En Bloc Amendments to H.R. 2500		
Subcommittee on Intelligence and Emerging Threats and Capabilities En Bloc #1		
Log #	**Sponsor**	**Description**
054	Bacon	Requires the Undersecretary of Defense for Research and Engineering to provide a briefing to the House Committee on Armed Services on the DOD strategy to leverage AI-enabled robotics in support of SOF in CBRN environments.
116r1	Brown	Extends the Commercialization Program in the FY2014 NDAA and includes consideration for venture capital.
130	Wittman	Asks for a briefing on the evaluation criteria for chemical and biological decontamination solutions procured by the Department, including an assessment of the cost, benefit and any impact to domestic suppliers
142	Banks	Directs the Department to establish a coordinating office that standardizes the hypersonics technical priorities across the department and collaboratively funds new technologies for expeditious transition to the Service weapons systems.
149	Horn	This amendment directs the Air Force to provide a report on their workforce development programs that may be extended to communities supporting Air Force depots.
178r1	Speier	Directs the Joint Improvised Threat Defeat Organization to submit a report to the House Committee on Armed Services on its research that can be released to U.S. humanitarian demining organizations to improve the efficiency and effectiveness of humanitarian demining efforts.
180r2	Gaetz	Requests a briefing on the activities of the Air Force's Kessel Run program and its ability to leverage commercial capabilities with Air Force acquisition programs of record.
205	Slotkin	Requests briefing from ASD/SOLIC and the DOD Information Operations Steering Group on the implementation plan for their Information Operations implementation plan and related authorities.
207	Slotkin	Request for a briefing from Sec Army and DIU on how DoD is incorporating lessons learned from the automotive industry for defense system development, and any consideration of establishing an Innovation center related to GVSC.
208	Slotkin	Directs the Assistant Secretary of the Army for Acquisition, Logistics, and Technology to provide a briefing to the House Committee on Armed Services on how modeling and simulation are being incorporated into the next generation combat vehicles development.

Log 054

Amendment to H.R. 2500
National Defense Authorization Act for Fiscal Year 2020

Offered by Mr. Bacon of Nebraska

In the appropriate place in the report to accompany H.R. 2500, insert the following new Directive Report Language:

AI-enabled Robotics in CBRN and Complex Environments

The committee supports the Department of Defense efforts to advance artificial intelligence and machine learning technologies in support of the National Defense Strategy and notes its commitment to rapid innovation and delivery of emerging capabilities to achieve military superiority over near-peer competitors. However, the committee also observes with interest the emerging application of AI-enabled technologies to facilitate human-machine teaming for special operations forces operating in dangerous and non-permissive environments. For this reason, the committee encourages the Department to pursue collaborative partnerships with small businesses, industry, and academia to aggressively develop and field AI-enabled robotics to enable safer and more effective maneuver operations. The goal of these efforts should be to put revolutionary technology in the hands of warfighters to speed decision-making, increase lethality, and better enable complex tactical operations in contested or denied environments, especially those where chemical, biological, radiological or nuclear (CBRN) threats are present or where positioning, navigation and timing (PNT) services are degraded. Therefore, the committee directs the Undersecretary of Defense for Research and Engineering, in coordination with the Commander of U.S. Special Operations Command, to provide a briefing to the House Committee on Armed Services by November 1, 2019, on its strategy to leverage AI-enabled robotics in support of special operations forces and CBRN environments.

Log 116r1

AMENDMENT TO H.R. 2500

OFFERED BY MR. BROWN OF MARYLAND

At the appropriate place in title II, insert the following new section:

SEC. 2___. MODIFICATION OF PROOF OF CONCEPT COMMERCIALIZATION PROGRAM.

(a) EXTENSION OF PROGRAM.—Section 1603(g) of the National Defense Authorization Act for Fiscal Year 2014 (Public Law 113–66; 10 U.S.C. 2359 note) is amended by striking "2019" and inserting "2024".

