



August 24, 2020

The Honorable James Inhofe
Chairman
Committee on Armed Services
United States Senate
Washington, DC 20510

The Honorable Adam Smith
Chairman
Committee on Armed Services
House of Representatives
Washington, DC 20515

The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate
Washington, DC 20510

The Honorable Mac Thornberry
Ranking Member
Committee on Armed Services
House of Representatives
Washington, DC 20515

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

On behalf of the Coalition for National Security Research (CNSR), a more than 100-member coalition of industry, academia, scientific and professional associations, and non-profits, I write to commend you for your leadership in moving the fiscal year (FY) 2021 National Defense Authorization Act (NDAA) (S. 4049 & H.R. 6395) through your respective chambers. We appreciate your support for the Defense Science and Technology (S&T) program in both pieces of legislation. As negotiations continue to reconcile differences between the two bills, below please find recommendations (in no particular order) to strengthen the defense scientific research enterprise in the FY 2021 NDAA conference agreement.

Defense S&T Funding Authorization Recommendations

Investing in the Defense S&T program, including the defense basic research programs, is essential to meeting the objectives of the *National Defense Strategy (NDS)*, including deterring adversaries, sustaining Joint Force military advantages and establishing an unmatched twenty-first century national security innovation base. The core functions of the Defense S&T program are to support the research and development (R&D) required to create and advance transformational military capabilities to ensure technological superiority over our competitors.

Given that the FY 21 president's budget request calls for cutting Defense S&T funding by more than \$2 billion, including defense basic research by approximately \$285 million, compared to FY 2020 enacted levels, CNSR supports all Defense S&T plus ups in S. 4049 and H.R. 6395.

Specifically, we support additional resources for

- University Research Initiatives (all Services);
- Basic Research Initiatives (including Minerva Research Initiative and Defense Established Program to Stimulate Competitive Research (DEPSCoR);
- National Defense Education Program; and
- Defense-Wide Manufacturing S&T Program.

We would like to highlight our specific support for restoring funding for the Minerva Research Initiative in both bills and strongly urge it be included in the FY 21 NDAA conference agreement. As noted by DoD officials, many of the challenges we face are social or have social elements to them. The Minerva Research Initiative serves as DoD's signature social science basic research program providing an important source of new ideas to better understand, social, behavioral, cultural, and political aspects that are inherent to our security and stability. Minerva has aligned its research to support the NDS and has a proven track record of shaping national security policies and better positioning the warfighter in today's complex global environment.

Finally, with China likely becoming the world's top R&D performer¹, now is not the time to cut funding for the Defense S&T program that will create new technologies and capabilities – as well as help train the next generation workforce – to ensure the U.S. military maintains its global dominance.

Legislative Provision Recommendations

Social Science, Management Science, and Information Science Research Activities

Sec. 221 of H.R. 6395 formally authorizes a R&D program in social science, management science, and information science (Minerva Research Initiative). This section also authorizes each military department to establish or designate research centers in the fields of social science, management science, and information science. Research findings from these fields of science would be required to be transitioned into DoD strategic documents.

As noted above, CNSR strongly supports the Minerva Research Initiative. While there is a tremendous focus on advancing technology against competitor nations, in reality, many of the challenges facing the military are social². Minerva also serves as the only real connection between DoD and the social science community. Furthermore, the National Academies concluded that Minerva research has made important contributions to enhance our national security over the years³. This important program should be continued and robustly supported.

CNSR also supports establishing social science focused research centers similar to how the Manufacturing Technology (ManTech) Program is structured. Specifically, we support the Office of the Secretary of Defense (OSD) and each military Service branch being required to establish a center led by an academic institution, in partnership with a DoD laboratory, to serve needs of that DoD component. For example, OSD could establish a social science focused research center to conduct research to improve DoD's business practices. The Army could establish a center to conduct research on enhancing warfighters decision making to outpace adversaries. The Navy could establish a center to conduct research on improving human interactions with artificial intelligence (including unmanned undersea vehicles). The Air Force could establish a center to conduct research on how to best and quickly analyze and extract data from sensors or artificial intelligence. Arguably most importantly, these research centers would

¹ https://www.nsf.gov/news/news_summ.jsp?cntn_id=300508&WT.mc_id=USNSF_62&WT.mc_ev=click

² <https://www.nationalacademies.org/our-work/assessing-the-minerva-research-initiative-and-the-contribution-of-social-science-to-addressing-security-concerns>

³ Ibid

dramatically expand DoD's access to the nation's top social scientists that can work to solve complex challenges facing the military.

