

21st Century Nuclear Arms Control

A Framework for the Next Generation of Treaty Negotiations... and Treaty Negotiators

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Presentation Overview



- **Deter and Downsize**
 - Future Nuclear Environment
 - U.S.-Russia Nuclear Arms Control
 - The Need for a New Approach
- **A 21st Century Nuclear Framework**
 - Central Limits
 - Information Exchange
 - Verification
- **Bilateral to Multilateral Nuclear Arms Control**

Deter and Downsize



Global Deterrence and Assurance

Downsize Legacy Arsenal

Europe



Asia-Pacific



“Polar Growl”



Dismantling last W56

21st Century Nuclear Environment



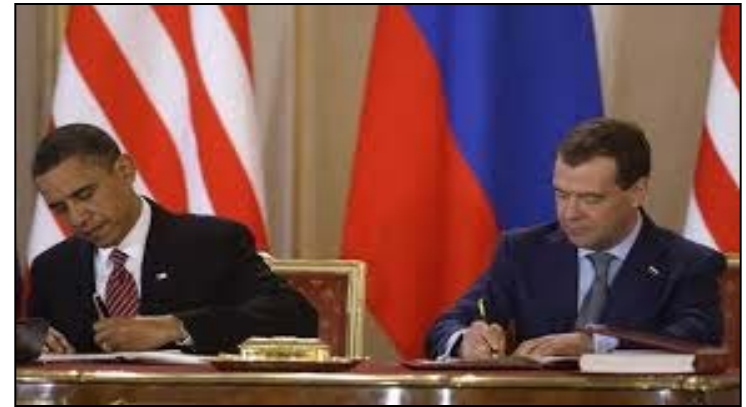
Setting the Stage



- **21st Century Geopolitics and Nuclear Forces**
 - Nuclear forces will remain strategically important to a number of states, including the U.S., indefinitely
 - Non-nuclear forces will not supplant nuclear
 - U.S. & Russia will remain largest nuclear powers for foreseeable future
- **U.S. will need diverse, flexible force capable of global deterrence & assurance missions**
 - Nonproliferation efforts will require assuring states under the “nuclear shadow”

**Nuclear use remains a major security threat,
but nuclear forces are vital to geopolitical stability**

Nuclear Arms Control, Past & Present



Missile launch tubes removed from a ballistic missile submarine are eliminated with equipment and services provided by the Department of Defense's Cooperative Threat Reduction program implemented by the Defense Threat Reduction Agency (DTRA).



Legacy Nuclear Arms Control Approach



- **SALT/INF/START/New START (NST): '69 – now**
- **Context: Rival nuclear superpowers**
- **Key challenges to address:**
 - **Arms Racing (costly, destabilizing over long term)**
 - **De-incentivizing pre-emptive attack**
- **Solution: Central focus on limiting and balancing deployed “strategic” offensive delivery systems**
 - **Concentrate limits, verification on front line forces**
 - **Set aside weapon stockpiles, “non-strategic” systems**

End Goal: A Stable, Bilateral Strategic Nuclear Balance

NST: The End of the Beginning



- **Future problems with START/NST framework**
 - Delivery vehicle reductions beyond NST limits increasingly complicated to negotiate
 - Does not account for non-deployed and non-strategic nuclear weapons
 - Verification only focuses on “tip of the spear”
 - Bilateral, mutual deterrence structure difficult to apply to other nuclear weapon states

**Focus on strategic delivery systems =
first generation of nuclear arms control**

Arms Control Remains Important Means to and End



- **Russian deployed forces shape U.S. posture, and vice versa**
 - **Existential threat to U.S. and NATO**
- **RF relies on nuclear forces as strategic counter**
 - **Desire to be treated as great power peer**
 - **Any effort to devalue nuclear will make little headway**
- **Arms control is most likely mechanism for future RF or PRC reductions, P-5 approach to NPT Article VI commitments**

A New Approach



- Approach should reduce the risk of nuclear warfighting while also retaining robust deterrent
 - Not “Global Zero” and not “Dr Strangelove”
- Shift from focus on delivery vehicles to weapons
- What deters?
 - Deterrence (and assurance) dependent on flexible, visible force ... regardless of load-out
 - Lethality and risk can be reduced without compromising national policy or strategic stability

**Goal: Strategically flexible, operationally robust,
lethality reduced nuclear forces**

A 21st Century Framework



Evolve nuclear arms control to ...



Focus on stockpiles



Inspect additional facilities



Include additional countries

Elements of the Framework



- Address key elements of a weapons-focused framework based on essential arms control “building blocks”
 - Central limit(s) – identify how many weapons will be limited or reduced and how quickly
 - Data and notifications – identify what information will be provided and how often
 - Verification Regime – identify means to confirm the information provided is accurate

Central Limit



- **Focus on the total stockpile of nuclear weapons**
 - Overall weapon/warhead limit (ex. 5,000)
 - Reductions at regular intervals (ex. 20% every 10 yrs)
 - Cover full “life cycle” of nuclear weapons
 - No “treaty math”
- **No new limit on numbers/types of delivery vehicles**
 - Recognize stabilizing NST limit on deployed DVs
 - Complete flexibility to structure force
 - Opportunity to negotiate INF role given new framework?