(b) ADDITIONAL IMPROVEMENTS.—Section 1603 of such Act, as amended by subsection (a), is further amended—

(1) in the section heading, by inserting "**OF DUAL-USE TECHNOLOGY**" after "**COMMERCIALIZATION**";

(2) in subsection (a)—

(A) by inserting "of Dual-Use Technology" before "Program"; and

(B) by inserting "with a focus on priority defense technology areas that attract public and private sector funding, as well as private sector investment capital, including from venture cap-

ital firms in the United States," before "in accordance";

(3) in subsection (c)(4)(A)(iv), by inserting ", which may include access to venture capital" after "award";

(4) by striking subsection (d);

(5) by redesignating subsection (e) as subsection (d);

(6) by striking subsection (f); and

(7) by adding at the end the following new subsection (e):

"(e) AUTHORITIES.—In carrying out this section, the Secretary may use the following authorities:

"(1) Section 1599g of title 10 of the United States Code, relating to public-private talent exchanges.

"(2) Section 2368 of such title, relating to Centers for Science, Technology, and Engineering Partnerships.

"(3) Section 2374a of such title, relating to prizes for advanced technology achievements.

"(4) Section 2474 of such title, relating to Centers of Industrial and Technical Excellence.

"(5) Section 2521 of such title, relating to the Manufacturing Technology Program.

"(6) Section 225 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91; 10 U.S.C. 2359 note).

"(7) Section 1711 of such Act (Public Law 115–91; 10 U.S.C. 2505 note), relating to a pilot program on strengthening manufacturing in the defense industrial base.

"(8) Section 12 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a) and section 6305 of title 31, United States Code, relating to cooperative research and development agreements.".

Log 130

Amendment to H.R. 2500
National Defense Authorization Act for Fiscal Year 2020

Offered by: Rep. Robert J. Wittman (VA-01)

In the appropriate place in the report to accompany H.R. 2500, insert the following new Directive Report Language:

Chemical and Biological Decontamination Solutions

The committee is aware of the Department of Defense's continuing interest in chemical and biological decontamination technologies. The Department has invested significantly in research and development efforts in academia, Department of Defense laboratories, and commercial industry. The committee understands there are a number of different domestic and foreign providers of chemical and biological decontamination solutions for the Department. The committee is interested in understanding the costs, benefits, and variances of these different solutions, including any impact on the domestic industrial base. Therefore, the committee directs the Secretary of Defense to provide a briefing to the House Committee on Armed Services by February 1, 2020, on the evaluation criteria for chemical and biological decontamination solutions procured by the Department, including an assessment of the cost, benefits, and any impact to domestic suppliers.

Log 142

AMENDMENT TO H.R. 2500

OFFERED BY MR. BANKS OF INDIANA

At the appropriate place in title II, insert the following new section:

SEC. 2___. JOINT HYPERSONICS TRANSITION OFFICE.

Section 218 of the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109–364; 10 U.S.C. 2358 note) is amended—

(1) in subsection (a), by striking "the program required under subsection (b), and shall" and inserting "the program and activities described in subsections (d) through (g), and shall";

(2) by redesignating subsections (b) through (e) as subsections (d) through (g), respectively;

(3) by inserting after subsection (a) the following new subsections:

"(b) DIRECTOR.—There is a Director of the Office (referred to in this section as the 'Director'). The Director shall be appointed by the Secretary of Defense and shall serve as the senior official in the Department of Defense with principal responsibility for carrying out the program and activities described in subsections (d) through (g). The Director shall report to the Assistant Director for

Hypersonics within the Office of the Under Secretary of Defense for Research and Engineering.

"(c) UNIVERSITY CONSORTIUM.—

"(1) DESIGNATION.—The Director shall designate a consortium of institutions of higher education (as that term is defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)) to lead foundational hypersonic research in research areas that the Director determines to be appropriate for the Department of Defense.