CNSR supports including language in the FY 21 NDAA conference report that formally establishes the Minerva Research Initiative and requires DoD components to establish social science-focused research centers at academic institutions in partnership with DoD laboratories.

Development and Testing of Hypersonic Capabilities

Sec. 219 of S. 4049 requires the Secretary to take actions to improve ground-based test facilities for the development of hypersonic capabilities and produce a strategy that is required to include required investments in testing and infrastructure to address the need for both flight and ground testing.

There are many research and testing needs to ensure hypersonics capabilities are fully deployed for military and civilian use. In addition to wind tunnels for testing, there is also a tremendous need for materials testing and characterization facilities. Generally speaking, existing materials in nature are typically not sufficient to handle hypersonic speeds so new materials will need to be researched, developed, and tested. Consequently, CNSR recommends that language be added to (b) of this section to increase opportunities for collaboration in developing hypersonic capabilities:

*“(b) Improving Ground-Based Testing Facilities – The Secretary of Defense shall take such actions as may be necessary to improve ground-based test facilities for the development of hypersonic capabilities, such as improving wind tunnels **and materials testing and characterization facilities.**”*

Defense Industrial Base Participation in a Threat Intelligence Sharing Program

Sec. 1631 of S. 4049 and Sec. 1632 of H.R. 6395 relate to establishing a threat intelligence sharing program and mandating participation in the newly established program or a similar program that meets certain requirements.

We appreciate the intent of these provisions to promote cybersecurity among the defense industrial base. With DoD still developing the Cybersecurity Maturity Model Certification (CMMC) program, we are concerned with adding new cybersecurity requirements until we know what is required (including costs we may need to incur) to be compliant with the CMMC.

As written, CNSR prefers Sec. 1631 of S. 4049 over the House provision. We offer the following principals for consideration of these provisions in the FY 21 NDAA conference agreement:

- **Language should be included to make it clear that members of the defense industrial base do not have to expose their internal and confidential computer networks to DoD in order be compliant;**
- **Language should make it clear that DoD is required to share relevant and actionable threat information with each sector of the defense industrial base**

(currently there is minimal information being shared from the federal government about cyber threats on a sector-by-sector basis); and

- Existing threat information sharing programs from other federal agencies (not just DoD programs) such as the FBI should be considered as eligible to meet this new mandate.

Defense Industrial Base Cybersecurity Threat Hunting

Sec. 1632 of S. 4049 and Sec. 1634 of H.R. 6395 require a feasibility study on establishing a cybersecurity threat hunting program for the defense industrial base.

As noted above, we appreciate the intent to promote cybersecurity among the defense industrial base. Again, with DoD still developing the CMMC program, we are concerned with adding new cybersecurity requirements until we know what is required (including costs we may need to incur) to be compliant with the CMMC.

As written, CNSR prefers Sec. 1632 of S.4049 over the House provision. We offer the following principals for consideration of these provisions in the FY 21 NDAA conference agreement:

- Language should be included to state that the feasibility study is prohibited from considering requiring members of the defense industrial base to expose their internal and confidential computer networks to DoD in order to be compliant;
- Language should be included to require DoD to provide specifics on how it will share information related to cybersecurity threats and vulnerabilities with the defense industrial base;
- Existing third-party initiatives such as the Research and Education Networks Information and Sharing & Analysis Center (REN-ISAC) are considered as eligible to meet this new mandate.

Policy Recommendations for Implementation of Executive Order (EO) 13806

Sec. 801 of S. 4049 requires the Under Secretary for Acquisition and Sustainment to develop a series of recommendations in order to fully implement EO 13806 (Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency) including assessing foreign talent attraction and retention, and graduate education policy.

CNSR does not have a position on this section but should it be included in the FY 21 NDAA conference agreement, we respectfully request the following changes:

- In (d), add “academic institutions” after “commercial industry” to ensure colleges and universities are consulted during assessments of policies such as graduate education.
- Add “(g) Public Recommendations Availability – To the maximum extent possible, the Secretary shall make public the recommendations submitted under (e) and (f) in an online format.”