Data and Notifications



- **Baseline & quarterly data exchange on stockpile**
 - Three categories of data: “deployed” and “non-deployed” and “dismantled”
 - Aggregate number of warheads by location (e.g., bases, storage sites, dismantlement facilities)
- **Depart from START/New START notification process of day-to-day reporting on movements**
 - Many delivery vehicles can be monitored via NTM
- **Other notifications to enhance transparency and facilitate implementation, as necessary**

Verification



- **Seek to balance transparency measures with provisions to enable verification of compliance**
 - Offer visibility into the deployed stockpile
 - Encourage states to maintain more stabilizing force postures
 - Provide substantiation that progress is being made toward reductions



Seek to provide level of confidence that supports stability

Inspections



- **Inspections of deployed nuclear weapons**
 - Regular, on-site, short-notice, intrusive but familiar
 - Confirm weapons on ballistic missiles, aircraft, etc.
- **Inspections of non-deployed nuclear weapons**
 - Agreed annually (>0), highly-intrusive, unfamiliar
 - Confirm weapons at storage locations
- **Inspections of dismantled nuclear weapons**
 - Periodic, provide transparency and high confidence
 - Confirm weapons dismantled, either through verification of disassembly or disposal

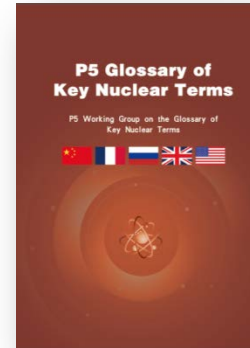
Beyond Bilateral



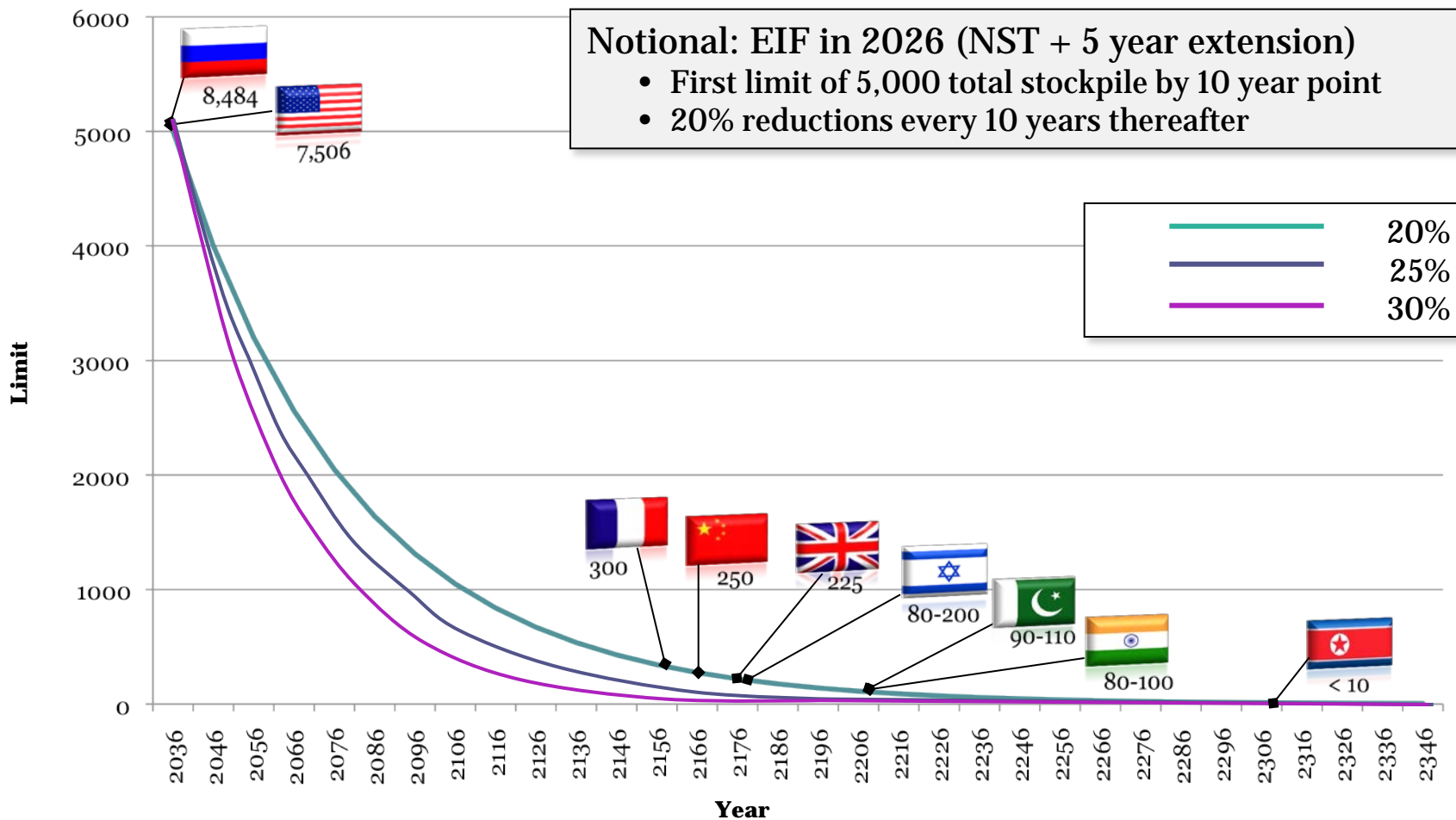
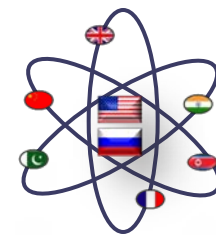
Bilateral to Multilateral ...