"(2) AVAILABILITY OF INFORMATION.—The Director shall ensure that the research results and reports of the consortium are made available across the Federal Government, the private sector, and academia, consistent with appropriate security classification guidance.";

(4) in subsection (d), by striking "The Office" and inserting "The Director";

(5) in subsection (e), as so redesignated—

(A) in the matter preceding paragraph (1), by striking "program required by subsection (b), the Office" and inserting "program required by subsection (d), the Director";

(B) in paragraph (3)(A), by striking "private sector" and inserting "private-sector academic"; and

(C) in paragraph (5), by striking "certified under subsection (e) as being consistent with the roadmap under subsection (d)" and inserting "certified under subsection (g) as being consistent with the roadmap under subsection (f)";

(6) in subsection (f), as so redesignated—

(A) in paragraph (3)—

(i) in subparagraph (C)—

(I) in clause (i), by striking "and" at the end;

(II) in clause (ii), by striking the period at the end and inserting "; and"; and

(III) by adding at the end the following new clause:

"(iii) the activities and resources of the consortium designated by the Director under subsection (e) to be leveraged by the Department to meet such goals."; and

(ii) in subparagraph (D), by striking "facilities" both places it appears and inserting "facilities and infrastructure"; and

(B) by adding at the end the following new paragraph:

"(4) SUBMITTAL TO CONGRESS.—

"(A) INITIAL SUBMISSION.—Not later than 180 days after the date of the enactment of this paragraph, the Secretary of Defense shall submit to the congressional defense committees the roadmap developed under paragraph (1).

"(B) SUBSEQUENT SUBMISSIONS.—The Secretary of Defense shall submit to the congressional defense committees each roadmap revised under paragraph (1) together with the budget submitted to Congress under section 1105 of title 31, United States Code, for the fiscal year concerned.";

(7) in subsection (g), as so redesignated—

(A) by striking "subsection (d)" each place it appears and inserting "subsection (f)";

(B) in paragraph (1)—

(i) in the matter preceding subparagraph (A), by striking "The Office" and insert "The Director";

(ii) in subparagraph (A) by striking "research, development, test, and evaluation and demonstration programs within the Department of Defense" and inserting "defense-wide research, development, test, and evaluation and demonstration programs"; and

(iii) in subparagraph (B), by striking "the hypersonics" and inserting "all hypersonics";

(C) in paragraph (2), by striking "The Office" and inserting "The Director"; and

(D) in paragraph (3), by striking "2016" and inserting "2026"; and

(8) by adding at the end the following new subsection:

"(h) FUNDING.—The Secretary may make available such funds to the Office for basic research, applied research, advanced technology development, prototyping, studies and analyses, and organizational support as the Secretary considers appropriate to support the efficient and effective development of hypersonics technologies and transition of those systems and technologies into acquisition programs or operational use.".

Log 149

Amendment to H.R. 2500
National Defense Authorization Act for Fiscal Year 2020

Offered by Congresswoman Kendra S. Horn

In the appropriate place in the report to accompany H.R. 2500, insert the following new Directive Report Language:

Aerospace Career Training Expansion Report

The committee recognizes the important role depots provide in achieving the Air Force's mission to fly, fight and win in air, space and cyberspace, and believes in the value of ensuring that the depot feeder communities have strong science, technology, engineering, and math (STEM) educational and workforce development opportunities. Critical investments in workforce are necessary to be better prepared to meet the future needs of the aerospace and defense industry sector. Diverse aerospace training programs and stackable credentials can also provide a clear sequenced pathway to ensure success and goal-oriented outcomes.

