to between 1,700 and 2,200 warheads by the end of 2012, at which point the treaty expires. Unfortunately, SORT does not define which warheads the treaty counts, and it does not contain any verification measures.

START expired on December 5, 2009, and with it the verification protocols. Without the transparency provided by these verification measures, the United States will know much less about Russia's arsenal in the future.

Because of this, the Obama administration made negotiating a START follow-on treaty a priority. On July 6, 2009, President Obama and Russian President Dmitry Medvedev signed a joint understanding outlining the New START treaty. While the negotiations took longer than expected, they have concluded and the treaty will be signed on April 8, 2010.

Provisions of New START

The treaty will set a limit of 800 total deployed and non-deployed strategic delivery vehicles (missiles and bombers) for each country, with a limit of 700 on deployed delivery vehicles. In addition, there is a limit of 1,550 nuclear warheads on deployed delivery vehicles, but with each nuclear-capable bomber counted as single warhead.

These limits would require both countries to cut several hundred warheads, and the United States to cut several hundred delivery vehicles. Table 2 gives current estimates of numbers of delivery vehicles and warheads according to two different sets of "counting rules"—those for START and for SORT. Below we describe these two ways of counting.

We note that the July 6, 2009, joint understanding between Russia and the United States also called for a body to resolve questions related to treaty implementation and a "provision on basing strategic offensive arms exclusively on the national territory of each party."¹ However, these issues will likely be addressed in a new round of negotiations in the future.

START & SORT Counting Rules

START Counting Rules

Verification of the 1991 START treaty was based in part on observing launchers (silos, submarines, etc.), which can be seen by satellites. Numbers of missiles and warheads are then assigned according to an agreed set of "counting rules" in the treaty. Each missile silo or launch tube on a submarine is considered to hold a missile. In addition, each missile and bomber is assigned a certain number of warheads. For missiles, this is generally based on the maximum number of warheads the missile carried in tests. So a missile tested carrying at most 10 warheads would be counted as carrying 10 warheads regardless of how many were actually on the missile.

This way of counting overstates the number of deployed warheads, but is intended to reflect the "upload potential," that is, the number of additional warheads a country could deploy relatively quickly by adding warheads to existing missiles that are not carrying their maximum number, and by placing missiles in existing, empty launch tubes.

For bombers carrying nuclear cruise missiles, each U.S. bomber is assigned 10 warheads and each Soviet bomber is assigned eight. Bombers equipped to carry nuclear bombs are each assigned one warhead regardless of the actual

number it is carrying.

SORT Counting Rules

The SORT treaty contains only non-verified limits on strategic nuclear warheads, not on launchers. It does not define what warheads are to be counted, nor does it define counting rules. As a result, there is no agreed accounting.

Under SORT, the United States counts only “operationally deployed strategic nuclear weapons,” which it defines as those warheads that are loaded on delivery vehicles and ready for launch. As a result, the United States does not count warheads in storage, or warheads on submarines that are undergoing maintenance. It counts the actual number of warheads it deploys on missiles, even if those missiles can carry more, and does not count launchers, such as silos, that do not currently contain missiles.

Russia rejects this interpretation and has not provided a SORT count due to the lack of agreement about what is to be counted under SORT (estimates are given in Table 2).

Current Arsenals Under START and SORT

Table 1 shows estimates of the current U.S. and Russian nuclear arsenals under START counting rules and under the U.S. SORT counting rules. Both countries are below the numerical limits in START. More details are given in Table 2.

Arsenals Under New START

A key question for the New START treaty has been not only what the numerical limits will be, but how warheads and delivery vehicles will be counted.

The warheads on ballistic missiles will be counted essentially by SORT rules, which would reflect the actual number of warheads on deployed systems. As noted above, this number is considerably lower than the total number of possible warheads that could be deployed relatively rapidly.

Having two sets of numerical limits—on deployed and on total (deployed and non-deployed) delivery vehicles—appears to be intended to address Russian concerns about limiting the number of non-deployed delivery vehicles that could be re-deployed. Re-deploying could allow a country to quickly deploy stored warheads on existing launchers,

and therefore break out of the treaty in a relatively short time.

Verification measures carried over from START will presumably monitor launchers, but warhead numbers will likely not be verified.

Because warhead numbers are not verified under START, the treaty only requires the destruction of launchers—and not warheads—that are removed from deployment. As a result, reductions in numbers of deployed warheads have largely been accomplished by placing those warheads in storage rather than destroying them.

Because Russia has a smaller number of delivery vehicles than the United States (see Table 1), Russia has a considerably smaller upload potential. The issue of how to count warheads and launchers, and its effect on upload potential are illustrated below.

Bombers

While the U.S. Air Force currently has 206 long-range bombers capable of carrying nuclear bombs or nuclear-armed cruise missiles, the United States declares that only 60 of these are intended to be used for nuclear missions. Bombers present a big challenge to treaty negotiators since bombers assigned to non-nuclear missions can be reassigned to a nuclear mission. Without intrusive measures, verifying these changes is difficult if not impossible.