- P-5 have NPT obligation to engage in negotiations on reductions
 - Baby step toward common lexicon with Glossary
- PRC and RF state future talks should be multilateral
- Institute regular “review conferences” to assess progress, build confidence, and encourage other nuclear powers to join
 - Education and familiarization opportunity
 - Also explore advances in technology to enhance verification and strengthen the regime



Global Stockpile Reductions



Summary/Conclusion



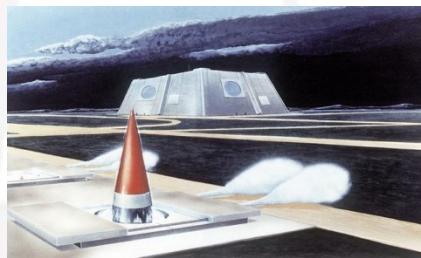
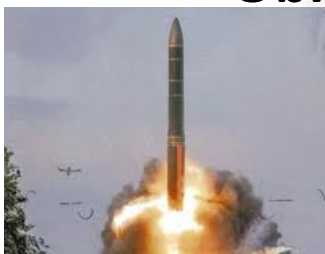
- **Time for “2nd generation” of nuclear arms control**
 - Current framework turns 50 at end of NST
 - Reduce risk & lethality but maintain deterrence
 - Gradual but steady decrease leading to smaller weapons arsenal but operationally viable force
- **New Approach, New Framework**
 - Shift focus from delivery vehicles to weapons
 - Verify weapons & full stockpile
 - Three-part inspection regime tailored to each phase of weapon life cycle

Exploring the Dichotomy Between New START Treaty Obligations and Russian Actions and Rhetoric

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Background

- To achieve the objective of returning Russia to Great Power status and defend Russia's National Interests, President Putin (10 Sept 2014) stated Russia's 2016-2025 weapons modernization program should focus on:
 - a- Building a new array of offensive weapons to provide a "guaranteed nuclear deterrent"; (Putin & Gen Gerasimov—SNF modernization has top priority for 2015 & 2016) Complete IC/SL modernized by 2022.
 - b- Re-arming strategic and long-range aviation;
 - c- Creating an aerospace defense system, and
 - d- **Developing high-precision conventional weapons.**
- Russia view's nuclear weapons far differently than the US, and their view is embodied in statements such as "use of nuclear weapons to **de-escalate conflicts**",... "making nuclear weapons **once again an instrument of policy**", and developing **qualitative new nuclear weapon capabilities that have political/militarily utility.**
- President Putin –Russia is creating a new generation nuclear weapons "...these will be things which do not exist and are unlikely to exist in other nuclear powers." "Number of new nuclear systems will be built".
 - e.g. Drone torpedo? Precision, low-yield, "clean" nuclear weapons? EMP weapons?– Developing a spectrum of nuclear weapons which can maintain escalation dominance all along the conflict spectrum.
- Russia has no prospect of restoring its conventional military capabilities in the foreseeable future, nor of matching the west in the procurement and deployment of advanced weapon systems—funding and technology constraints.
- Nuclear weapons that have political/military utility provide Russia a **comparative advantage.**

Background (con't)

- Putin – 2012 “ **Russia will build 400 new ICBM’s by 2022**”—(Note: all w/6-10+ WH capability)
 - For force structure calculations, allocated 168 missiles for Bulava production (148 deployed and 20 T&E), and for ICBM production allocated 232 missiles (222 deployed: 108 RS-24 mobile; 36 RS-24 silo; 30 RS-24 rail mobile; and 38 RS-26 IR/ICBM plus 20 for T&E). The 46 + Sarmat being produced by Krasnoyarsk were not counted in the 400—Votinsk has the capacity to produce 400 IC/SL by 2022. No limit on IC/SL production, but must be accounted for.
 - A simple calculation illustrates how many IC/SLBM nuclear warheads Russia could have by 2022 due to SNF modernization, new production and MIRVing:

400 IC/SL X 4 RV’s = 1600 WH

400 IC/SL X 7RV’s = 2800 WH

400 IC/SL X 10 RV’s = 4000 WH

Plus ~ 50 SS-18/Sarmat X 10/15 = 500/750 WH

Plus refurbished Delta IV’s = 384-960 WH

Plus 30 “like new” SS-19 = 180 WH

Plus SS-19 class new liquid = TBD

Potentially
 2664-5890 IC/SL WH = **Great uncertainty**
 (Plus > 800 bomber WH)

- Mikhail Ulyanov, Director, Russian Foreign Ministry Department of Security and Disarmament made several statements that Russia would be “forced to exercise its right of withdrawal from the New START Treaty. Russia has rejected talks on further SNF reductions.
- Life extension and new production missile numbers and associated throw-weight raise questions about New START compliance.

