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Nov 13, 2023

Department of Defense
OFFICE OF PREPUBLICATION AND SECURITY REVIEW



DEFENSE SCIENCE BOARD
Strategic Options
Executive Summary

November 8, 2023

This report is a product of the Defense Science Board (DSB).

The DSB is a Federal Advisory Committee established to provide independent advice to the Secretary of Defense. Statements, opinions, conclusions, and recommendations in this report do not necessarily represent the official position of the Defense Department (DoD).



OFFICE OF THE SECRETARY OF DEFENSE
3140 DEFENSE PENTAGON
WASHINGTON, DC 20301-3140

DEFENSE SCIENCE
BOARD

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR RESEARCH AND
ENGINEERING

SUBJECT: Executive Summary of the Strategic Options Task Force

Please see this executive summary of the Defense Science Board Task Force on Strategic Options, chaired by me and Gen. Paul Selva, USAF ret.

Through the Terms of Reference (ToR), identified in Appendix B, the Defense Science Board (DSB) Task Force on Strategic Options ("the Task Force") will cease fact-finding activities and be terminated on January 10, 2024. These duties will then be transitioned to the DSB Permanent Subcommittee on Strategic Options ("the Permanent Subcommittee") in order to support the ongoing need of the DoD to address strategic challenges. The DSB, working through the Permanent Subcommittee, will identify concepts, capabilities, strategies, and courses of action in the scientific and technical enterprises that inform the cost and benefit of decision-making to ensure U.S. operational dominance.

The DSB Task Force on Strategic Options was established to identify effective weapon system and operational concepts to rebalance the cost and benefit of intervention for the goal of fostering operational dominance of the United States Armed Forces in deterring local conflict involving allies or partners and to prevail at the lowest 'cost' should deterrence fail.

The Task Force considered advanced undersea assets and operational concepts, new uses of space assets, development of new countermeasures for electronic warfare, employment of cyber weapons, and as well as other areas that involved the adversary's use of countermeasures to undermine U.S. dominance in the air, space, sea, and cyber domains.

A handwritten signature in cursive script, appearing to read "Eric Evans", is positioned above the printed name.

Dr. Eric Evans
Chair, Defense Science Board

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Appendix A: Terms of Reference – Strategic Options Permanent Subcommittee



UNDER SECRETARY OF DEFENSE
3030 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

5 OCT 2023

MEMORANDUM FOR CHAIR, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference – Defense Science Board Permanent Subcommittee on Strategic Options

Dramatic and continuing changes in geopolitics and technology have shaped both the challenges the U.S. military has sought to address, and the vulnerabilities strategic competitors and potential adversarial countries seek to exploit to undermine U.S. national security. Competing nations continue to develop operational doctrines that take advantage of perceived vulnerabilities in U.S. capabilities and leverage new technologies to threaten strategic deterrence and stability on a global scale. To meet growing threats to U.S. national security and ensure future military successes by building enduring advantages, the Department of Defense (DoD) must evaluate to what extent it can anticipate, respond to, and proactively prevent these threats from ever developing, or to dynamically respond to and mitigate their impacts. This includes deterring unprecedented actions and technologies, understanding new threats and susceptibilities, and developing new strategic capabilities.

Through this Terms of Reference (ToR), I am terminating the Defense Science Board (DSB) Task Force on Strategic Options (“the Task Force”). The Task Force should cease fact-finding activities and provide a consolidated product of findings, observations, and recommendations to the full DSB for its thorough, open discussion and deliberation at a properly noticed and public meeting, unless it must be closed pursuant to one or more of the exemptions found in subsection 552b(c) of title 5, United States Code (U.S.C.). The DSB will provide its findings and recommendations to the Under Secretary of Defense for Research and Engineering (USD(R&E)) as the Sponsor of the DSB.