In the new treaty, each deployed bomber is counted as carrying one warhead regardless of how many it actually carries. The numbers in Table 2 show that this rule significantly reduces the number of warheads counted under the treaty. Whether the full 206 U.S. bombers will be counted by the new treaty is not publicly known.

Ballistic Missile Submarines

The U.S. Navy has 18 Ohio-class submarines, each initially designed to carry 24 submarine-launched ballistic missiles (SLBMs). Each missile can carry up to 12 nuclear warheads. Four submarines have been converted to carry conventionally armed cruise missiles, but are still counted under START counting rules. Two of the others at any given time are in dry-dock, undergoing maintenance, and these are also counted under START. The United States does not count either the converted submarines or those

	Warheads	Delivery Vehicles
U.S. under START ²	5916	1188
U.S. under SORT ³	2202	798
Russia under START ²	3897	809
Russia under SORT ³	2504	566
New START	1550	700 deployed 800 total

being overhauled as operationally deployed for the purposes of SORT counting, and this appears to be true as well for New START.

Additionally, while the Trident missiles on these submarines are capable of carrying up to 12 warheads, they are currently deployed with an average four warheads per missile. It appears that the new treaty will count the actual, rather than the possible, number of warheads deployed on their SLBMs, similar to SORT.

Table 2. (source: references 2 and 3)

	START Counts (2009)				SORT Levels (2009/10)*							
	Launch	V	WH	Each	Total	WH	Launch	V	WH	Each	Total	WH
US ICBMs												
MM-III	500		2.4		1200		450		1.2		550	
MX	50		8		400		0				0	
Subtotal	550				1600		450				550	
US SLBMs												
Trident II	336		8		2688		288		4.0		1152	
Trident I	96		6		576		0		0		0	
Subtotal	432				3264		288				1152	
US Bombers												
B1	47		1		47		0		0		0	
B2	18		1		18		16		9.4		150	
B52	47		1		47		0		0		0	
B52 ALCM	94		10		940		44		8.0		350	
Subtotal	206				1052		60				500	
US Totals	1188				5916		798				2202	
Russian ICBMs												
SS27	65		1		65		71		1.1		80	
SS25	176		1		176		150		1		150	
SS19	120		6		720		60		6		360	
SS18	104		10		1040		50		10		500	
Subtotal	465				2001		331				1090	
Russian SLBMs												
Delta III (SSN18)	96		3		288		64		3		192	
Typhoon (SSN20)	40		10		400		0		10		0	
Delta IV (SSN23)	96		4		384		96		4		384	
Typhoon (Bulava)	20		6		120		0		6		0	
Borey (Bulava)	16		6		96		0		6		0	
Subtotal	268				1288		160				576	
Russ. Bombers												
Blackjack (TU160)	13		8		104		13		12.0		156	
Bear (TU95)	63		8		504		62		11.0		682	
Subtotal	76				608		75				838	
Russian Totals	809				3897		566				2504	

*SORT numbers: 2009 for U.S., 2010 for Russia

¹ Joint Understanding, released by the White House Press Office, July 8, 2009.

http://www.whitehouse.gov/the_press_office/The-Joint-Understanding-for-The-Start-Follow-On-Treaty/

² State Department Fact Sheet "START Aggregate Numbers of Strategic Offensive Arms," July 1, 2009,

<http://www.state.gov/documents/organization/130361.pdf>

³ Estimates based on "Nuclear Notebook: United States Nuclear Forces 2009" and "Russian Nuclear Forces 2010," Bulletin of the Atomic Scientists www.thebulletin.org

Inter-Continental Ballistic Missiles

The United States has 100 silos that do not contain missiles but have not been destroyed and are therefore still counted under START rules. And, like the SLBMs, the Minuteman-III inter-continental ballistic missiles (ICBMs) are not generally deployed with their full complement of warheads. While the Minuteman-III missiles can carry up to three warheads, the majority carry only one while approximately 50 missiles carry two. Again, it appears the new treaty will count the actual number of deployed warheads.

Conclusions

Based on White House descriptions of New START, one can compare the treaty limits to current totals in Table 2.

According to the new counting rules (with missile warheads counted by SORT rules and bombers counted as one warhead), the United States currently has approximately 1,762 warheads and Russia currently has 1,741. The new limit is 1,550.

The current number of deployed delivery vehicles appears to be approximately 798 for the United States and 566 for Russia. The new limit is 700.

The number of total delivery vehicles (deployed and non-deployed) appears to be roughly 1,188 for the United States and 809 for Russia. The new limit is 800. The current U.S. number includes nuclear-capable bombers that the United States says are not intended for nuclear missions. If there is agreement not to count these bombers, the U.S. total would be 1,042.

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