Russian Nuclear Doctrine Provides the Foundation for Russia's Strategic Nuclear Forces

- Russian Nuclear Doctrine is driven by Great Power consideration, concerns that future conflicts could be waged on Russian soil, and nuclear technology developments.
- Evolving nuclear doctrine serves as justification for development of very low-yield, high precision, "clean", tailored effects nuclear weapons (e.g. EMP, neutron)—large number's of WH will be available for deterrence and to execute warfighting tasks
- Nuclear weapons will once again become an effective instrument of policy. – **Return Russia to superpower status** by the threat of **precision low yield nuclear strikes**. **"...make the threat realistic."** **"...nuclear weapons once again an instrument of policy"**
- **"...existing strategic nuclear warheads are to be upgraded so they can be rapidly and simply be reprogrammed to deliver highly accurate strikes with yield of ten's to hundred's of tons of TNT"** (Implications of low yield WH for strategic nuclear war?)
- Capabilities being developed for "non-strategic" strikes "anywhere in the world"—lowers the nuclear threshold
- Provides **global escalation dominance**, and calls into question the viability of the US extended deterrent
- A Russia threatened by conventional attacks **may use nuclear weapons to "de-escalate" the conflict**. "Russia views the tactical use of nuclear weapons as a viable alternative to advanced conventional."
- Russia's extensive nuclear infrastructure, scientific capability, and low cost to implement, supports this doctrine and provides comparative advantage. Russia built over 55,000 nuclear weapons, and retains a estimated capability of building 1,000-2,000+ weapons/year.

These statements support repeated Russian threats/exercises/demonstrations to use nuclear weapons, and places nuclear weapons at the center of Russian military strategy and national policy

Nuclear Weapons and Warfare are not Immune to the March of Technology

- V. Mikhaylov, Minister of Atomic Energy, and First Deputy Minister, proposed creating a force of 10,000-11,000, Low yield, highly accurate nuclear weapons – **confirmed by CIA 22 June 2000** ⁽¹⁾ Yeltsin reportedly signed presidential decree authorizing development 29 Apr 99
 - Goal is to “make nuclear weapons an instrument of policy” –” provide usable military force”
 - “Precision strike of this kind would not result in immediate global nuclear war”
- “...work to create highly accurate ‘clean’ third-generation nuclear weapons in which can be very compact by containing the equivalent of **several dozens or hundreds of metric tons of TNT.**” Moscow Rossiyskaya, 18 December 1998
- “...developing low and super-low yield nuclear weapons and precision weapons with nuclear warheads.”
- “Evidence of Russian development/operational testing of new sub-kiloton nuclear warheads” – **CIA 30 Aug 2000 (1)**
- “...the deterrent actions of strategic forces... strikes with both conventional and nuclear warheads with the goal of de-escalating the military conflict... **[Strategic missile systems should be capable of conducting ‘surgical’ strikes... using both highly accurate, super-low yield nuclear weapons, as well as conventional ones...]** “...groupings of non-nuclear MBR (ICBM’s) and BRPL (SLBM’s) may appear...”] Col-Gen V. Muravyev, Dep CINC of the RVSN, Moscow Armeyskiy Sbornik, 1 Dec 1999. Russia reportedly has deployed precision nuclear WH **w/50-200 ton yields** on SS-N-23 SLBM and CM
- Russia has/will use threat of nuclear escalation to deter a NATO response to Russian conventional aggression. (e.g. Ukraine)

1) Declassified CIA documents

Russia Has a Very Different View of Nuclear War Than The US and is developing the policy/doctrine/forces to implement

(1) Declassified CIA documents

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Recent/New SNF Modernization Initiatives That Contradict Intent to Comply With New START

