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

DEFENSE SCIENCE BOARD

INFORMATION MEMO

April 20, 2005, 9:45 AM

FOR: SECRETARY OF DEFENSE

FROM: CHAIRMAN, DEFENSE SCIENCE BOARD for Brian D Hughes

SUBJECT: Info memo - Defense Science Board 2005 Summary Study Programs

- Per your meeting with me on 19 April 2005, the following information concerning the Defense Science Board summer study program is provided. The 2005 summer study program encompasses two areas of study:
    - Transformation: A Progress Assessment is led by GEN Larry Welch, USAF (Ret) and Dr. Robert Hermann. The terms of reference is provided in TAB A. The study's organization and panel leaders are provided in TAB B.
        - A panel of the summer study titled Nuclear Capabilities will inform the Summer Study but is also formed as a separate Task Force. The Task Force terms of reference is provided in TAB C.
    - Reducing Vulnerabilities to Weapons of Mass Destruction is led by Mr. Larry Lynn and Mr. Robert Nesbit. The terms of reference is provided in TAB D. The study's organization and panel leaders are provided in TAB E.
- Both studies commenced in January 2005.
- An interim brief to Mr. Ryan Henry, PD USD (Policy) is being scheduled for early June to help inform the QDR process.
- The same information was provided to ASD (Public Affairs)

COORDINATION: None.

Attachments:
As Stated

Prepared by: Mr. Brian Hughes, 703-695-4158

OSD 07426-05

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THE UNDER SECRETARY OF DEFENSS

3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

ACQUISITION.
TECHNOLOGY
AND LOGISTICS

JAN 19 2005

MEMORANDUM FOR CHAIRMAN, DEFENSE **SCIENCE** BOARD

SUBJECT: Terms of Reference—Defense Science Board 2005 Summer Study on Transformation: A Progress Assessment

Since the end of the Cold War, the Department of Defense has engaged in a wide range of military and humanitarian operations. As President G.W. Bush stated in the 2002 National Security Strategy, "The major institutions of American national security were designed in a different era to meet different requirements. All of them must be transformed." In response to this call to arms, the Department of Defense initiated wide-ranging plans, policies, and programs to transform itself. As described in the Secretary of Defense's 2003 Transformation Planning Guidance (TPG), the scope of the Department's transformation efforts encompassed how we fight, how we do business, and how we work with others. While the TPG states, "there will be no moment at which the Department is transformed," the Department must evaluate both the effectiveness and the direction of its transformation efforts.

You are requested to form a Defense Science Board Summer Study to provide an assessment of the Department's continuing transformation process. The assessment should describe the current status of the Department's transformation efforts, identify the appropriate transformation objectives, and recommend ways and means to meet the emerging and persistent challenges as identified in the 2004 National Defense Strategy.

The TPG outlined the Department's three-part strategy for transformation: Transformed culture, Transformed processes, and Transformed capabilities. Within the Department's transformation scope and strategy, the Study should consider are the following:

1) Concepts and Experimentation. Post Cold War operational concepts are continuously evolving. In response to the Secretary's request for joint concepts of operations, the concept community developed a family of joint concepts organized in a hierarchy including the overarching Joint Operations Concepts (JOpsC), subordinate Joint Operating Concepts (JOC), supporting Joint Functional Concepts (JFC), and detailed Joint Integrating Concepts (JIC). In addition, the Services developed supporting service concepts. The Air Force is developing the

Air Force Concepts of Operations (CONOPS); the Navy and Marine Corps are developing the Naval Operating Concept for Joint Operations (NOC); and the Army is pursuing the Future Force concept. These concepts address the development of future joint forces' transformational capabilities and characteristics, but an assessment is needed of the state of the joint concept development and experimentation process that integrates Service provided capabilities into effective joint operational capabilities. Further, the assessment should examine how well the Department integrates the rest of the U.S. government (USG) capabilities to provide the capabilities to deal with 21st Century adversaries. The Study should address alternative operational constructs and concept development processes, which would enable the Department of Defense to better meet the challenges of the 21st century by applying the entire array of power available to the USG. The Study must focus on important functional concepts and capabilities, such as logistics and battlespace awareness, which provide essential elements to implementing joint concepts. Finally, experimentation provides an important feedback mechanism into the iterative development of joint concepts. Consequently, the study must assess the state of experimentation, the interrelationships between a series of experiments within an experimental campaign, and, especially, the relationship and involvement of service and combatant command experimentation efforts.

2) International competitors seek to develop and possess breakthrough technical capabilities intended to supplant U.S. advantages in particular operational domains. Because of this aspect of the security environment, the study should address disruptive challenges from a variety of sources such as technology, demographics, and legal. In addition, the Study should define the scope of the problem and capabilities DoD requires to address these challenges.

3) As an element of net-centric operations, the Department is developing a broad range of networked systems to generate new capabilities and multiply existing force structure effectiveness. The Study should assess the adequacy and effectiveness of the approaches to realize the potential advantages of net-centric operations.

