

October 18, 2017

The Honorable Mac Thornberry  
Chairman  
Committee on Armed Services  
U.S. House of Representatives  
Washington, DC 20515

The Honorable John McCain  
Chairman  
Committee on Armed Services  
U.S. Senate  
Washington, DC 20510

The Honorable Adam Smith  
Ranking Member  
Committee on Armed Services  
U.S. House of Representatives  
Washington, DC 20515

The Honorable Jack Reed  
Ranking Member  
Committee on Armed Services  
U.S. Senate  
Washington, DC 20510

Dear Chairmen Thornberry and McCain, and Ranking Members Smith and Reed,

On behalf of the Coalition for National Security Research (CNSR), a broad-based coalition of research universities and institutes, scientific and professional associations, and non-profits conducting nearly \$5 billion in scientific research annually for the U.S. Department of Defense (DOD), I write to commend you for your leadership in passing the fiscal year (FY) 2018 National Defense Authorization Act (NDAA) (H.R. 2810 and S. 1519) through your respective chambers. CNSR appreciates the support provided for the defense scientific research enterprise in both pieces of legislation. As negotiations begin to reconcile differences between the two bills, please find below CNSR's recommendations for further strengthening the defense scientific research enterprise in the FY18 NDAA Conference Agreement.

### **Defense Science & Technology (S&T) Funding Authorization Recommendations**

The Defense S&T program serves as the seed corn that gives rise to new weapon systems, defensive capabilities, and technologies to protect and heal the warfighter. Stealth technology, night vision, navigation tools, weather satellites and precision munitions have led to paradigm shifts in the U.S. military's technical capabilities, and all can trace their roots to the Defense S&T program. Currently, the Defense S&T program is supporting scientific research to develop the game-changing military technologies of tomorrow in, among other areas, quantum computation and communications, bio-inspired low-energy information processing, photonics materials, additive 3D self-assembly materials, advancing autonomous systems, and high-energy, solid-state lasers capable of stopping enemy attacks at the speed of light. If the United States is to maintain its technical superiority over current and future adversaries, we must adequately fund the Defense S&T program.

Unfortunately, the Budget Control Act discretionary funding caps severely restrict the ability to fund the Defense S&T program at expert-recommend levels. The Defense Science Board, Council on Competitiveness, National Academies of Sciences, Engineering, and Medicine, and American Academy of Arts & Sciences have all recommended funding levels for the Defense S&T program and Defense basic research well above the levels in H.R. 2810 and S. 1519. Again, we understand the committees are constrained by the Budget Control Act caps but we urge the

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committees to consider the needs of the warfighter in 2020 and 2040. Our soldiers, sailors, airmen and Marines are likely to require technologies, tactics and practices that are either not known today or at the very early stages of development. The way to maintain our technological superiority and enable the discoveries that will give rise to the military capabilities and technologies of tomorrow is to provide robust funding for the Defense S&T program.

Please find enclosed CNSR's recommendations for its priority Defense S&T program elements (PE). Additionally, S. 1519 contains numerous authorization increases in the Research, Development, Test, and Evaluation (RDT&E) funding tables that CNSR strongly supports. Below, please find summaries of those increases that CNSR respectfully requests be included in the conference agreement. We respectfully request the conference committee consider the enclosed and below recommendations as the minimum level of resources to invest in the Defense S&T Program given current budget constraints.

*National Defense Education Program (NDEP) (PE 0601120D8Z)*

CNSR supports the Senate position for this PE. The NDEP provides funding for various initiatives to help attract and develop the next generation science and engineering workforce. We specifically urge the conferees support the Senate bill that includes authorizing funding for the Manufacturing Engineering Education Program (MEEP). According to the [\*Manufacturing Institute\*](#), 80 percent of manufacturers report a moderate or serious shortage of qualified applicants for skilled and highly-skilled production positions. A shortage of this magnitude can have drastic negative impacts on the defense industrial base. MEEP authorizes funding to tailor educational and training curriculum to meet the needs of the industrial base to ensure we not only have an adequate workforce but that we do not need to rely on foreign nations for the manufacturing of defense-related products.