ICBM's

- RS-12M2 SS-27 Topol M - Reports 78 missiles w/single WH may be replaced w/4-7 MIRV ~ 2016, and stay in service (~2030?)
- RS-24 SS-29 Yars IOC 2011 – 3 Variants w/4 RV's (could carry 7, or 10 very small WH)
-- Silo, Road mobile, Rail Mobile (IOC ~2018)
- RS-26 Rubezh (IOC~ 2016) New type missile (energetic fuel and nanomaterials?) – also reports it may be first two stages of RS-24
-- Tested to a range of 5800 km (Karakayev-5600 km), making it a ICBM, but subsequently tested to ranges under 5500 km. Not a violation.
NOTE: All Russian IC/SLBM's have short minimum ranges (~1500km? e.g. SS-25 1000 km)
- RS-28 SS-X-30 Sarmat – New liquid heavy ICBM to replace SS-18 Satan. IOC ~ 2018-2020.
-- 10 heavy or 15 medium yield WH-May carry “high precision combat units in **conventional** outfit”
-- With a 9,000 kg throw-weight, (50% bus, 50% WH) Sarmat could carry up to ~Fifty 90kg WH w/75-100 kt yield (Bulava class WH) (50 missiles X 50 WH = 2500), **or 8-10 500 kg non-nuclear WH.**
-- Russia states Sarmat can “fly around the south pole” (FOBS re-born?)
- RS-XX – Reports of another new liquid ICBM (SS-19 FO?) to be designed by NPO Mashinostroyeniya and produced by Khrunichev (Angara, Proton, SS-19). IOC 2020?.

Recent/New SNF Modernization Initiatives That Contradict Intent to Comply With New START (con't)

SLBM's - Russia believes at least 12 SSBN are required—will have at least 16

- Delta IV SSBN's – All 6 refurbished circa 2010-2012 and armed w/ “upgraded” R 29RM Snieva SLBM's (Layner front ends w/ 10-12 RV's/missile?) This indicates that Delta IV's will **not** be retired as Borei SSBN's enter the force, but will be additive, adding 384 to 960 WH. Reportedly they will remain in service into the 2020's and if they limit deployments/depths, Delta's could have a hull life of ~ 40 years could take them to ~ 2030.
- Borei SSBN's w/ SS-N-32 Bulava SLBM (6 RV's) – 3 Project 955 w/16 tubes and 5 Project 955A's w/ 20 tubes(16?) to be constructed by 2020. Reports 10+ Borei's will be built (12 to meet SSBN criteria?). Reportedly the 5th Gen SSBN has been authorized to begin design, carry LACM also? Reports Borei's may also be armed w/long range LACM's (3000-5000 km-could carry 8-12?)
- NOTE: Oscar's, Sierra's and Akula's are being modernized w/20 more years operational life. Can carry large numbers (~1100) of long range (3000-5000 km) LACM – **Provides new options to attack CONUS and US global base infrastructure.**

Heavy Bombers

- Tu-95 Bears and Tu-160 Blackjacks are being modernized. Production of 50 (+) new Tu-160 Blackjacks authorized in addition to PAK DA bombers – IOC ~ 2021 (50 X 12 + 600 additional WH.) Production will not interfere w/PAK DA production.
- PAK DA- New stealth bomber IOC ~ 2023-2025 – Numbers unknown.
- Tu-22M Backfires – Not a heavy bomber, so not counted—30-60 Backfires to be modernized to Tu-22M3 standard. Can carry 4 Kh-101/102 (5000 km) or 6-8 Kh-SD. Carriage of Kh-102 would be a treaty violation. Has screw-in re-fueling probes and can be re-fueled in flight. 93 AF and 58 Navy Tu-22M are still in operation, plus ~ 90 in storage.

Russian Strategic Nuclear Force modernization/build-up has already exceeded New START WH limits >250 WH
Jan 2016 (Povdig) **4 new ICBM's, 2 new SLBM's and 2 new bomber's in less than 10 years – WHY?**

