DSB SUMMER STUDY

NATIONAL LEADERSHIP COMMAND CAPABILITY

NLCC

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OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR RESEARCH & ENGINEERING (OUSD (R&E))

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Dedication

Robert M. Stein

1937 – 2019

Before this report could be published, Robert Stein, a Co-Chairman of this study, passed away after a two-year battle with cancer. Bob's clear thinking, professionalism, sense of humor, and gentle coaching were instrumental on this study and the 33 others he chaired or co-chaired during his nearly 30 years of volunteer service to the Department of Defense. This report, on a topic of such importance to the Nation's security, is dedicated to his memory.

***Robert Stein** retired from Raytheon in 2000, after spending 42 years with the company. During his prolific career at Raytheon, he developed radar and missile systems, such as the Patriot, Stinger, Sparrow, and AMRAAM, which form the backbone of the Army's and Air Force's air-defense, air-to-ground, and air-to-air capabilities. He served as a member of the Defense Science Board since 1990 and chaired 33 Summer Studies and Task Forces. In December 2014, he was awarded the Eugene Fubini Award by the Secretary of Defense for outstanding volunteer service to the Department of Defense, the highest such honor in the Department.*

Executive Summary

(U) This report recommends a three-pronged strategy to gain a more defensible and resilient National Leadership Command Capability (NLCC). First, mitigate the limitations of the current NLCC while migrating to a modernized architecture and evolved capabilities. Next, establish an exercise, testing, and learning regimen that is sustained and provides the principal source of areas for continuous improvement in both capabilities and processes. Finally, streamline the governance and management structure at both the White House and Department of Defense to enable vetting of requirements and configuration control.

(U) Additional information exists at a higher classification level available to those with appropriate access. Please contact the Defense Science Board Office for more information.

Terms of Reference

ACQUISITION, TECHNOLOGY, AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE
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WASHINGTON, DC 20301-3010

MAR 13 2017

MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference – Defense Science Board Task Force on National Leadership Command Capability

The National Leadership Command Capability (NLCC) encompasses command, control, and communications capabilities and systems to enable senior leader decision support, continuity of government, and continuity of operations in times of crises. The NLCC must remain viable in the face of a major disruptive event across the spectrum—from a natural disaster on the scale of the New Madras fault's eruption to man-made intentional attacks, such as cyber-attacks on the grid, that debilitate critical infrastructure. These events have the potential to result in large numbers of casualties and cause extensive destruction at the scale that might occur in various Weapons of Mass Destruction attack modalities.

The NLCC is a "system of systems" whose complexities present technical challenges, not only to its maintenance and modernization, but also to its continued functionality during a time of crisis. At the time of the 9/11 attacks, the NLCC limitations were made evident and led to a couple of high-profile assessments, which were followed by formal leadership attention and directives to facilitate improvements. Several factors have emerged since those assessments to suggest a fresh look at NLCC capabilities is warranted. Those factors include deep concerns about the cyber threat and EW threats to networked operations; the ability of both nation states and non-state actors to carry out such threats; advances in physical and software architectures that make them more adaptable to changing environmental (or threat) conditions; the increasing affordability and effectiveness of continuous monitoring that might support better anticipation of an impending crisis; a growing interdependence and interoperability across the Department of Defense (DoD) and other agencies for coordinated, rapid crisis response; and the consequent need and potential for near real-time situational awareness among a much wider array of decision-makers and operators.

A properly designed "system of systems" will not only provide resilient communications and situational awareness, but will also allow the earliest possible assessment and resultant collaboration among the decision-makers to counter the impact of any natural or man-made disasters. This can significantly limit loss of life in all scenarios and prevent terrorists from achieving their goals during an attack. While this is an interagency issue, DoD has the majority of the systems required to make it operate; therefore, DoD will define many, if not most, of the technical issues that need to be addressed. Further, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) and Vice Chairman of the Joint Chiefs of Staff, as co-chairs of the Council on Oversight of the NLCC, provide the leadership for this congressionally mandated function. It is therefore recommended that DoD takes the lead in this study provided that coordination is made with other members of the interagency throughout the conduct of the study.

The Defense Science Board (DSB) is therefore tasked to undertake the following tasks:

- Characterization of the current capabilities of the NLCC, both within DoD and across the interagency, to include how they are integrated and any shortfalls or risks that might prevent or hinder the timely exercise of national leadership and subordinate command, control, and communications during a crisis and its recovery phase;
- Investigation of new or emerging concepts and technologies that might facilitate a more adaptive NLCC to address an unpredictable future, with particular attention to:
    - Maintaining critical NLCC connectivity and information assurance in an era of advanced penetrating cyber capabilities;
    - Maximizing warning time associated with advanced threats and enhancing the information flow to senior leaders;
    - Developing, implementing, and incorporating new decision aid technologies to enhance early comprehension of the situation, provide greater option awareness, and facilitate collaborative and rapid decision-making in complex and uncertain information environments.
- Determination of alternative concepts for phasing in new capabilities, architectural changes, and/or technologies to implement the concepts investigated above with a view toward balancing rapid improvements with minimum functional disruption;
- Assess the technical and program management capabilities needed for producing a fully integrated NLCC. Include as a minimum, a review of the current requirements process—requirements definition, requirements documentation, and the success of programs in meeting stated requirements; a review of the resources currently applied to NLCC and that which is actually required, if different; and, assess the oversight mechanisms and their effectiveness. Identify any concerns that should be addressed in order to develop and deploy a modernized system in which the National Leadership can have the highest confidence;
- Recommendations, both technical and organizational, that would increase confidence in the critical operations of the NLCC in the context of evolving threats to its integrity.

We will sponsor the study. Dr. Miriam John and Mr. Robert Stein will serve as Co-chairmen of the study. The Executive Secretary is Mr. Leonard D'Amico. Ms. Karen Saunders will serve as the DSB Secretariat Representative.

The task force members are granted access to those DoD officials and data necessary for the appropriate conduct of their study. USD(AT&L) and DoD CIO will serve as the DoD lead for the matter under consideration and will coordinate decision-making as appropriate with other stakeholders identified by the study's findings and recommendations. The nominal start date of the study period will be within 3 months of signing this Terms of Reference, and the study period will be between 9 to 12 months. The final report will be completed within six months from the end of the study period. Extensions for unforeseen circumstances will be handled accordingly.

The study will operate in accordance with the provisions of Public Law 92-463, "Federal Advisory Committee Act," and DoD Instruction 5105.04, "Department of Defense Advisory Committee Management Program." It is not anticipated that this study will need to go into any "particular matters" within the meaning of title 18, United States Code, section 208, nor will it cause any member to be placed in the position of action as a procurement official.

John A. Zangardi
Acting Department of Defense
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James MacStravic
Performing the Duties of the
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