*Defense-Wide Manufacturing Science & Technology Program (PE 0603680D8Z)*

We support the Senate position for this PE. The DOD-supported Manufacturing USA Institutes receive funding through this PE. The Manufacturing USA Institutes are public-private partnerships that solve challenges facing the manufacturing industrial base. Every federal dollar invested in the Manufacturing USA Institutes has spurred \$2.05 of private sector investment and we are seeing results in addressing the valley of death for photonic-enabled semiconductors, addressing workforce development through work-study programs, and providing small businesses and start-ups with access to software, hardware, and expertise that they would have access to due to high costs.

CNSR also supports the Senate position for this PE that authorizes support to continue the partnership between the Hollings Manufacturing Extension Partnership (MEP) and Manufacturing USA Institutes. MEP works to enhance the productivity and technological performance of small and medium-sized manufacturers through its national network of MEP Centers. According to the U.S. Census Bureau, approximately 98 percent of manufacturing firms have fewer than 500 employees and 75 percent have fewer than 20 employees. With the Manufacturing USA Institutes designed to solve challenges facing the entire manufacturing industrial base and the fast majority of manufacturing firms being small and medium-sized, this partnership will improve the effectiveness of both the Manufacturing USA Institutes and MEP.

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### **Legislative Provisions**

In no particular order, please find below CNSR's position on various legislative provisions contained in H.R. 2810 and S. 1519. The U.S. defense research enterprise is the most effective and innovative in the world; enhancing the enterprises' legislative authorities will help provide DOD with the tools necessary to secure our national security against the numerous emerging threats. We respectfully request the conferees consider the coalition's comments below.

#### *Defense Medical Scientific Research Sections*

S. 1519 includes several sections that would negatively impact defense medical scientific research (Sec. 733, Sec. 891, Sec. 892, and Sec. 893). These sections appear to try to undermine DOD's efforts to support innovation in medical technologies by adding unnecessary layers of bureaucratic red tape. In fact, that was DOD's assessment when asked about the provisions in S. 1519:

This language would, in essence, eliminate military family and military retiree relevant medical research, inhibit military medical training programs, and impact future health care cost avoidance. Impacts will take place across all areas... [Researchers] would most likely not want to do business with the DOD. ... [The provisions] may create a chilling effect on potential awardees of DOD assistance agreements.

According to the National Academies of Sciences, the defense medical research programs use an effective peer review process in awarding funding and are not in need of extensive revisions. The provisions in S. 1519 will likely jeopardize the effectiveness of the programs by creating harmful and unnecessary delays in groundbreaking medical research. Ultimately, this will discourage scientists from even exploring collaborations with DOD, which could prevent medical discoveries from even happening. In addition, these sections have the potential to jeopardize future military readiness. A strong United States military must have healthy soldiers and families. In light of the fact that we have an all-volunteer force, it is both prudent and strategic for DOD to contribute to curing diseases that affect not only the men and women in uniform, but also the public more broadly.

CNSR strongly supports the House position and urges the conferees to exclude Sections 733, 891, 892 and 893 of S. 1519 from the conference agreement.

#### *Federally Owned Medical Inventions Report Language*

S. 1519 includes report language that directs DOD to exercise "march-in" authority for DOD-sponsored medical inventions based on price. The "licensing of federally owned medical inventions" language would inhibit innovations in public health. Federally funded research conducted at universities often leads to patents for innovative new medicines and cures that private industries then license, develop, and bring to patients. These public-private partnerships, including university-industry collaborations – reinforced by intellectual property rights – are vital to expanding our country's capacity to address complex, unmet medical needs. The committee report language would put such innovation at risk and directly conflict with core objectives of the Bayh-Dole Act. Further, the language assumes, inaccurately, that under Bayh-

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Dole, the Department has the right to march in for pricing purposes: this interpretation is not supported by the congressional record or by Senators Bayh and Dole themselves.

We know that policymakers want federally supported discoveries made in university labs to ultimately be transformed into products that improve human health and enhance our quality of life. That, of course, is the central goal of Bayh-Dole. This report language would have the opposite effect as it would chill medical innovation by discouraging private entities from investing substantial resources in and taking considerable risk to develop those inventions for the benefit of our armed forces, veterans, and the American people. In order to ensure our armed forces and veterans receive the best care our country can provide, we must encourage innovation, not hinder it.

CNSR urges the conferees to include language in the conference agreement directing DOD to not follow this report language.