RUSSIA NEW PRODUCTION OF IC/SLBM'S AND LIFE EXTENSION OF EXISTING IC/SLBM'S WILL VIOLATE NEW START LIMITS

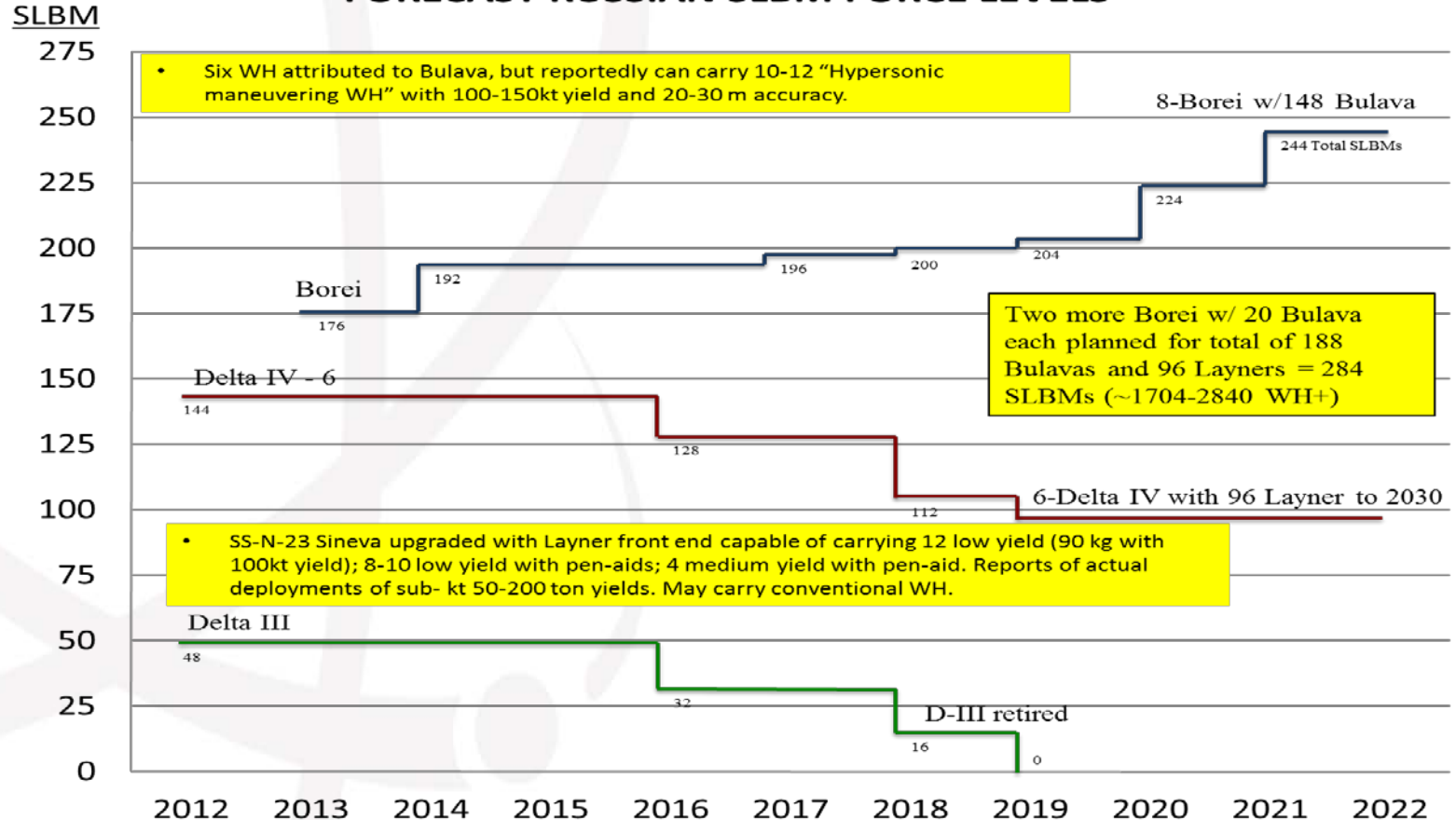
System	Attributed	2015			2022 (Full) (3)		2022 (START)	
		BAS (1)	SNDV (2)	WH	SNDV	WH	SNDV	WH
ICBM	WH							
SS-18 ICBM RS-20V	10	46	58	580				
RS-28 Sarmat	10	0	0		46	460	46	460
SS-19 (RS-18)	6	30	66	396	6 X 30	180	0	0
SS-25 (RS-12M)	1	99	145	145	0	0	0	0
SS-27 (Silo) (RS-12M2)	1	60	60	60	7 X 60	420	60	60
SS-27 (Mobile)	1	18	18	18	7 X 18	126	18	18
RS-24 Yars(Mobile)	4	54	45	180	7 X 108	756	108	432
RS-24 (Silo)	4	4	4	16	7 X 36	252	36	144
RS-24 Rail-Mobile	4	0	0	0	7 X 30	210	30	120
RS-26	4	0	0	0	7 X 38	266	38	152
Sub-totals		311	396	1395	366	2670	336	1386

1) Bulletin of Atomic Scientist
-Norris/Kristensen

2) Yasin/Karakayev

3) Full WH loading

FORECAST RUSSIAN SLBM FORCE LEVELS



Forecast Russian Bomber Force Levels

	Total Warheads		Comments
	Actual	START	
• Tu – 95 Bear			<ul style="list-style-type: none"> • All bombers can carry Kh-101/102, (3-5m accuracy), as well as a variety of other ordinance. <ul style="list-style-type: none"> - can be re-loaded • Tu-95 Bears being modernized and will stay in service until ~2040. 60 in storage. • Tu-160 Blackjacks being modernized • Note: Putin and Def Min Shoigu authorized production of “at least” another 50 Tu-160 M2 Bombers, IOC ~2021. Production will not delay PAK DA. (50x12=600WH)
- H-6 : 27 x 6 =	162 WH	27	
- H-16 : 28 x 16 =	448 WH	28	
• Tu-160 Blackjack			
- 16 x 12 =	192 WH	16	
Total =	802 WH	75	
• PAK DA – New stealth bomber – IOC ~ 2023-2025 – Production numbers unknown.			
• Tu-22M3 Backfire – Not accountable, but can cover the US. 93 AF; 58 Navy and ~90 in storage.			
• Transport aircraft (Speculative, but feasible):			
a. Can carry two IC/SLBMs with 10 RVs each (total 20 RVs), and counted as one SNDV under New START. Concept has been flight tested.			
b. Transport aircraft (passenger or cargo) can be rapidly modified (several months) to carry 20-40+ long range (3000-5000 km) ALCMs. Many launcher configurations are feasible. Force of 50-60 cruise missiles carrier (CMC) aircraft could be developed in less than 5 years (1000-2400 ALCMs).			
• Cruise missiles – can be equipped with multiple warheads (demonstrated)			

