



DSB Newsletter



March 2001

Dr. Craig I. Fields, Chairman

Philip A Odeen, Vice Chairman

John V. Eilo, Executive Director

Chairman's Corner

On the eve of the DSB's first Quarterly meeting in 2001, I want to take this opportunity to welcome the following new members of the Defense Science Board:

*Mr. Bran Ferren
Dr. Joseph Markowitz
Ms. Judy Miller
Mr. Tom Peoples*

I would also like to welcome the following new ex-officio members of the Board: Ms Kathy Hegmann as the new chair of the Naval Research Advisory Committee and Dr. Robert Selden as the new chair of the Air Force Scientific Advisory Board.

My thanks and appreciation as well to the following Board members for the leadership roles they are undertaking in support of this year's Summer Study Program:

*Defense Science & Technology
Co-chairs: Dr. Anita Jones & Mr. Larry Lynn*

*Precision Targeting
Co-chairs: Mr. Bob Nesbit & Mr. Vince Vitto*

Both of these study initiatives are especially timely during this critically important transition period for the DoD, and I look forward to working closely with all of the study participants in the challenging months that lie ahead.

Dr. Craig I. Fields

DSB MEETING DATES FOR 2001

- Spring Quarterly May 16-17
- Summer Study Conclusion August 12-24
- Fall Quarterly October 24-25

DSB Secretariat Staff

Mr. John V. Ello, Executive Director
Ms. Brenda Leckey, Executive Officer
Ms. Patricia A. Shirley, Executive Assistant
CDR Brian Hughes, Navy Military Assistant
Mr. Robert Jamison, Army Assistant
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Membership

The Board continues to actively solicit suggestions for highly qualified scientific and technical candidate members, with special emphasis on women and minority candidates. Prior Task Force participation offers an individual, OSD, and the Board an opportunity to determine a person's interest and suitability to Board activities and is a desirable prerequisite to membership on the Board. An overall roster of current Board members is included in this newsletter.

Task Force Status

• 2001 Summer Study Program

- **Defense S&T** (Co-chairs: Mr. Larry Lynn & Dr. Anita Jones) The study co-sponsored by USD(AT&L) and DUSD(S&I) will address the issues involved in assuring that the U.S. continues to gain access to and develop technology from which to gain military advantage. (LtCol Yang)
- **Precision Targeting** (Co-chairs: Mr. Vince Vitto & Mr. Robert Nesbit) The study co-sponsored by USD(AT&L) and Director, Strategic and Tactical Systems, will examine the full range of the process from target selection, locations and identification through mission execution and damage assessment. (CDR Hughes)

- **2000 Summer Study Program** Last year's Summer Study Program concluded with an Outbrief on 18 Aug 00 at the Beckman Center, Irvine, CA. Defense Against Biological Weapons, Defensive Information Operations, and Unconventional Nuclear Warfare Defense are now in the final stages of preparation for publication.
- **Adequacy of the DoD Science & Technology (S&T) Program** (Chair: Dr. Walter Morrow) This study was initiated by section 212 of the National Defense Authorization Act for FY 2000. The study assessed the effect of the Department's decision to not program its S&T budget at a level of two percent above the inflation rate for FY01-05. The report is in final coordination. (Mr. Jamison)
- **Biological Defense** (Co-chairs: Dr. Josh Lederberg and Dr. George Whitesides) This study, co-sponsored by USD(AT&L) and DDR&E, was a combined effort of the DSB and the TRAC. The study assessed the scope of activities conducted by the DoD to ensure its future preparedness to deter, defend against and respond to attack by biological weapons. Awaiting final report. (CDR Hughes)
- **Chemical Warfare Defense** (Co-chairs: Dr. George Whitesides & Dr. Regina Dugan) This study, co-sponsored by USD(AT&L) and Defense Advanced Research Projects Agency (DARPA), is assessing the possibility of controlling the risk and consequences of a

CW attack to acceptable levels within the next five years. The Task Force is in process. (Mr. Jamison)