#### Accessing Technical Talent and Expertise at Academic Institutions

Sec. 211 of S. 1519 authorizes DOD to utilize various mechanisms to facilitate expedited access to university technical expertise to help address technical, engineering, management challenges. As the [National Research Council](#) states, the primary source of new knowledge and talented individuals driving American innovation are the nation's universities. Scientific breakthroughs such as radar, penicillin, the computer, jet propulsion, lasers, global-positioning systems, bar codes, transistors, and the atomic bomb all have origins in university scientific research. Providing DOD with the tools to further collaborate with universities will help DOD identify experts to overcome technical challenges that ultimately can assure we maintain our technological superiority and address emerging threats.

CNSR strongly supports the Senate position and urges the conferees to include Sec. 211 of S. 1519 in the conference agreement.

#### Prize Awards Authority Modification

Sec. 213 of H.R. 2810 and Sec. 214 of S. 1519 modify authorities related to DOD's ability to provide nonmonetary awards in prize competitions. DOD employs approximately 46 percent of all scientists and engineers in the federal government. In addition, DOD relies on thousands of scientists and engineers in the industrial base workforce to help meet its national security mission. Prize awards play a part in the development and progression of a scientists or engineers career. It is in DOD's interest to ensure we have a highly trained workforce both inside the government and in the industrial base. Enabling DOD to award nonmonetary prizes will provide for another avenue to support the next generation science and engineering workforce.

The differences between the House and Senate bills seem largely technical in nature. Consequently, CNSR supports language that ensures DOD has the flexibility to award nonmonetary prizes and accept prizes to award from nongovernmental sources.

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*Hacking for Defense Program*

Sec. 222 of H.R. 2810 authorizes funding to establish a Hacking for Defense Program. The goal of this program is to educate and build a network of innovators and entrepreneurs equipped with expertise and resources to successfully develop, commercialize and apply DOD technology to address real world challenges. An important part of the program is to bring together researchers and entrepreneurs from academia and industry with military personnel to develop solutions in the national security environments. The [National Academies](#) has recommended the federal government support collaborative mechanisms similar to the Hacking for Defense Program to spur creation and efficient use of knowledge to achieve national goals. This program has the potential to help DOD meet several goals such as helping training the next generation science and engineering workforce and deploying technologies to address real world challenges facing our armed forces today.

CNSR strongly supports the House position and urges the conferees to include Sec. 222 of H.R. 2810 in the conference agreement.

*STEM(MM) Jobs Action Plan*

Sec. 224 of H.R. 2810 requires DOD to perform an assessment of science, technology, engineering, math, maintenance and manufacturing (STEM)(MM) jobs. Among the requirements of the assessment is to identify the types of jobs needed to support future mission work. Universities are often criticized for not providing students the education needed to enter the real world workforce. While there is significant data to show this criticism is unfounded, DOD jobs present unique challenges for preparing the future workforce due to the nature of national security needs and limitation in providing sensitive employment information. An unclassified assessment of STEM(MM) personnel, overview of pending retirements, future anticipated hiring, and a strategy from DOD to address STEM(MM) employment challenges can provide valuable information to the academic community. This information can be used to modify existing curriculum or develop other training programs to meet the specific needs of DOD. It is not only in the interest of DOD to ensure an adequate workforce exists but it is also in the interest of the academic community that enrolled students are able to secure employment in their respective fields.

CNSR supports the House position and urges the conferees to include Sec. 224 of H.R. 2810 in the conference agreement.

*Other Transaction Authority*

Sec. 225 of H.R. 2810 extends the authorization of Other Transaction Authority (OTA) to non-profits and universities. Under the current OTA cost-share framework, non-profits and universities are unable participate due to the capital requirements. Non-profits and universities, because of their public missions, focus on scientific research that has the potential to help meet the mission of DOD, not profitability. Consequently, the current cost-share requirements for OTAs essentially prohibit non-profits and universities from participating since the net fees from scientific research, which are the primary source of working capital, provide low margins ultimately used to help maintain our research infrastructure, facilities, and equipment. DOD concurs as it was reinforced in report submitted to Congress earlier this year (as requested by

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Congress in the FY 16 NDAA). Providing cost-share relief to scientific research focused non-profits and universities will benefit DOD, allowing them to participate more actively in OTAs, and to build on investments in non-profit and university technology research and human capital/subject matter expertise.

