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Abstract

- This research highlights the importance of reducing sea-based nuclear weapons for the overall success of global nuclear disarmament. Different from traditional perceptions, sea-based nuclear weapons are not necessarily the most survivable or the least destabilizing types of nuclear weapons. Current global nuclear disarmament efforts can be more effective if the international community pays more attention to the reduction and disarmament of sea-based nuclear weapons.
- For countries that are developing and are considering developing sea-based nuclear weapons other than submarine launched ballistic missiles (SLBM), this research analyzes why such development and deployment programs undermine one's own security interests and therefore should be abandoned.
- For countries that already possess nuclear ballistic missile submarines (SSBN) and SLBMs, this research points to a number of measures that countries can take to reduce the number of such weapon systems and associated warheads without undermining existing deterrent capability.

Why Cutting Sea-Based Nuclear Weapons Deserves More Attention

- Sea-based nuclear weapons considerably increase the chances of direct interaction between two or multiple countries' nuclear weapon systems. As usually deployed outside of one's own territory or territorial waters, sea-based nuclear weapons are sent out on patrols in international waters even during peacetime and raise the chances of accidental encounters and hostile interactions between different nuclear weapons states.
 - Due to the nature of such weapons and their operational requirement, some sea-based nuclear weapons significantly blur the line between nuclear weapons and conventional weapons and are easy to cause military tensions at the conventional level which could then lead to nuclear escalations.
- Case study: U.S.-USSR

Delta and Typhoon SSBN Patrol Areas Late-1980s, Early-1990s



- Case study: China – U.S.



Why There Is Room for Reduction

- Many development programs are technology/prestige driven
 - Case study: India
 - Case study: China
 - Case study: Pakistan
- Current capabilities/numbers are more than necessary for maintaining a credible deterrent

US SSBN Operational Changes 1999, 2012

Category	1999	2012	Change
SSBNs Total	18	14	-4 (-22%)
SSBNs Operational	16	12	-4 (-22%)
Patrols	64	28	-36 (-56%)
Patrols per SSBN	4.1	2.6	-1.5 (-37%)
At-Sea Rate*	11.2	8.2	-3 (-27%)

* The at-sea rate is defined as the average number of submarines deployed at sea any given time. An additional two boats are in dry dock for refueling overhaul.

Problems with Previous Arms Control Measures

- Strategic Arms Limitation Talks (SALT) II Agreement
- Reciprocal unilateral measures under Presidential Nuclear Initiatives
- Unilateral moves under Clinton administration
- Unilateral moves under George W. Bush administration
- Very limited scope, did not cover most destabilizing weapon systems:
 - SALT II Agreement: The protocol banned deployment, but not testing, of cruise missiles capable of ranges in excess of 600 kilometers on ground- and sea-based launchers.
 - No limitation on deployment after agreement expiration.
 - No limitation on nuclear armed sea launched cruise missiles (SLCM).
- Confidence-building measures not sustained
 - Transparency measures regarding nuclear armed SLCM stopped after Strategic Arms Reduction Treaty (START) expired in 2009.

To Further Reduce the Numbers

- SSBN
 - Modernization decisions to be made
 - U.S., U.K.,
 - China, India
- SLBM
 - U.S.: 24 → 20 → 16
 - U.K.: 16 → 12 → 8
 - China: 12 → 24?
- Choose the optimal operation strategy
 - Reassess the threat of surprise first strike and the need to maintain x number of SSBN at sea
- Maintain a hedge capability rather than a full-blown capability
 - Maintain a capable infrastructure and make the best use of existing submarines to train reserve crews.