- **Development and Production of Measures to Preserve Health** (Chair: Dr. George Poste) This study, co-sponsored by USD(AT&L) and DDR&E, will analyze major shortcomings in the lack of antiviral drugs, antibiotics, and vaccines against bioagents. The Task Force will also assess the logistic adequacy of the supply chain for vaccine production, novel vaccine delivery techniques and the adequacy of vaccine development and verification technologies against known and potential diseases. The TOR is signed. (CDR Hughes)
- **E-Commerce** (Co-chairs: Dr. Ron Kerber & Dr. Mike Frankel) This study, co-sponsored by USD(AT&L) and Director of Defense Procurement, will review the DoD's current implementation status of e-commerce tools and make any appropriate recommendations that enhance this opportunity for cost reduction, capital and manpower efficiency. The Task Force is in process. (Mr. Jamison)
- **Future DoD Airborne High-Frequency Radar Needs/Resources** (Chair: Dr. David Briggs) This study, sponsored by USD(AT&L) and Director, Strategic and Tactical Systems, reviewed the use of airborne X-band radars to serve the broad mission areas of air defense and ground surveillance. The final report is in security review. (Mr. Jamison)
- **High Energy Laser Weapon Systems Applications** (Co-chairs: Mr. Don Latham and Gen Larry Welch, USAF (Ret)) This study, sponsored by USD(AT&L), Director, Strategic and Tactical Systems, and Director, BMDO, is reviewing the military applications of high energy laser weapon systems. The task force is in progress. (LtCol Yang)
- **Improving Fuel Efficiency of Weapons Platforms** (Co-Chairs: Mr. Al Alm and VAADM Richard Truly, USN (Ret)). This study, co-sponsored by DUSD(S&T) and DUSD(ES), identified technologies that improve fuel efficiency of the full range of

weapon platforms (land, sea & air) and assessed their operational, logistical, cost and environmental impacts for a range of practical implementation scenarios. The final report is in security review. (CDR Hughes)

- **Intel Needs for Homeland Defense (Follow-on)** (Co-Chairs: Dr. Ruth David and Mr. Peter Marino) The study, sponsored by USD(AT&L), ASD(C3I) & DCI, will explore the intelligence ramifications posed by biological, chemical, information, nuclear, and radiological threats to the United States. The Task Force is in progress. (CDR Hughes)
- **Logistics Transformation – Phase II** (Co-chairs: Mr. Phil Odeen and Mr. Bill Howard) This study, co-sponsored by USD(AT&L) and USD(Logistics), is a follow-on to the DoD Logistics Transformation Task Force completed in Dec 98. The Task Force assessed the progress to date in implementing the recommended actions of the 98 report. The report is now in the final stages of preparation for publication. (CDR Hughes)
- **Managed Information Dissemination** (Chair: Mr. Vince Vitto) This study, co-sponsored by ASD(SOLIC) & USD(AT&L), will assess the characteristics, organizational relationships and responsibilities of a U.S. Government World Information Service. Such an Information Service could become a primary vehicle for presentation of the U.S. Government's position on issues, point of view and policies. The task force is in progress. (CDR Hughes)
- **Systems Technology for the Future U.S. Strategic Posture** (Chair: Dr. Bob Cooper) This study, co-sponsored by USD(AT&L) and Director, Strategic and Tactical Systems, is reviewing the systems technology of the future U.S. strategic posture for dealing effectively with a range of possible future strategic challenges to the U.S. The task force is in progress. (LtCol Yang)
- **Training for Future Conflicts** (Co-chairs: Dr. Joe Braddock & Dr. Ralph Chatham) This study, co-sponsored by USD(AT&L) and Director for Readiness and Training in OUSD(P&R), is a follow-on to the Training

Superiority & Training Surprise report completed early this year. The Task Force will identify and characterize what education and training are demanded by JV 2010/2020 but which are markedly different from what is being done today. (Mr. Jamison)

- *Since publication of the last DSB Newsletter, the following reports have been completed and released:*
 - DoD Supercomputing Needs
 - DoD Frequency Spectrum Issues
 - Defense Software
 - Impact of Acquisition Policies on Health of Defense Industrial Base
 - Efficient Utilization of Defense Laboratories
 - Training Superiority & Training Surprise
 - Test & Evaluation Capabilities

Other Advisory Board Activities

Army Science Board (ASB)

Mr. Michael J. Bayer - Chairman
LTC Damian Bianca - Executive Secretary
MAJ William Belknap – Executive Officer

FY01 Overarching Study

Objective Force Soldier/Soldier Teams
(Chaired by Dr. Robert Douglas, GEN Wayne Downing, USA (Ret) and LTGEN Martin R. Steele, USMC (Ret)) This study will provide practical insights into current and future science and technology opportunities. Recommendations will assist Joint Ground Forces' Leadership to optimize those research, development and acquisition efforts that can yield dramatic improvements in Objective Force Soldier lethality, survivability, supportability and situational awareness.