I am also establishing the Defense Science Board Permanent Subcommittee on Strategic Options (“the Permanent Subcommittee”) in order to support the ongoing need of the DoD to address strategic challenges. The DSB, working through the Permanent Subcommittee, will identify concepts, capabilities, strategies, and courses of action in the scientific and technical enterprises that inform decision-making and serve to rebalance intervention cost and benefit to ensure U.S. operational dominance. Under the DSB, the Permanent Subcommittee areas of consideration will include (but not be limited to at the discretion of the USD(R&E)):

- New and novel uses of space assets,
- Employment of cyber systems,
- Development of new methodologies and countermeasures for electronic warfare,
- Rapid collection and use of strategic counterintelligence,
- Logistics resiliency both within the United States and abroad,

- Region- and circumstance-specific integrated deterrence,
- Existing and potential norms of behavior and escalation thresholds,
- Advanced undersea assets and operational concepts,
- Effective deterrence of adversarial coercive and malign activities in the gray zone,
- Additional considerations should include the adversary’s attempts and operations to undermine U.S. dominance in the air, space, sea, and cyber domains.


The DoD and the U.S. Government face a significant national security challenge in adversarial use of low-cost mass assets that can create swarms of capabilities which could result in multilayered and unmanageable threats. Although DoD strategy includes some ways to counter the threat of enemy mass assets, it must fully confront the challenges posed by future armed low-cost mass asset swarms. As such, I am initially tasking the DSB, through the Permanent Subcommittee, to explore ways the DoD can create low-cost mass assets across the air, sea, and land domains in the “multiple thousands” within the next few years, as well as identify ways to counter adversarial assets that would present similar capabilities. The Permanent Subcommittee’s findings, observations, and recommendations will be presented to the full DSB for its thorough, open discussion and deliberation at a properly noticed and public meeting, unless it must be closed pursuant to one or more of the exemptions found in subsection 552b(c) of title 5, U.S.C. The DSB will provide its findings and recommendations to the USD(R&E) as the Sponsor of the DSB. The nominal start date of the study period for this initial task of the Permanent Subcommittee will be after the termination of the Task Force and within 30 days of the appointment of DSB Permanent Subcommittee members. In no event will the duration of this particular task exceed 12 months from the start date. Additional taskings of the DSB, through the Permanent Subcommittee, will occur as needed.

In support of this ToR and the work conducted in response to it, the DSB and the Permanent Subcommittee have my full support to meet with Department leaders. The DSB staff, on behalf of the DSB and the Permanent Subcommittee, may request the Office of the Secretary of Defense and DoD Component Heads to timely furnish any requested information, assistance, or access to personnel to the DSB or the Permanent Subcommittee. All requests shall be consistent with applicable laws; applicable security classifications; DoD Instruction 5105.04, “Department of Defense Federal Advisory Committee Management Program”; and this ToR. As special government employee members of a DoD federal advisory committee, the DSB and the Permanent Subcommittee members will not be given any access to DoD networks, to include DoD email systems.

Once material is provided to the DSB and the Permanent Subcommittee, it becomes a permanent part of the DSB’s records. All data/information provided is subject to public inspection unless the originating Component office properly marks the data/information with the appropriate classification and Freedom of Information Act exemption categories before the data/information is released to the DSB and the Permanent Subcommittee.

The DSB and the Permanent Subcommittee will operate in conformity with and pursuant to the DSB charter; chapter 10 of title 5, U.S.C.; subsection 552b(c) of title 5, U.S.C.; and other

applicable federal statutes, regulations, and policy. Individual DSB and Permanent Subcommittee members and the Permanent Subcommittee as a whole do not have the authority to make decisions or provide recommendations on behalf of the DSB nor report directly to any Federal representative. The members of the Permanent Subcommittee and the DSB are subject to certain Federal ethics laws, including section 208 of title 18, U.S.C., governing conflicts of interest, and the Standards of Ethical Conduct regulations in 5 Code of Federal Regulations, Part 2635.



Heidi Shyu

Appendix B: Terms of Reference – Strategic Options Task Force



UNDER SECRETARY OF DEFENSE
3030 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

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Feb 13, 2023

Department of Defense
OFFICE OF PREPUBLICATION AND SECURITY REVIEW
31 January 2023

MEMORANDUM FOR CHAIR, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference – Defense Science Board Task Force on Strategic Options

Several countries aspire to greater regional power, threatening to employ military force to prey on their neighbors. Anticipating that the United States might seek to deter or thwart their aggression due to allies, partners, or treaty commitments, these emerging regional powers have invested over the last decade to discourage the United States from intervening. These investments are aimed at raising the cost of United States intervention to unacceptable levels; cost in terms of loss of life of military personnel and loss of high value assets.