4) The Department's force structure still is burdened with Cold War legacy components. A significant transformation effort seeks to transform the joint force into smaller, rapid, more agile forces with greater deployability and lethality than much of the current force. However, strategic guidance and operational experience confirm that some joint force operations will continue to require sustained presence and an ability to confront heavy, concentrated firepower to achieve desired effects and mission accomplishment. Since the Department's transformation efforts must reconcile expeditionary agility and responsiveness with persistence and durability, the study should focus on the Department's need

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for evolving joint forces to cover the spectrum of military engagement and accomplish the full range of missions assigned to DoD.

5) The Study should provide insights into two approaches to adaptability. The first examines how DoD might provide for high adaptability of the force by increasing the tempo of inserting promising science and technology initiatives into the acquisition process. The second approach should compare materiel, technological, conceptual, and organizational efforts to provide adaptability to surprise.

6) Industry partners are key to providing transformational capabilities. Consolidation since the Cold War peak has reduced the number of market participants (– 32 to 8) at prime and subsystem levels. The Study should assess the suitability of the structure of the defense industry to the needs of Transformation.

7) Culture is a decisive characteristic of innovative military organizations, Future joint operations envision increasingly complex and heavy cognitive demands on personnel at all levels. The Department must examine how to adapt its culture to producing personnel able to meet the high knowledge demands of interdependent joint, interagency, and multinational operations. In addition, the Study should focus specifically on the human resources needed to develop and acquire new materiel, adapt existing systems to leverage past investment, exploit technologies, design organizations, and devise knowledge management procedures,

8) The Department's business processes, including its logistics and acquisition practices, must support and facilitate transformation. The assessment should evaluate progress made towards streamlining and reforming these processes and recommend a strategy for going forward especially in the area of acquisition of joint interoperable systems.

The Task Force will provide an interim report by May 2005.

The study will be sponsored by me as the Acting Under Secretary of Defense (Acquisition, Technology and Logistics), Under Secretary of Defense (Policy), Under Secretary of Defense (Personnel and Readiness), Director, Force Transformation, and Director, Defense Research and Engineering. Gen Larry Welch, USAF (retired), and Dr. Robert Hermann will serve as the Task Force Chairmen. Dr. Jerry McGinn, OUSD(P), will serve as the Executive Secretary, and Lt Col Dave Robertson will serve as the Defense Science Board Secretariat representative.

The Task Force will operate in accordance with the provisions of P.L. 92-463, the "Federal Advisory Committee Act," and DOD Directive 5105.4, the "DoD Federal Advisory Committee Management Program." It is not anticipated that this Task Force will need to go into any "particular matters" within the meaning of Section 208 of Title 18, U.S. Code, nor will it cause any member to be placed in the position of acting as a procurement official.

Michael W. Wynne
Acting

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2005 Summer Study on Transformation: A Progress Assessment

Organization

- Study Co-chairs – Gen Larry Welch, Dr. Bob Hermann
- Panels
  - Joint Operations Concepts and Doctrines - Dr. Ted Gold, Mr. John Stenbit
  - Force Capability Evolution - Gen Mike Williams, Gen Jim McCarthy
  - DoD Business Practices - Dr. Ron Kerber, Dr. Jack Gansler
  - Defense Industry and Acquisition - Mr. Phil Odeen, Dr. Paul Kaminski
  - Human Resources - Dr. Johnny Foster, Dr. Bill Howard
  - Interagency Integration - Mr. Michael Bayer, Mr. Mike Donley
  - Nuclear Capabilities (separate Task Force) - Gen Larry Welch, Dr. Johnny Foster
- Executive Secretary - Dr. Jerry McGinn, OUSD(P)

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MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT Terms of Reference--Defense Science Board Task Force on Nuclear Capabilities

The qualitative features of the nuclear leg of the new triad continue to be largely an extension of the cold war capabilities. The quantities of deployed warheads and related delivery vehicles are reducing in increments from the 10,000+ at the height of the cold war to the 1700-2200 in the Moscow Agreement.

The cold war weapons designs include a variety of toxic and high risk materials and complex mechanisms that make the weapons difficult to manufacture or refurbish. The infrastructure required to sustain these designs for the long term does not currently exist and restoral is unaffordable.

Current plans do not lead to qualitative changes in the sustainability of a reliable, safe and secure weapons stockpile. Instead, the plan is to extend the life of cold war weapons that were introduced during or before the 1980s. The current life extension plans would have this same inventory of weapons to beyond 2040.

The NPR articulated a new multi-level triad – a triad of nuclear weapons in a triad of strike capabilities in a new triad of strike, defense, and infrastructure. With the exception of deploying a rudimentary missile defense program, there are few programs to convert the NPR vision to reality.

The Nuclear Capabilities Task Force is to:

1) Assess the current plan for sustaining the nuclear weapons stockpile and make recommendations for ensuring the future reliability, safety, security, and relevance of the nuclear weapons stockpile for the 21st century.

2) Examine the DoD role in defining needs in the nuclear weapons stockpile and recommend changes in institutional arrangements to ensure an appropriate DoD role.

3) Assess progress towards the goal of an integrated new triad of strike capabilities (nuclear, advanced conventional, and non-kinetic) within the new triad of strike, defense and infrastructure.