CNSR supports the House position and urge the conferees to include Sec. 225 of H.R. 2810 in the conference agreement.

Entering Research Agreements

Sec. 874 of S. 1519 authorizes DOD to use OTA and experimental procurement authority to enter into research agreements with industry and academia among others. While a similar authority may exist in 10 U.S.C. 2371, Sec. 874 ensures consistency in federal law and reinforces the intent of Congress that DOD should, when appropriate, consider the use of OTAs for scientific research projects. OTAs can be tailored to meet specific challenges or situations that may not fit neatly into the rules and regulations of the DOD acquisition system. OTAs also provide DOD the authority to write agreements that can help attract partners that have not typically done business with DOD due to concerns with burdensome requirements. Finally, as noted by a U.S. Government Accountability Office [study](#), OTAs enable DOD to carry out activities to meet their mission that they would not have been able to do otherwise.

CNSR supports the Senate position and urges the conferees to include Sec. 874 of S. 1519 in the conference report.

Thank you for your consideration of our views. Please do not hesitate to contact us at [cnsr.dodresearch@gmail.com](mailto:cnsr.dodresearch@gmail.com) if we can be of any assistance as the conferees work towards a final FY 2018 NDAA Conference Agreement.

Sincerely,

John Latini  
Chairman  
Coalition for National Security Research

**Coalition for National Security Research (CNSR) FY 18 NDAA Priority Program Elements**

Line	FY 18 PE #	Program Element (PE) (\$ in Thousands)	FY 17 NDAA Enacted	FY17 Enacted	FY18 PBR	FY18 HASC NDAA	FY18 SASC NDAA	CNSR FY 18 NDAA Recommendation
		<b>DOD 6.1 Basic Research</b>	\$2,141,832	\$2,276,332	\$2,228,529	\$2,258,529	\$2,285,529	>\$2,300,000
		<b>DOD 6.2 Applied Research</b>	\$4,836,900	\$5,296,175	\$4,973,465	\$4,983,465	\$5,049,765	>\$5,100,000
		<b>DOD 6.3 Advanced Technology Development</b>	\$5,509,774	\$6,438,722	\$5,997,183	\$6,063,283	\$6,241,383	>\$6,300,000
		<b>DOD Science &amp; Technology (S&amp;T)</b>	\$12,488,506	\$14,011,229	\$13,199,177	\$13,305,277	\$13,576,677	>\$13,800,000
<b>Army Basic Research Program Elements</b>								
2	601102A	Defense Research Sciences	\$253,116	\$293,116	\$263,590	\$263,590	\$273,590	\$273,590
3	601103A	University Research Initiatives	\$69,166	\$69,166	\$67,027	\$67,027	\$67,027	\$67,027
4	601104A	University and Industry Research Centers	\$94,280	\$112,280	\$87,395	\$87,395	\$92,395	\$92,395
<b>Army Applied Research Program Elements</b>								
5	602105A	Materials Technology	\$37,033	\$82,533	\$29,640	\$29,640	\$39,640	\$39,640
6	602120A	Sensors and Electronic Survivability	\$38,109	\$51,109	\$35,730	\$35,730	\$35,730	\$35,730
11	602307A	Advanced Weapons Technology	\$28,803	\$53,803	\$22,785	\$22,785	\$22,785	\$22,785
12	602308A	Advanced Concepts and Simulation	\$27,688	\$30,688	\$28,650	\$28,650	\$28,650	\$28,650
21	602716A	Human Factors Engineering Technology	\$23,671	\$23,671	\$24,127	\$24,127	\$24,127	\$24,127
24	602783A	Computer and Software Technology	\$13,811	\$13,811	\$14,041	\$14,041	\$14,041	\$14,041
45	603461A	High Performance Computing Modernization	\$179,190	\$222,190	\$182,331	\$182,331	\$222,331	\$222,331
<b>Navv Basic Research Program Elements</b>								
1	601103N	University Research Initiatives	\$121,714	\$121,714	\$118,130	\$138,130	\$123,130	\$138,130