I am establishing the Task Force on Strategic Options (“the Task Force”) as a subcommittee of the Defense Science Board (DSB). The DSB, working through the Task Force, should identify effective weapon system concepts and operational concepts to rebalance intervention cost and benefit in order to regain the operational dominance that the United States Armed Forces achieved for the past 25 years. The concepts may devolve from novel technology, improvements in training and doctrine, alliance building, or exploitation of inherent asymmetric vulnerabilities of adversaries. The goal is to deter local conflict involving allies or partners, and to prevail at the lowest ‘cost’ should deterrence fail.


Areas of consideration may include advanced undersea assets and operational concepts, new uses of space assets, development of new countermeasures for electronic warfare, employment of cyber weapons, and other areas the Task Force deems appropriate. Additional considerations should include the adversary’s use of countermeasures to undermine U.S. dominance in the air, space, sea and cyber domains.

The Task Force findings, observations, and recommendations will be presented to the full DSB for its thorough, open discussion and deliberation at a properly noticed and public meeting subject to Government in the Sunshine Act exemptions. The DSB will provide its findings and recommendations to the Under Secretary of Defense for Research and Engineering as the Sponsor of the DSB. The nominal start date of the study period will be within 30 days of the initial appointment of Task Force members. In no event will the duration of the Task Force exceed 12 months from the start date.

I will be the sponsor of the Task Force. The Task Force members are granted access to those Department of Defense (DoD) officials and data necessary for the appropriate conduct of their activities. As such, the Office of the Secretary of Defense and Component Heads are requested to cooperate and promptly facilitate requests by DSB staff regarding access to relevant personnel and information deemed necessary, as directed by paragraphs 5.1.8. and 5.3.4. of DoD

Instruction 5105.04, "Department of Defense Federal Advisory Committee Management Program," and in conformance with applicable security classifications.

The DSB and the Task Force will operate in accordance with the provisions of the Federal Advisory Committee Act (5 United States Code (U.S.C.), Appendix), the Government in the Sunshine Act (5 U.S.C. §552b), and other applicable federal statutes, regulations, and policy. Individual DSB and Task Force members and the Task Force as a whole do not have the authority to make decisions or recommendations on behalf of the DSB nor report directly to any Federal representative. The members of the Task Force and the DSB are subject to certain Federal ethics laws governing conflicts of interest, including 18 U.S.C. § 208, and the Standards of Ethical Conduct regulations in 5 Code of Federal Regulations Part 2635.



Heidi Shyu

Appendix C: Task Force Membership*

Task Force Chair

Dr. Eric Evans	MIT-LL
Gen. Paul Selva, USAF ret.	Private Consultant

DSB Secretariat

Mr. Kevin Doxey	Executive Director, Defense Science Board
Ms. Elizabeth Kowalski	Senior Advisor, Defense Science Board

Membership

Dr. Kimberly Budil	Lawrence Livermore National Laboratory
Mr. James Carlini	Leidos, Inc.
ADM William Fallon, USN ret.	Private Consultant
Hon. Shirley Ann Jackson	Private Consultant
Dr. John Manferdelli	VMware
Dr. James Miller	Private Consultant
Dr. Bradford Tousley	Private Consultant

Subject Matter Experts

Dr. Ronald Kerber	Private Consultant
Hon. Judith Miller	Private Consultant
Mr. Mark Russell	Raytheon
Hon. William Schneider, Jr.	International Planning Services, Inc.
Dr. David Whelan	University of California, San Diego

Government Advisors

Mr. James Baker	OSD
Mr. Thomas Browning	OUSD(R&E)
Mr. Jay Dryer	OSD
Dr. Peter Highnam	OUSD(R&E)
Dr. Ray O'Mara	OUSD(R&E)

Mr. David Pendall	OSD
Mr. Dale Rielage	OSD

Analytical Support

Mr. Marcus Hawkins	Strategic Analysis, Inc.
Mr. Eric Tunkavige	Strategic Analysis, Inc.

* Task force and permanent subcommittee membership are separate and distinct. Permanent subcommittee membership appointment authority rests solely with the DoD Appointment Authority. Permanent subcommittee members will be appointed in accordance with 5 U.S. Code § 3109.