4) Examine a wide range of alternative institutional arrangements that could provide for more efficient management of the nuclear enterprise.

5) Examine approaches to evolving the stockpile with weapons that are simpler to manufacture and that can be sustained with a smaller, less complex, less expensive design, development, certification and production enterprise.

6) Examine plans to transform the nuclear weapons production complex to provide a capability to respond promptly to changes in the threat environment with new designs or designs evolved with previously tested nuclear components.

The study will be sponsored by me as the Acting Under Secretary of Defense (Acquisition, Technology and Logistics), and by the Assistant to the Secretary of Defense (Nuclear, Chemical and Biological Defense Programs). Gen Larry Welch, USAF (retired), and Dr. John Foster will serve as the Task Force Chairmen. Col Dan Wilmoth, OATSD(NCB), will serve as the Executive Secretary, and Lt Col Dave Robertson will serve as the Defense Science Board Secretariat representative.

The Task Force will operate in accordance with the provisions of P.L. 92-463, the "Federal Advisory Committee Act," and DOD Directive 5105.4, the "DoD Federal Advisory Committee Management Program." It is not anticipated that this Task Force will need to go into any "particular matters" within the meaning of Section 208 of Title 18, U.S. Code, nor will it cause any member to be placed in the position of acting as a procurement official.

Michael W. Wynne
Acting

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JAN 10 2005

ACQUISITION,
TECHNOLOGY
AND LOGISTICS

MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference – Defense Science Board *2005* Summer Study on Reducing Vulnerabilities to Weapons of Mass Destruction

You are requested to form a Defense Science Board (DSB) Summer Study on Reducing Vulnerabilities to Weapons of Mass Destruction (WMD). The *2005* Summer Study should concentrate on a State's clandestine employment of WMD or the use of such capability by a terrorist.

Much of the dialogue and activity concerning the reduction of vulnerability to WMD effects focus on limited aspects (e.g. detection, defeat, consequence management) of a single modality – whether it be biological, chemical, or nuclear/radiological. While single modality approaches are useful, they do not lend themselves to the development of an integrated system. In addition, by focusing on separate aspects of the overall defense outside of an end-to-end architecture, the proper balance of requirements and resource allocations across architectural components cannot and has not been made. WMD defense must be able to handle the different modalities singularly or in combination across the spectrum of WMD from preemption to consequence management. The current segmented approach begs the question whether coverage gaps exist in this spectrum and if there are misplaced priorities in the programs designed to protect the US from WMD attacks. In addition, the current approach does not provide any mechanism to rationalize the effort and likely lends itself to suboptimal resource allocation, especially with the "sharp" lines being drawn between national security and homeland security.

The Summer Study should develop national enterprise architecture to reduce vulnerabilities to WMD. The architecture should identify those areas where integration across modalities would pay off, as well as the issues that are uniquely tied to a single modality. Ideally, the architecture should be able to adapt to shifting priorities in WMD defense which may arise from new intelligence or other sources and adapt to different generations of WMD defensive systems which will probably be procured under a spiral development model. An integrated WMD system would be able to assess from end to end the state of affairs in WMD defense.

The Summer Study should develop an enterprise architecture which covers the entire range of U.S. government capabilities and responsibilities. Using this architecture, the Summer Study should assess:

- Which WMD modalities are the U.S. most vulnerable to? What factors might change the vulnerability over time?

- Functional "requirements" of envisioned WMD defense capability – quantified to maximum extent possible.

- Develop an overall architecture including distributed characteristics, interfaces, and commonalities.

- Examine current and planned U.S. investments in WMD defense. Recommend a prioritized and comprehensive investment strategy.

- Which organizational construct best serves the implementation of an integrated WMD defense, both nationally and within DoD?

The Summer Study will be co-sponsored by me as the acting USD(AT&L) and the Assistant to the Secretary of Defense (Nuclear, Chemical and Biological Defense Programs). Mr. Larry Lynn and Mr. Bob Nesbit will serve as chairmen of the Summer Study. Mr. Mike Evenson, DTRA, will serve as Executive Secretary. LTC Scott Dolgoff, USA will serve as the Defense Science Board Secretariat representative.

The Task Force will operate in accordance with the provisions of P.L. 92-463, the "Federal Advisory Committee Act," and DoD Directive 5105.4, the "DoD Federal Advisory Committee Management Program." It is not anticipated that this Task Force will need to go into any "particular matters" within the meaning of section 208 of Title 18, U.S. Code, nor will it cause any member to be placed in the position of acting as a procurement official.

Michael W. Wynne
Acting

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2005 Summer Study on Reducing Vulnerabilities to Weapons of Mass Destruction

Organization

- Study Co-chairs – Mr. Larry Lynn and Mr. Robert Nesbit
- Panels
  - Chemical - Dr. Regina Dugan
  - Biological - Dr. Anna Marie Skalka
  - Nuclear - Dr. Miriam John
  - Systems - Mr. Robert Stein
  - Intelligence - Mr. Robert Nesbit
  - Strategy - Mr. Robert Nesbit
  - Investment - Mr. Irv Blickstein
- Executive Secretary - Mr. Michael Evenson, DTRA