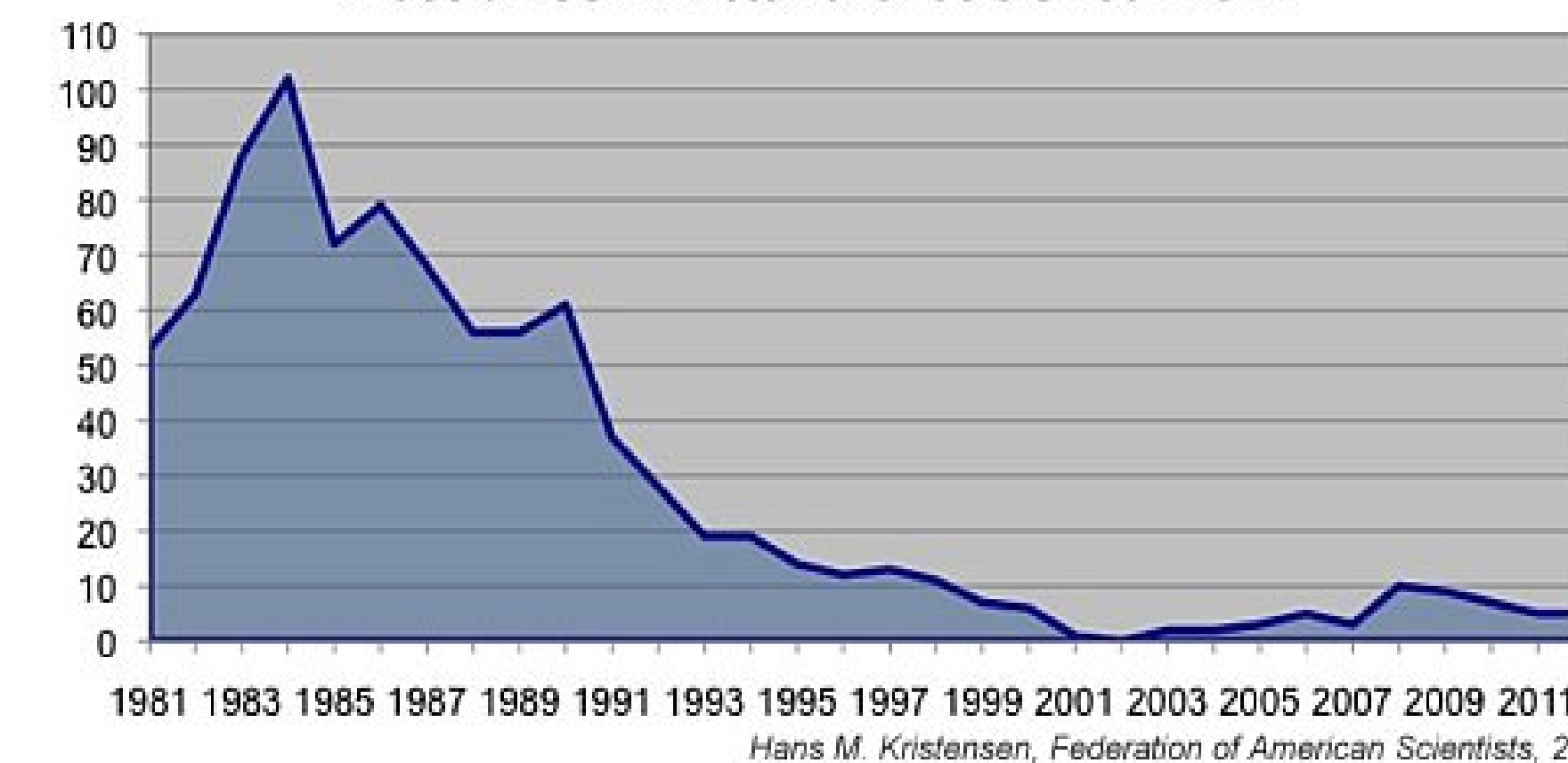
To Move to Less Platforms

- Prohibition of surface ship based nuclear ballistic missiles
 - India: Dhanush short range ballistic missile (350km) on conventional surface ships?
 - Pakistan
 - Naval Strategic Force Command in 2012
 - Declared intent to develop sea-based deterrent
 - Nuclear missiles on surface ships?
- Cutting dual-use systems: nuclear armed cruise missiles (submarine- and surface ship-based)
 - Strategic ambiguity; risk of inadvertent escalation
 - Russia, France, China (existing and possible planned systems)
 - India: Arihant reported to carry SLCM as well
 - Pakistan: Nuclear cruise missile (naval version of Babur) on conventional submarine

To Reduce the Role

- Optimal operational tempo
 - Reduce strategic patrols to the lowest level necessary to maintain deterrent
 - Crew training and proficiency maintenance

Russian SSBN Deterrent Patrols 1981-2012



- Reduce alert levels at peacetime
 - Explore options of not (or selective) mounting SLBMs or warheads onto SSBNs during routine patrols
- Escalation risks resulted from re-alerting during crisis can be mitigated
 - Avoid only using outdoor SSBN docking facilities, but use underwater entrances/exits to SSBN pens/docking facilities.
 - SSBN leaving port during crisis won't be easily detected.



To Reduce Offensive Capabilities

- Avoid offensive strategies
 - Rethink the need for developing and deploying strategic anti-submarine warfare (ASW) capability
 - Aggressive strategic ASW increases "use or lose" dilemma
- Think strategically about developing and deploying advanced unmanned underwater vehicles (UUV) for strategic ASW purposes
 - Potential for radically shifting existing offense-defense balance underwater



How Current Dialogues Need to Be Adjusted

- Radical arms control measures difficult to succeed
 - ASW free zones
- Clarifying intentions at official level
- Naval engagement at operational level
- Unilateral restraint and transparency
 - Continuous at sea deterrent?
 - "Out of the blue" first strike threat evaluation
 - Armed patrols and warhead integration?
 - Keeping low alert level
 - Numerical reductions
 - Infrastructure maintenance and crew reserve

References

- Iskander Rehman, "Drowning Stability: The Perils of Naval Nuclearization and Brinkmanship in the Indian Ocean," Naval War College Review 65, no. 4 (2012): 64–88.
- Hans M. Kristensen, "Russian SSBN Fleet: Modernizing But Not Sailing Much," Federation of American Scientists, May 3, 2013.
- Hans M. Kristensen, "Declining Deterrent Patrols Indicate Too Many SSBNs," Federation of American Scientists, April 30, 2013.
- "China's Nuclear Missile Submarine Base," Nuclear Brief, February 16, 2006.
- Peter Coates, "Submarine Matters," January 28, 2014.
- "Drones the future of warfare – You can neither run nor hide," Geo-politics/Global governance: Asia pacific on the chess board, February 3, 2014.