RUSSIAN SNF GRAND TOTALS: SNDV'S & WARHEADS

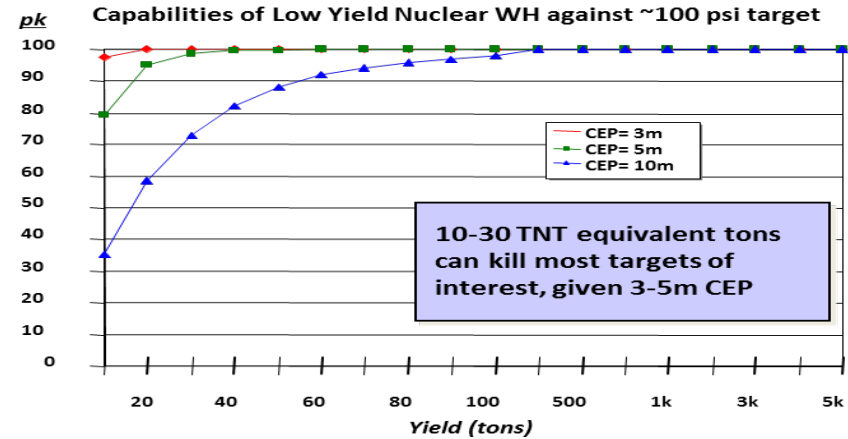
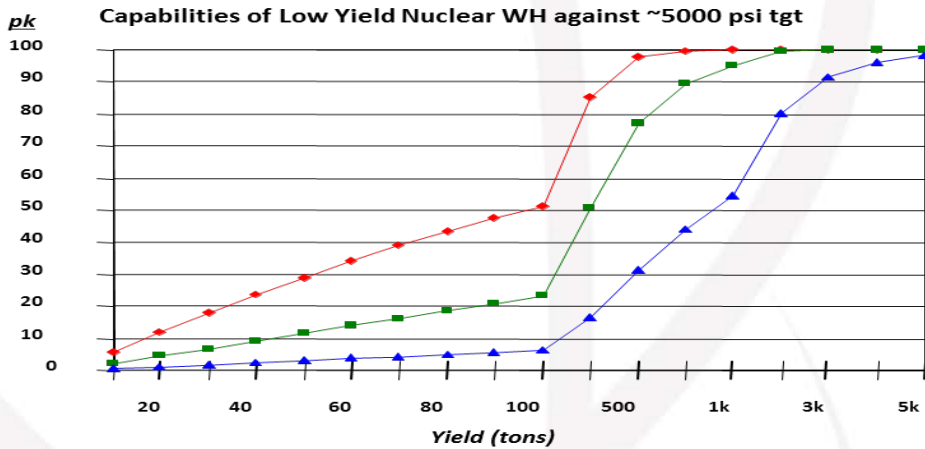
	<u>2015</u>		<u>2022 (Full upload)</u>		<u>2022 (START)</u>		
	SNDV	WH	SNDV	WH	SNDV	WH	
ICBM	396	1395	366	2670	336	1386	580 X 2=1160
SLBM	176	768	244	2440	244	1464	580 X 3=1740
Bomber	71	802	75	850	75	75	580 X 4=2320
Grand Total	643	2965	685	5960	655	2925	580 X 7=4060
							75 Bmr= 850

Given stated modernization/new production goals, Russia will exceed New START WH limitation unless WH attribution adjusted to very low levels, e.g. 2-3/SNDV

Russia will likely have a mix of high (1-4 WH), medium (4-7 WH), and low yield nuclear WH (7-10/12), integrated with cyber/space/defense/non-nuclear forces to cover all strategic policy/strategy/targeting options

How might extra warheads be used?

WHAT IF “EXCESS” RUSSIAN SNF WH USED FOR A DIFFERENT STRATEGIC TARGETING STRATEGY?



Nuclear burst of overpressure distance as a function of yield (m/km)

Overpressure (psi)

Yield	5	20	100	1000	5000
20 T	196	60	24	5	1
50 T	265	100	32	6	2
100 T	333	130	41	8	3
500 T	566	220	69	14	4
1 KT	711	280	81	17	6
10 KT	1.5 km	0.61 km	187	37	12
50 KT	2.6 km	1.04 km	318	63	21
100 KT	3.3 km	1.31 km	399	80	26
400 KT	5.1 km	2.08 km	631	126	41

- Precision, low yield WH have significant military/political utility
- Requires more warheads, but results in
 - Far fewer fatalities (<0.01%)
 - Far less collateral damage

Nuclear weapons, are once again an instrument of policy

- Political utility – deterrence and coercion
- Military utility – war fighting

SNF Weapons Could be Available for Conventional Application (Ex: Advanced; FAE; Kinetic; Conv EMP; Energetic?)