3	601153N	Defense Research Sciences	\$422,748	\$422,748	\$458,333	\$458,333	\$458,333	\$458,333
<b>Navv Applied Research Program Elements</b>								
6	602131M	Marine Corps Land Force Technology	\$51,590	\$69,765	\$53,936	\$53,936	\$53,936	\$53,936
7	602235N	Common Picture Applied Research	\$41,185	\$41,185	\$36,450	\$36,450	\$36,450	\$36,450
8	602236	Warfighter Sustainment Applied Research	\$45,467	\$50,467	\$48,649	\$48,649	\$48,649	\$48,649
9	602271N	Electromagnetic Systems Applied Research	\$118,941	\$120,941	\$79,598	\$79,598	\$79,598	\$79,598
10	602435N	Ocean Warfighting Environmental Applied Research	\$72,618	\$81,618	\$42,411	\$42,411	\$57,411	\$57,411
13	602750N	Future Naval Capabilities Applied Research	\$165,103	\$157,103	\$156,805	\$156,805	\$156,805	\$156,805
24	603680N	Manufacturing Technology Program	\$56,712	\$56,712	\$57,797	\$67,797	\$57,797	\$67,797
87	0604536N	Advanced Undersea Prototyping	\$44,189	\$59,479	\$66,543	\$76,543	\$13,643	\$76,543
<b>Air Force Basic Research Program Elements</b>								
1	601102F	Defense Research Sciences	\$340,812	\$380,812	\$342,919	\$342,919	\$342,919	\$342,919
2	601103F	University Research Initiatives	\$145,044	\$150,044	\$147,923	\$147,923	\$147,923	\$147,823
3	601108F	High Energy Laser Research Initiatives	\$14,168	\$14,168	\$14,417	\$14,417	\$14,417	\$14,417
<b>Air Force Applied Research Program Elements</b>								
4	602102F	Materials	\$131,152	\$159,152	\$124,264	\$124,264	\$124,264	\$124,264
6	602202F	Human Effectiveness Applied Research	\$111,647	\$111,647	\$108,784	\$108,784	\$133,784	\$133,784
8	602204F	Aerospace Sensors	\$155,174	\$162,674	\$152,782	\$152,782	\$152,782	\$152,782
12	602605F	Directed Energy Technology	\$127,163	\$127,163	\$132,993	\$132,993	\$141,293	\$141,293
13	602788F	Dominant Information Sciences and Methods	\$161,650	\$166,650	\$167,818	\$167,818	\$167,818	\$167,818
14	602890F	High Energy Laser Research	\$42,300	\$42,300	\$43,049	\$43,049	\$43,049	\$43,049
<b>Defense-Wide Basic Research Program Elements</b>								
1	601000BR	DTRA Basic Research Initiatives	\$35,436	\$35,436	\$37,201	\$37,201	\$37,201	\$37,201
3	601110D8Z	Basic Research Initiatives	\$36,654	\$68,154	\$40,612	\$40,612	\$40,612	\$40,612
5	601120D8Z	National Defense Education Program	\$79,345	\$79,345	\$74,298	\$74,298	\$99,298	\$99,298
<b>Defense-Wide Applied Research Program Elements</b>								
16	602668D8Z	Cyber Security Research	\$12,183	\$12,183	\$14,775	\$14,775	\$14,775	\$14,775
48	603680D8z	Defense-Wide Manufacturing S&T Program	\$158,398	\$158,398	\$136,159	\$136,159	\$191,159	\$191,159
64	603833D8Z	Engineering Science and Technology	\$17,659	\$22,659	\$25,395	\$25,395	\$25,395	\$25,395
<b>DARPA Program Elements</b>								
		<b>DARPA Total</b>	<b>\$2,957,036</b>	<b>\$2,889,036</b>	<b>\$3,170,390</b>	<b>\$3,170,390</b>	<b>\$3,145,390</b>	<b>\$3,170,390</b>
<b>Medical Research Program Elements</b>								
28	602787A	Medical Technology	\$77,111	\$79,111	\$83,434	\$83,434	\$83,434	\$83,434
30	603002A	Medical Advanced Technology	\$68,365	\$107,365	\$67,780	\$67,780	\$67,780	\$67,780
67	603807A	Medical Systems Advanced Development	\$33,503	\$54,120	\$33,491	\$33,491	\$33,491	\$33,491
		Research, Development, Test and Evaluation Research	\$9,097	\$9,097	\$9,796	\$9,796	\$9,796	\$9,796
		Exploratory Development	\$58,519	\$58,517	\$64,881	\$64,881	\$64,881	\$64,881

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