Coalition for
National Security Research

April 22, 2018

The Honorable Richard Shelby
Chairman, Subcommittee on Defense
Committee on Appropriations
United States Senate
Washington, DC 20510

The Honorable Kay Granger
Chairwoman, Subcommittee on Defense
Committee on Appropriations
House of Representatives
Washington, DC 20515

The Honorable Richard Durbin
Ranking Member, Subcommittee on Defense
Committee on Appropriations
United States Senate
Washington, DC 20510

The Honorable Pete Visclosky
Ranking Member, Subcommittee on Defense
Committee on Appropriations
House of Representatives
Washington, DC 20515

Dear Chairman Shelby, Chairwoman Granger, and Ranking Members Durbin and Visclosky,

On behalf of the Coalition for National Security Research (CNSR), a broad-based alliance of industry, academia, scientific and professional associations, and nonprofits committed to a strong Defense science and technology (S&T) enterprise, I would like to thank you for your support of the Defense S&T program in the Consolidated Appropriations Act, 2018. The additional resources for defense basic research programs such as University Research Initiatives and applied research programs such as the Defense-Wide Manufacturing S&T program will support innovative scientific research to help the U.S. military maintain technical superiority now and in the future.

As you begin crafting the fiscal year (FY) 2019 Defense Appropriations Bill, enclosed please find CNSR's recommendations for funding levels for the Defense S&T program, and select Research, Development, Test and Evaluation (RDT&E) program elements (PEs) of importance to coalition members. In general, CNSR members perform scientific research sponsored by the U.S. Department of Defense (DOD) to help create new weapon systems, defensive capabilities, and technologies that protect the warfighter and heal the wounded. Additionally, RDT&E funding, including Defense S&T program funding, provides important investments in future military scientific workforce development and helps sustains the research base of participants from the academic community. CNSR members conducted more than $5.2 billion in DOD-sponsored scientific research in FY 2016.

Our FY 2019 funding recommendations stem from *Innovation: An American Imperative* (Innovation Imperative), a statement signed by the CEOs of Northrop Grumman, Lockheed Martin, Boeing, and Microsoft, and endorsed by over 500 other leading organizations from industry, academia, and science and engineering. Specifically, the Innovation Imperative urges Congress to provide steady and sustained growth in funding of at least four percent for basic scientific research at numerous federal agencies, including DOD. We believe the Innovation Imperative is consistent with the National Defense Strategy's objective of establishing an unmatched twenty-first century national security innovation base. Defense S&T including basic

research enables the discovery of new military capabilities utilized by the national security innovation base to provide unmatched technological superiority for the military.

Basic Research PE Recommendations

The defense basic research programs serve as the seed corn that has given rise to many of the military technologies deployed on the battlefield today. As a result of investments in defense basic research, our military has utilized night vision, stealth technology, near-real-time delivery of battlefield information, navigation systems, and precision munitions. CNSR members have conducted basic research that helped create military drones, nanotechnology, portable detection systems for improvised explosive devices (IEDs), spurred numerous innovations in semiconductors, and dramatically improved telecommunications systems.

We remain particularly concerned about the Multidisciplinary University Research Initiative (MURI) program. Since FY 2014, the program has only been able to support slightly over 23 projects on an annual basis. Each year, there are roughly between 50 and 60 proposals that go unfunded. Many of the technologies mentioned above were supported by MURI funding. Underfunding this program could result in the military technologies of tomorrow being discovered by other nations willing to invest in fundamental scientific research. ***As a result, we respectfully request that you increase each Services University Research Initiatives PE and require that the additional dollars be used to support the MURI program***. We request that these increases not come at the expense of the other initiatives funded under this program element. We encourage you to direct DOD to maintain and grow funding for the MURI program in the Future Years Defense Program (FYDP).

Furthermore, we would like to highlight CNSR's strong support for the Defense University Research Instrumentation Program (DURIP), each Service's Young Investigator Programs (YIP), Vannevar Bush Faculty (VBF) Fellowships, Minerva Research Initiative, and National Defense Science & Engineering Graduate (NDSEG) Fellowships. Each of these programs plays a role in supporting the DOD innovation ecosystem.