Assessment of National Security Innovation Base

Sec. 802 of S. 4049 requires the Deputy Secretary to conduct an assessment of the economic forces and structures shaping the capacity of the national security innovation base and provide policy recommendations pertaining to the outcome of such assessment. The assessment is required to examine immigration policy, graduate education funding and policy, and federally-funded investments in research and development.

CNSR does not have a position on this section but should it be included in the FY 21 NDAA conference agreement, we respectfully request the following changes:

- **In (b)(3), add “(14) federally funded investments to expand innovation through scientific research.”**
- **In (c), add “National Academies of Science, Engineering and Medicine” after “Defense Business Board.”**
- **Add “(e) Public Assessment Availability – To the maximum extent possible, the Secretary shall make public the assessment submitted under (d).”**

Part-Time & Term Employment of University Professors and Students

Sec. 216 of S. 4049 and Sec. 246 of H.R. 6395 authorize DoD to establish a program under which qualified professors and students may be employed on a part-time or term-basis in an organization within the DoD science and technology enterprise. No fewer than 10 positions for professors with no less than five positions in the fields of artificial intelligence and machine learning would be required to be established.

At one CNSR member university, engineering faculty and researchers maintain relationships with key personnel working in one of the DoD’s laboratories. These relationships are critical for supporting R&D and advancing the nation’s national security priorities. Authorizing a part-time and term employment program at DoD laboratories may provide for opportunities for faculty who are on sabbaticals as well as students at different stages of their studies.

CNSR supports establishing part-time and term employment opportunities for faculty and students within organizations in the DoD science and technology enterprise in the FY 21 NDAA conference agreement.

Admission of Essential Scientists and Technical Experts

Sec. 281 of H.R. 6395 would allow for limited admission of essential scientists and technical experts to promote and protect the national security innovation base.

As noted in the *NDS*, “recruiting, developing, and retaining a high-quality military and civilian workforce is essential for warfighting success⁴.” Without the best and brightest minds in the world working on complex military problems, scientists and technical experts could end up supporting competitor nations. Permitting limited admission to the United States of key individuals with specific talents to enhance our national security is not only consistent with the *NDS* but necessary for the country to maintain its global technological superiority.

⁴ <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>

CNSR supports Sec. 281 of H.R. 6395 being included in the FY 21 NDAA conference agreement.

Traineeships for American Leaders to Excel in National Technology and Science

Sec. 279 of H.R. 6395 requires the Secretary, acting through the Under Secretary for Research and Engineering, to establish a traineeship program to expand DoD access to domestic scientific and technological talent in areas of strategic importance to national security.

The National Academies reported that the principal challenge for DoD's STEM workforce is recruiting and retaining top quality professionals for critical positions⁵. Establishing a traineeship program with the mission of expanding access to top talent in scientific disciplines important to DoD can help address that principal challenge. Additionally, DoD's flagship National Defense Science and Engineering Graduate fellowships program has only awarded 4,000 fellowships since 1989⁶. With DoD employing more than 100,000 scientists and engineers⁷, it is clear that existing programs are inadequate just to maintain DoD's STEM workforce – let alone address competition from near-peer nations.

CNSR supports Sec. 279 of H.R. 6395 being included in the FY 21 NDAA conference agreement.

National Artificial Intelligence Initiative

Sections 5101 – 5502 of H.R. 6395 establish a national artificial intelligence (AI) initiative with government-wide collaboration and coordination that designate specific roles for DoD and DARPA. Among the numerous provisions, DoD is authorized to competitively award AI institutes to focus on fundamental research and key mission-related applications.

These sections are largely consistent with the recommendations from the National Security Commission on Artificial Intelligence (NSCAI)⁸. Advancing and adopting AI technology is a key DoD modernization priority⁹. The DoD AI strategy calls for engaging with academic partners and harnessing AI to benefit both the DoD and the nation¹⁰. These sections authorizing the National Artificial Intelligence Initiative would help put recommendations, priorities and strategies into action.

CNSR supports Sections 5101 – 5502 of H.R. 6395 being included in the FY 21 NDAA conference agreement.