- Putin – Statement issued to a Kremlin gathering on “long-range high-precision weapons”--“High precision weapons are becoming increasingly important factor in **non-nuclear deterrence**...become **decisive in a global conflict**...alternative to nuclear weapons ... in their deterrent capacity...” 29 Nov 2013. Sept 2014 “...**non-nuclear use of strategic weapons being explored**...” Receive hypersonic weapons” ~2018?
- RVSN Cdr Karakaev “[Sarmat] would allow Russia to realize such opportunities as the creation of high precision strategic weapons with **non-nuclear warheads**”.
- If Russia completes planned IC/SLBM production and life extension’s, and fully uploads, Russia will have ~ **1300-3560 IC/SLBM** WH in excess of New START limits it could use for conventional applications.
 - Non-nuclear ballistic RV’s on IC/SL’s would count against treaty limits.
 - **Boost-glide vehicles are not counted.**
- Russia’s 2022 heavy bomber force can deliver ~ 850 weapons in one strike, and has re-load capability. Use of the Tu-22M3 Backfire could add substantially more WH.
 - Kh-101 & Kh-555 have 5,000 km range and 5-10 m accuracy
- Russian SSN/SSGN submarines can add another ~1100 long range (3000-5500 km) LACM providing new attack options against CONUS and US global base infrastructure.
- Def Min Borisov “Russia is capable of and will have to develop a similar [PGS] system”.

Is Russia’s intent to use “excess” WH for conventional applications?

...or is Russia Concerned About the Rising Chinese Nuclear Forces?



- Current consensus is that China has ~240-260 nuclear weapons
- Others estimate that China has 1800- >3000 weapons by 2020+
- China's SNF build-up inconsistent with a low number of warheads
-- MIRVing will rapidly increase forces

Capability of Russia to Produce 2022 Strategic Nuclear Forces

- Through 2020 R77B will be spent on the creation of series manufacturing processes, with R15B on facilities alone—half of this will go to Krasnoyarsk for modernization of production. **Krasnoyarsk** can produce **30 SLBM's/year**, and is being modernized and readied for the **serial production** of the Sarmat
 - **Votinsk** production facility has received a \$500M modernization -- Can now produce **40-50 IC/SLBM's/year**
 - 4 Borei SSBN (4th thru 7th) and 2 Yasen SSN currently under construction (2015)
- Deployment of the Bulava, Layner, RS-24, flight testing of two new ICBMs (Sarmat & RS-26), and start of SS-19 class liquid ICBM indicate many of the **past production problems have been solved**
- Reduced investments in the R&D sector in the last 15-20 years will have a impact on technology levels which can be achieved—but for the current production and planned systems, there is **no technology limitation** (BGV/HCV?)
- Funding: Russia is allocating \$730 B for the State Defense Program 2011-2020 to re-arm the Russian Forces, with 10 % (~\$70B) going to SNF. However, oil revenues providing most of the funding have plummeted. But the defense budget is only ~ 3.7% of GDP in 2015, 3.7 2016 and 3.6 2017 so there is **room to maintain funding** level (Which Russia is) –or even grow
 - SNF has 1st priority and strategic defense 2nd priority
 - SNF modernization will continue as planned, and can be afforded, even w/low oil prices
 - Russian economy is resilient to western sanctions

It appears that Russia may be able to achieve the stated SNF modernization goals, given the high priority SNF has been given

Conclusions

- GEN Breedlove, NATO Commander – 2 Nov 2015
 - “I don’t think anyone understands what Putin is about”
 - “We watch the capabilities and capacities he builds, and from those capabilities and capacities we can deduce what he might want to do”
- If we use GEN Breedlove’s criteria, then:
 - 1) Russia has given its Strategic Nuclear Forces 1st priority and has deployed nuclear forces which **have political/military utility** and are the **center of their strategy**. Russia could use these forces to:
 - a. Provide escalation dominance protection over its conventional forces,
 - b. Threaten and coerce US/Allies and other adversaries—gravely weakens US extended deterrent
 - c. Maintain escalation dominance along the nuclear conflict spectrum
 - d. Retain their super power status and place in the world
 - 2) Russia has a **comparative advantage** in useable nuclear force capacity and capabilities, and seeks to increase advantage – more **cost-effective**, and **quicker to deploy** than conventional forces.
 - 3) Russia will continue to build-up their nuclear forces under cover of both INF and New START, are likely to exceed the new START central limits in Feb 2018 (2015-already have), and likely leave it to the US not to renew the treaty in Feb 2021, or for the US to withdraw earlier, and maximize their build-up time while using the treaties to delay/constrain US responses.
- **Key uncertainties**—Use of SNF boosters for conventional applications and nuclear doctrine and strategy for force employment

Russian actions indicate New START will not survive—unless excess WH are BGV’s