Finally, CNSR has a variety of concerns related to the FY 2019 budget request for the Basic Research Initiatives PE (DW 601110D8Z) and National Defense Education Program PE (DW 601120D8Z). It appears in FY 2019 that DOD did not request resources to support the Proof of Concept Commercialization Pilot Program Innovation Corps @ Department of Defense (I Corps @ DoD) and the Defense Enterprise Scientific Initiative (DESI), which are funded under the Basic Research Initiatives PE, and the Manufacturing Engineering Education Program (MEEP), which is funded within the National Defense Education Program PE. Both the I Corps @ DoD and DESI initiatives are innovative approaches by DOD to help speed the transition from research to new military capability either through commercialization activities or university-industry collaborations. Moreover, the purpose of the MEEP is to provide support to better position the current and next-generation manufacturing workforce to produce military systems and components that assure technological superiority for DOD. The ability of the national security innovation base to support DOD will largely depend on the quality of the workforce. MEEP seeks to ensure that we have the highest quality workforce. ***We urge Congress to continue to support the I Corps @ DoD, DESI and MEEP initiatives.***

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Applied Research PE Recommendations

Fundamental scientific research is just the first step to creating new military technologies. Researchers and scientists must apply the fundamental knowledge learned through basic research in order to solve military problems and develop the systems and components for potential solutions. The private sector is unable to solely assume the risk of applying fundamental knowledge to field the military technologies of tomorrow.

An example of a successful applied research program is the Defense-Wide Manufacturing Science and Technology Program, which provides resources for DOD's contribution to the Manufacturing USA Network. The public-private partnership established through the Network is helping move discoveries in the nation's universities and research laboratories to the defense industrial base, and focusing resources on developing the skilled workforce required to support a revitalized and modern U.S. manufacturing sector. Manufacturing USA is enabling innovation throughout the defense manufacturing industry, ensuring that the U.S. is able to domestically manufacture the world's most respected and capable weapons systems, such as the F-35 fighter jet, the M1-A2 tank, and the Ohio Class submarine, while also securing our economic prosperity. Furthermore, the Network acts as a catalyst to spur private investment in our national security technology. In fact, every federal dollar invested in the Manufacturing USA Network so far has spurred $2.05 of private sector investment into technologies to further our national security.

Finally, the 2018 National Defense Strategy says, "We cannot expect success fighting tomorrow's conflicts with yesterday's weapons or equipment." CNSR wholeheartedly agrees. It is absolutely critical that Congress support the enclosed program elements within the Defense S&T program and basic research programs that provide the resources to maintain our technical superiority over our adversaries. In addition to supporting robust funding for DOD's science and engineering enterprise, we plan to work with you to urge the Department's leadership to sustain increased funding levels for these activities in future years, ensuring the longevity of a science and technology pipeline that will meet the goals of the National Defense Strategy and guard against evolving threats.

We thank you for your commitment to American security and prosperity. Please do not hesitate to contact us cnsr.dodresearch@gmail.com if we can be of any service to you.

Sincerely,

John Latini
Chairman
Coalition for National Security Research (CNSR)

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Coalition for National Security Research (CNSR) FY 2019 PE Recommendations

