



Promoting Cooperative Solutions for Space Sustainability

Emerging Challenges to Space Stability and U.S. Responses

Victoria Samson

Washington Office Director, Secure World Foundation

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Note: This briefing is compiled entirely from public, unclassified sources

SWF's Counterspace Threat Assessment

- Space domain undergoing significant changes
- Existence of counterspace capabilities is not new, but the circumstances surrounding them are
- Discussions of space capabilities often veer quickly into classified territory
- SWF's Global Counterspace Capabilities: An Open Source Assessment
 - Significant research and development of a broad range of kinetic (i.e. destructive) and non-kinetic counterspace capabilities in multiple countries: direct ascent, co-orbital, electronic warfare, directed energy, cyber
 - US, Russia, China, Iran, North Korea, India
 - ***Only non-kinetic capabilities are actively being used in current military operations***
- <https://swfound.org/counterspace>



Resurgent Russian counterspace capabilities

- Once a space superpower, Russia appears to be recapitalizing some of its Cold War-era counterspace capabilities
 - Multiple flight tests of “Nudol” BMD/ASAT missile
 - Multiple tech demos of on-orbit rendezvous and proximity operations (RPO), which have links to Naryad-V co-orbital ASAT program
 - Tests of the tracking component of air-launched ASAT missile (Kontakt)
 - Test of an airborne laser dazzler (Sokol Eshelon, aka A-60) against satellite, possible new ABL platform
- Also indications of operational electronic warfare/cyber capabilities
 - Multiple reports of GPS and mobile communications jamming in eastern Ukraine impacting UAV ops
 - Some additional reports coming from Syria



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Rising Chinese space capabilities

- China is on a path to develop a “full spectrum” of space capabilities over next two decades
 - National prestige (human spaceflight, exploration)
 - Support to military ops on Earth (PNT, ISR, satcom)
 - Economic development/industrial base
 - Counterspace/missile defense, RPO activities
- China has been more forceful in asserting its regional power, but has (so far) refrained from outright military aggression

Date of Test	Target Object	Interceptor Object	Interceptor Type	Amount of Trackable Debris Created	Notes
7/5/2005	None known	SC-19	direct ascent	0	Likely rocket test
2/6/2006	None known	SC-19	direct ascent	0	Likely flyby of an unknown orbital target
1/11/2007	FengYun 1C	SC-19	direct ascent	3,280	Successful intercept and destruction of an orbital target
1/11/2010	CSS-X-11 (ballistic)	SC-19	direct ascent	0	Successful intercept and destruction of a suborbital target
1/27/2013	Unknown (ballistic)	SC-19	direct ascent	0	Successful intercept and destruction of a suborbital target
5/13/2013	None known	DN-2	direct ascent	0	Likely rocket test of a new system capable of reaching GEO
7/23/2014	None known	SC-19	direct ascent	0	Non-destructive test
10/30/2015	None known	Possible upgraded SC-19	direct ascent	0	Non-destructive test
Total Amount of Trackable Debris				3,280	

Source: [“ASAT testing in space: The Case of China”](#),
SWF Fact Sheet

Demonstrated U.S. Counterspace Capabilities

- Conducted multiple tests of technologies for close approach and rendezvous in both LEO and GEO, along with tracking, targeting, and hit-to-kill intercept technologies that could lead to a co-orbital ASAT capability
 - No acknowledged program to develop co-orbital weapon system
 - Discussion among policymakers on developing new offensive counterspace capabilities that could lead to a capability in the near future
- Demonstrated a basic direct-ascent ASAT capability
 - No active programs specifically to develop this sort of weapon system
 - Interest expressed by US officials in initial R&D for a space-based interceptor
- Stand up Space Command, interest in creating Space Force

New Entrant: Indian ASAT Capabilities

- Historically, Indian space program focused on civil applications
- Changes in recent years have given its military a larger role
 - Concerns about being “grandfathered in” as a space weapons state
- March 27, 2019: PM Modi announced Indian ASAT test
 - Since then, established a Defence Space Agency and Defence Space Research Organisation
- Growing SSA capabilities



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Very Limited Iranian Space Program