Therefore, the committee directs the Under Secretary of Defense for Research and Engineering and the Under Secretary of Defense for Acquisition and Sustainment, with support from the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics, to provide a report to the congressional defense committees not later than February 28, 2020 on the Department's innovation, acquisition, and STEM programs that could be extended to the communities supporting Air Force depots. The report should include, but not be limited to, programs such as: Hacking4Defense within the National Security Innovation Network; the program on enhancement of preparation of dependents of members of armed forces for careers in science, technology, engineering, and mathematics as laid out in Chapter 111 of title 10 United States Code; small business programs such as Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) as defined under section 9 of the Small Business Act (15 U.S.C. 638); university research programs; public/public and public/private programs under the authority of the Air Force Research Laboratory; and Defense Acquisition University virtual or regional campuses.

Log178r1

Amendment to H.R. 2500
National Defense Authorization Act for Fiscal Year 2020

Offered by: Rep. Jackie Speier

In the appropriate place in the report to accompany H.R. 2500, insert the following new Directive Report Language:

PROVISION OF ANALYSIS TO U.S. HUMANITARIAN DEMINING ORGANIZATIONS

The committee recognizes the prevalence and growing use of improvised threats in war and the work being conducted by humanitarian demining organizations, with support from the U.S. government, to alleviate the lasting impacts of such threats on civilian populations. The committee also recognizes the expertise of the Defense Threat Reduction Agency, Joint Improvised-Threat Defeat Organization Directorate (JD), which has conducted extensive research on these improvised threats.

Therefore, the committee directs the Director, JD, by October 1, 2020, to submit a report to the House Committee on Armed Services cataloguing previous JD research that could be released to U.S. humanitarian demining organizations to improve the efficiency and effectiveness of humanitarian demining efforts.

Log180-2

Amendment to H.R. 2500
National Defense Authorization Act for Fiscal Year 2020

Offered by: Gaetz

In the appropriate place in the report to accompany H.R. 2500, insert the following new Directive Report Language:

Kessel Run Commercial Outreach

The committee notes the Air Force's continued use of agile development methods in the Kessel Run program. The committee encourages continued commercial outreach and commercial market research by the Kessel Run program in order to ensure that innovative commercial solutions are available to meet Air Force needs, while focusing on national security-unique challenges with in-house development teams.

The committee directs the Air Force to provide a briefing on Kessel Run plans not later than September 1, 2019. Such a briefing should include:

(1) an update on current priorities for Kessel Run;
(2) measures to ensure compliance with section 2377 of title 10, United States code, section 855 of the National Defense Authorization Act for Fiscal Year 2016 (Pub. L. 114-92, 129 Stat. 919), and other attempts to ensure the use of innovative commercial technologies;
(3) plans to transition Kessel Run technologies into established programs of record.

Log 205

Amendment to H.R. 2500
National Defense Authorization Act for Fiscal Year 2020

Offered by: Representative Elissa Slotkin

In the appropriate place in the report to accompany H.R. 2500, insert the following new Directive Report Language:

Strategy for Operations in the Information Environment

Operations in the information environment (IE) by state and non-state actors, such as Russian cyber intrusions to undermine democratic institutions, ISIS's recruitment through dissemination of propaganda, or exfiltration of controlled unclassified information from the defense industrial base by cyber actors affiliated with the People's Republic of China, pose a dynamic challenge to U.S. national security. The Department of Defense, when appropriate and in concert with the interagency, must be prepared to address, defend, and respond to actions in the IE that undermine national security across the spectrum of warfare and in all types of conflict.

In June 2016 the Department of Defense issued a strategy for operations in the IE to align Departmental actions and ensure effective integration of actions across all information domains. Section 1637 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115-91) directed the Department to develop an implementation plan to support the 2016 Department of Defense Strategy for Operations in the Information Environment and establish processes and procedures to better integrate strategic information operations and cyber-enabled information operations across the relevant elements of the Department, including those responsible for military deception, public affairs, electronic warfare, and cyber operations. Section 1637 of Public Law 115-91 also directed the Department of Defense to coordinate regional information strategies and interagency coordination plans of the combatant commands with the appropriate Department of State officials and the Global Engagement Center. Further, this section required periodic status reports to the congressional defense committees every 90 days on the date the implementation plan required was submitted.