Online and Distance Education Classes and Nonimmigrant Visas

Sec. 1763 of H.R. 6395 allows nonimmigrant students – newly enrolled and continuing – to maintain F, J, or M visa status if institutions of higher education conduct, or transition to,

⁵ <https://www.nap.edu/catalog/13467/assuring-the-us-department-of-defense-a-strong-science-technology-engineering-and-mathematics-stem-workforce>

⁶ <https://www.army.mil/article/237781>

⁷ https://dsb.cto.mil/reports/2010s/Defense_Research_Enterprise_Assessment.pdf

⁸ <https://www.nsc.ai.gov/reports>

⁹ <https://www.cto.mil/modernization-priorities/>

¹⁰ <https://media.defense.gov/2019/Feb/12/2002088963/-1/-1/1/SUMMARY-OF-DOD-AI-STRATEGY.PDF>

distance or online learning due to the COVID-19 pandemic. This provision would extend and expand current flexibilities through the public health emergency or June 2021, whichever is later.

As mentioned throughout this letter, DoD is in a global competition for the world's top scientific talent. The U.S. government should be promulgating policies that encourage the best and brightest to come to the United States because foreign students in particular tend to stay and contribute to our workforce. Overall, approximately 80% of all science and engineering doctoral students committed to remain in the United States for employment or further training¹¹. These are exactly the type of experts we need to help DoD maintain its global military superiority.

CNSR supports Sec. 1763 of H.R. 6395 being included in the FY 21 NDAA conference agreement.

Public-Private Consortium to Improve Military Education

Sec. 560A of H.R. 6395 establishes a public-private consortium to improve and broaden professional military education for military officers and civilian employees of the federal government.

The proposed consortium would bring the military education system together with a broad group of civilian institutions of higher education, policy research institutes, and the commercial sector to develop and continually update a research-based curriculum to prepare military officers and civilian employees of the federal government to succeed in an era that will be predominantly defined by great power competition (China and others) and in which security challenges will transcend the traditional areas of defense expertise.

CNSR supports Sec. 560A of H.R. 6395 being included in the FY 21 NDAA conference agreement.

Expedited Access to Technical Talent and Expertise at Academic Institutions

Sec. 232 of H.R. 6395 makes changes to the authorization providing DoD with an expedited mechanism to work with academic institutions and top scientific talent including the establishment of multi-institution consortium through the Office of the Secretary, Secretary of the Army, Secretary of the Navy, and Secretary of the Air Force. This section also requires a report on implementation by September 30, 2022.

Given that DoD has yet to take steps to implement this mechanism, we support authorizing the military Services to establish consortiums and report on actions taken using this authority. 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 global military technological superiority.

CNSR supports Sec. 232 of H.R. 6395 being included in the FY 21 NDAA conference agreement.

¹¹ https://www.nsf.gov/news/news_summ.jsp?cntn_id=299700

Directed Energy Working Group

Sec. 225 of H.R. 6395 directs the Secretary to establish a Directed Energy Working Group to undertake a variety of activities including identifying methods of quickly fielding directed energy capabilities and programs.

There is strong demand for directed energy capabilities and there are multiple programs in varying stages of development across all the services. A Directed Energy Working Group has the potential to help manage the demands for systems and coordinate across DoD components to quickly field directed energy capabilities. Academic institutions in particular have been an active contributor in advancing directed energy technologies. A Directed Energy Work Group could create new opportunities for utilization of academic expertise and leadership in this important technology area.

CNSR supports Sec. 225 of H.R. 6395 being included in the FY 21 NDAA conference agreement.

Assistance to Small Manufacturers Related to Cybersecurity

Sec. 1642 of S. 4049 and Sec. 1633 of H.R. 6395 authorize DoD and the National Institute of Standards and Technology to award financial assistance to a center for the purpose of providing cybersecurity services to small manufacturers

As the manufacturing sector begins to adopt more digital competencies, the importance of a fortified cybersecurity infrastructure will be an imperative in ensuring smooth and secure manufacturing operations. Providing manufacturers with a support system, including workforce development programs in both machine learning and cyber security, to streamline and incorporate cybersecurity systems will encourage robust innovation throughout the manufacturing and defense sectors.

CNSR supports Sec. 1642 of S. 4049 and Sec. 1633 of H.R. 6395 being included in the FY 21 NDAA conference agreement.

Thank you in advance for your consideration of CNSR's priorities. Please do not hesitate to contact me if we can be of any assistance as you work to finalize the FY 21 NDAA.

Sincerely,

John Latini
Chairman