- Space program in early stages
- Unlikely to have the capacity to build on-orbit or direct-ascent ASAT weapons
- Minimal SSA capabilities
- Demonstrated ability to interfere with commercial satellite signals

Extremely Limited DPRK Counterspace Capabilities

- May have some limited direct-ascent ASAT capability, but not threatening yet
- Minimal space launch vehicle and satellite capabilities
- Counterspace not mentioned by DPRK officials
- C2, SSA capabilities minimal
- Multiple public reports of GPS interference and jamming
- EMP unlikely

- France
 - July 2019, PM Macron announced the creation of a space command within the French air force
 - Also announced creation of anti-satellite laser weapons
 - Came after remarks in 2018 by French officials about close approaches to French satellites
 - Part of EU Space Surveillance Tracking system
- Japan
 - Changing role of how space is viewed in Japan
 - Interest in developing satellite interceptor by mid-2020's
 - Increased discussions of resiliency of Japanese satellites
 - MoD start SSA program in 2023

Cyber as a Counterspace Option

- Space capabilities become an attractive target for counterspace efforts
 - Kinetic attacks less likely option
 - Electronic warfare/cyber attack seen as more usable
- Destabilizing because laws of armed conflict for space are unclear
 - International law and military rules of engagement still being worked out
 - Manual on International Law Applicable to Military Uses of Space (MILAMOS) and Woomera Manual being developed

Other Disruptions to the Space Domain

- The Air Force maintains a catalog of about 24,000 objects 10 cm or greater
 - When the Space Fence comes on-line later this year, that number is expected to go to 100,000
- Active satellites: 2062, as of March 2019
 - Megaconstellations, which started launching this year, could add 50,000 *more* satellites
- New actors in orbit
- New uses of space and concerns about space resource usage
- Who's in charge?

Bilateral Efforts and U.S. Priorities

- National Space Policy of 2010 still official U.S. space policy
 - Emphasis on international cooperation and cooperative initiatives
 - Willingness to consider arms control measures for space activities
- Trump administration
 - SPD 1: Reinvigorating America's Human Space Exploration Program
 - SPD-2: Streamlining Regulations on Commercial Use of Space
 - SPD-3: National Space Traffic Management Policy
 - SPD-4: Establishment of the United States Space Force
- USG officials talk of space being a war-fighting domain
- SSA sharing agreements: 20 countries, 2 IGOs, over 80 commercial partners

Table 2. Selected Proposed Space Provisions

	Administration's Space Force Proposal	H.R. 2500 (House-Authorized)	S. 1790 (Senate-Authorized)
Organization within Air Force	U.S. Space Force	U.S. Space Corps	U.S. Space Force
Military Leadership (4 star General)	Chief of Staff	Commandant	Commander
Civilian Leadership (appointee)	Under Secretary of the Air Force for Space	No civilian position	Asst. Secretary of Defense (ASD) for Space Policy
Timeline	Headquarters Initial stand-up FY2020	Transition period of January 1, 2021 through December 30, 2023	Report to Congress on structure and cost due by January 2021
New Military/Civilian Positions	Creates and adds both military and civil service positions	Transfers existing positions and does not create new ones	Transfers existing positions and does not create new ones
Navy & Army Space Units	Included	Requires DOD to submit report to Congress	Not included
USSPACECOM	Included	Included	Included
Space Development Agency	Not included	Included	Included

Source: H.R. 2500 (passed House July 12, 2019), S. 1790 (passed Senate June 27, 2019), and Administration's Space Proposal.

CRS report: *Military Space Reform: FY 2020 NDAA Legislative Proposals*, by Stephen McCall, Oct. 2, 2019

- Existed 1985-2002
- Congress passed legislation reestablishing Space Command in FY19, and it was officially stood up Aug. 2019
- 11th unified combat command – geographic one, with AOR of 100 km and above
- Per Space Command head AF Gen. John Raymond, its mission is the 4 D's: **d**eterrence, **d**efend, **d**eliver warfighting capabilities globally, and **d**evelop warfighting cadre
- Space Force will train and equip war fighters; Space Command will focus on warfighting and identifying threats to U.S. space assets



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Questions?

Thanks.

vsamson@swfound.org

@Vsamson_DC

1.202.568.6213