Line	PE Number	Agency/Account	Program Element (PE) *($ in Thousands)*	FY18 Enacted	FY19 PBR	FY19 CNSR Request (v02)
			DOD RDT&E	***$88,308,133***	***$90,616,098***	***N/A***
			DOD 6.1 Basic Research	***$2,343,154***	***$2,269,206***	***$2,436,880***
			DOD 6.2 Applied Research	***$5,681,752***	***$5,100,359***	***$5,909,022***
			DOD 6.3 Advanced Technology Development	***$6,838,098***	***$6,292,102***	***$7,111,622***
			DOD Science & Technology (S&T)	***$14,863,004***	***$13,661,667***	***$15,457,524***
Army Basic Research Program Elements						
2	601102A	Army RDT&E	Defense Research Sciences	$273,590	$276,912	$287,988
3	601103A	Army RDT&E	University Research Initiatives	$77,027	$65,283	$80,108
4	601104A	Army RDT&E	University and Industry Research Centers	$107,395	$92,115	$111,691
			Army 6.1 Basic Research	***$470,022***	***$445,895***	***N/A***
Army Applied Research Program Elements						
5	602105A	Army RDT&E	Materials Technology	$81,640	$28,600	General Support
6	602120A	Army RDT&E	Sensors and Electronic Survivability	$81,230	$32,366	General Support
11	602307A	Army RDT&E	Advanced Weapons Technology	$37,785	$29,502	General Support
12	602308A	Army RDT&E	Advanced Concepts and Simulation	$28,650	$28,500	General Support
21	602716A	Army RDT&E	Human Factors Engineering Technology	$24,127	$24,131	General Support
24	602783A	Army RDT&E	Computer and Software Technology	$14,041	$14,958	General Support
45	603461A	Army RDT&E	High Performance Computing Modernization	$221,331	$183,322	General Support
			Army 6.2 Applied Research	***$1,369,382***	***$919,609***	***N/A***
			Army 6.3 Advanced Technology Development	***$1,478,677***	***$1,026,698***	***N/A***
			Army Science & Technology (S&T)	***$3,318,081***	***$2,392,202***	***N/A***
Navy Basic Research Program Elements						
1	601103N	Navy RDT&E	University Research Initiatives	$144,130	$119,433	$149,895
3	601153N	Navy RDT&E	Defense Research Sciences	$458,333	$458,708	$477,056
			Navy 6.1 Basic Research	***$621,901***	***$597,378***	***N/A***
Navy Applied Research Program Elements						
6	602131M	Navy RDT&E	Marine Corps Land Force Technology	$55,936	$59,607	General Support
7	602235N	Navy RDT&E	Common Picture Applied Research	$36,450	$36,348	General Support
8	602236	Navy RDT&E	Warfighter Sustainment Applied Research	$48,649	$56,197	General Support
9	602271N	Navy RDT&E	Electromagnetic Systems Applied Research	$85,598	$83,800	General Support
10	602435N	Navy RDT&E	Ocean Warfighting Environmental Applied Research	$74,911	$42,998	General Support
13	602750N	Navy RDT&E	Future Naval Capabilities Applied Research	$149,836	$147,771	General Support
24	603680N	Navy RDT&E	Manufacturing Technology Program	$67,797	$58,657	General Support
87	0604536N	Navy RDT&E	Advanced Undersea Prototyping	$66,543	$87,669	General Support
			Navy 6.2 Applied Research	***$994,110***	***$891,471***	***N/A***
			Navy 6.3 Advanced Technology Development	***$816,707***	***$750,995***	***N/A***
			Navy Science & Technology (S&T)	***$2,432,718***	***$2,239,844***	***N/A***
Air Force Basic Research Program Elements						
1	601102F	Air Force RDT&E	Defense Research Sciences	$342,919	$348,322	$362,255
2	601103F	Air Force RDT&E	University Research Initiatives	$162,923	$154,991	$169,440
3	601108F	Air Force RDT&E	High Energy Laser Research Initiatives	$14,417	$14,506	$15,086
			Air Force 6.1 Basic Research	***$520,259***	***$517,819***	***N/A***
Air Force Applied Research Program Elements						
4	602102F	Air Force RDT&E	Materials	$149,264	$125,373	General Support
6	602202F	Air Force RDT&E	Human Effectiveness Applied Research	$133,284	$112,518	General Support
8	602204F	Air Force RDT&E	Aerospace Sensors	$159,282	$166,534	General Support
12	602605F	Air Force RDT&E	Directed Energy Technology	$132,993	$141,898	General Support
13	602788F	Air Force RDT&E	Dominant Information Sciences and Methods	$194,318	$162,420	General Support
14	602890F	Air Force RDT&E	High Energy Laser Research	$43,049	$43,359	General Support
			Air Force 6.2 Applied Research	***$1,434,714***	***$1,312,342***	***N/A***
			Air Force 6.3 Advanced Technology Development	***$869,117***	***$814,797***	***N/A***
			Air Force Science & Technology (S&T)	***$2,824,090***	***$2,644,958***	***N/A***
Defense-Wide Basic Research Program Elements						
1	6010000BR	Defense-Wide RDT&E	DTRA Basic Research Initiatives	$37,201	$37,023	$38,689
3	601110D8Z	Defense-Wide RDT&E	Basic Research Initiatives	$40,612	$42,702	$44,410
5	601120D8Z	Defense-Wide RDT&E	National Defense Education Program	$103,298	$85,919	$107,430
			Defense-Wide 6.1 Basic Research	***$730,972***	***$708,114***	***N/A***
Defense-Wide Applied Research Program Elements						
16	602668D8Z	Defense-Wide RDT&E	Cyber Security Research	$14,775	$14,969	General Support
48	603680D8z	Defense-Wide RDT&E	Defense-Wide Manufacturing S&T Program	$186,159	$114,637	$193,605
64	603833D8Z	Defense-Wide RDT&E	Engineering Science and Technology	$25,395	$19,415	General Support
			Defense-Wide 6.2 Applied Research	***$1,883,546***	***$1,976,937***	***N/A***
			Defense-Wide 6.3 Advanced Technology Development	***$3,673,597***	***$3,699,612***	***N/A***
			Defense-Wide Science & Technology (S&T)	***$6,288,115***	***$6,384,663***	***N/A***
DARPA Program Elements						
		Defense-Wide DARPA	***DARPA Total***	***$3,071,586***	***$3,438,766***	***pport Request***
Medical Research Program Elements						
28	602787A	Army RDT&E	Medical Technology	$89,434	$90,075	General Support
30	603002A	Army RDT&E	Medical Advanced Technology	$106,780	$62,496	General Support
67	603807A	Army RDT&E	Medical Systems Advanced Development	$33,491	$34,284	General Support
		DHP RDT&E	Research, Development, Test and Evaluation Research	$9,796	N/A	N/A
		DHP RDT&E	Exploratory Development	$64,881	N/A	N/A
		DHP RDT&E	Undistributed Medical Research/Peer-Reviewed/CDMRPs	$1,386,100	$0	$1,441,544

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