The committee recognizes the efforts of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict as well as the Department's Information Operations Steering Group, charted in August 2016, relating to the requirements of section 1637 of Public

Law 115-91 and acknowledges the periodic status updates provided to the congressional defense committees to date. The committee understands the Information Operations Steering Group has recommended the 2016 Strategy for Operations in the IE be updated and that the Department will issue the new strategy sometime this year. The committee expects to be apprised of the new strategy and expects the Department to apply the direction and requirements of section 1637 of the NDAA for FY 2018 to the new strategy. Therefore, the committee directs the Secretary of Defense to brief the House Committee on Armed Services not later than September 1, 2019, on the status of the existing Strategy for Operations in the IE, status of the implementation plan and other elements of section 1637 of Public Law 115-91, plan for continuing to provide the congressional defense committees continuous periodic updates relating to operations in the IE, and provide detailed information on existing authorities, policies, and doctrine relating to operations in the IE.

Log 207

Amendment to H.R. 2500
National Defense Authorization Act for Fiscal Year 2020

Offered by: Representative Elissa Slotkin

In the appropriate place in the report to accompany H.R. 2500, insert the following new Directive Report Language:

Defense Innovation and the Automotive Industry

The committee commends universities and industry for their work in maturing technologies and producing materiel solutions to ensure our military maintains its technological edge. The commercial market driving the development of technologies is dynamic, and our military benefits greatly from the innovations that come from partnerships with small businesses and universities. As there are many lessons to be learned from independent research and the commercial market like the automotive industry, Science and Technology Reinvention Laboratories (STRLs) carry out a significant portion of basic and developmental research in collaboration with academia and the private sector. Government-funded research efforts to address military threats are critical to reducing technology development risk. If successful, they can attract private sector partners that lead to manufacturing and commercialization or production of defense systems. The committee encourages the Department to work with industry, and in particular the automotive industry, to establish public/public and public/private (P4) Innovation Centers focused on the defense and automotive industries. The Innovation Centers could also serve as "learning labs" for Science, Technology, Engineering, and Math (STEM) based programs. The committee directs the Under Secretary of Defense for Research and Engineering and the Secretary of the Army, with support from the Director of the Defense Innovation Unit, by March 31, 2020 to provide a briefing to the armed services committees on how the Department is working with the automotive industry to identify innovative technologies and learn lessons applicable to the development and production of defense systems. The briefing should include discussion of any plans to establish Innovation Centers as described above, including in or around the Detroit Arsenal or the Ground Vehicle Support Center in Warren, MI.

Log 208

Amendment to H.R. 2500
National Defense Authorization Act for Fiscal Year 2020

Offered by: Representative Elissa Slotkin

In the appropriate place in the report to accompany H.R. 2500, insert the following new Directive Report Language:

Modeling and Simulation for Ground Vehicle Development

The committee notes that modeling and simulation (M&S) has demonstrated its utility as a tool for vehicle technology development by providing program managers with necessary information related to reliability and performance challenges in advance of making significant investment decisions for future development. The committee also notes that M&S is particularly relevant in the development of unmanned vehicle systems that could use artificial intelligence. As the Army continues to modernize its ground combat and tactical vehicle systems, the committee encourages maximization of M&S to realize potential savings in experimentation and prototyping, predict and control program costs and, where possible, accelerate the speed of development and fielding of new ground vehicle capabilities. Therefore, the committee directs the Assistant Secretary of the Army for Acquisition, Logistics, and Technology to provide a briefing to the House Committee on Armed Services no later than December 1, 2019 on how M&S is being incorporated into the development of next generation combat vehicles to include the Optionally-Manned Fighting Vehicle and Robotic Combat Vehicle programs, as well as identify any barriers and challenges that may exist regarding the full utilization of M&S for ground combat and tactical vehicle development.