The study will examine those technologies that will enable the mounted and dismounted soldier to fight within a network-centric, system-of-systems across the full spectrum of operations. Military operations in urban and complex terrain will be addressed as part of the study. The study's

efforts include:

- **Affordability Panel** (Co-chaired by Mr. David Morrison, Mr. Carl Fischer) The panel will focus on the cost definition including life cycle costs, reducing costs through better business practices and leveraging commercial technology. It will also develop methodology for identifying potential trade-offs.
- **Fightability Panel** (Chaired by: Mr. Raj Rajagopal) The panel will examine the definition of soldier system, fightability and specialization. Recommendations will be made based upon the defined Soldier System.
- **Power Panel** (Co-Chaired by: Dr. Gil Herrera and Dr. James Sargeant) The panel will identify, assess, and recommend advanced power system technologies and concepts for the soldier system of the future.
- **Weight/Volume Panel** (Chaired by Mr. Tony Tether) This panel will address the potential enhancements of the tactical capabilities of soldier(s) by reducing the weight and volume of the combat and fighting loads.
- **Analysis Panel** (Chaired by Mr. Ed Brady) The panel will apply the analytic capability needed to relate proposed Soldier System enhancements to mission effectiveness. It will also recommend initiatives to enhance the assessment tools needed to support future Soldier System needs.
- **Organizational and Operations Panel** (Chaired by LTG Charlie Otstott, USA (Ret)) This panel will consider the operational impact of reasonably achievable technologies and combined arms and joint force contributions in the operational environment.
- **Science and Technology Panel** (Chaired by Mr. Herb Gallagher) The panel will develop an S&T strategy that captures alternative S&T roadmaps for the Objective Force Soldier.
- **Manpower and Resource Panel** (Chaired by BG James Ralph, USA (Ret)) This panel will provide the study an overall assessment of manpower needs to support the Objective Force.
- **Lessons Learned & Environment.** (Chaired by Dr. Joe Braddock and Dr. Tony Hyder) This effort will provide an overview of the lessons learned from ASB Transformation studies and the potential

military, political and socioeconomic environment the Objective Force will operate within.

On 26 July 2001 at the Beckman Center in Irvine, California, the draft ASB FY 2001 overarching study findings and recommendations will be briefed to the Army Chief of Staff and to a Joint audience.

Special Studies

- **Adapting Future Wireless Technologies** – (CO-Chaired by Ms. Ginger Lew and LTG Paul Funk, USA (Ret) and Mr. Kalle Kontson) The study will examine opportunities for modernizing the Objective Force through robust commercial wireless opportunities.
- **Asymmetric Threats to Land Based Operations (2015-2020)** (Co-chaired by Dr. Joseph Braddock, LTG Jack Woodmansee, USA (Ret), and Dr. Jim Tegnalia) The study will examine innovative ways that asymmetric threats can be used to disrupt land based operations in the future.
- **Venture Capital** (Chaired by Mr. Carl Fischer). The study will explore financial alternatives and opportunities for technology creation and modernizing the Objective Force given future budgetary constraints.
- **Knowledge Based Management and Information Reliability** (Chaired by Mr. John Reese) This effort will examine innovative ways of addressing technology issues that have the potential to "weigh down" our future warfighters with massive amounts of data.
- **Countermine Warfare and Joint Opportunities for the Future** (Chaired by Mr. Frank Kendall, ASB, and Mr. Jim Luyten, NRAC) This FY 2000 effort is in final draft and currently being outbriefed. This Joint Army/Navy advisory board effort has a specific focus on programs and technologies for mine detection and neutralization in the surf-zone and inland.
- **The Joint Service Advisory Group (JSAG)**, completed its FY 2000 efforts and the ASB has now turned its lead over to the AFSAB to conduct this year's efforts. Composed of

members drawn from the ASB, AFSAB, NRAC, and DIA S&T Advisory Board, the JSAG provides advice and counsel to ASD(C3I) on issues relating to technology, policy, architecture, joint interoperability, inter-Service coordination, and commercial standards. The Department's development of the Global Information Grid was the key focus. An initial JSAG report was outbriefed to the ASD (C3I) in January 2001.

For more information on ASB activities visit, <http://www.sarda.army.mil/home.htm>

Naval Research Advisory Committee (NRAC)

Ms. Katherine C. Hegmann - Chair
Ms. Diane Mason-Muir - Program Director

2001 NRAC Studies

- **Roadmap to an Electric Naval Force (Summer Study Panel)** Naval forces are on the verge of a revolution in the distribution, control and utilization of power onboard weapons platforms. All-electric ships, boats and combat vehicles offer the promise of improved performance, increased versatility and lower cost of ownership. In order to take full advantage of the opportunities offered by integrated electric power systems, a power system architecture that will facilitate flexibility in operation, rapid recovery from damage, ease of maintenance and ready integration of new technologies as they become available is essential. This study will:
 - Review and assess recent trends and developments in the application of electric power to marine, amphibious and land platforms as well as weapons and auxiliary systems.
 - Recommend a power system architecture for optimum long-term exploitation of the benefits of integrated power systems for Naval forces.
 - Recommend a science and technology roadmap for the development of an integrated electric Naval force and

identify possible roadblocks to its successful realization.

▪ **Life Cycle Technology Insertion (Summer Study Panel)**

The rapid evolution of supporting technologies relative to the acquisition cycle and service lifetime of Naval weapons platforms makes it essential to design and acquire future Naval systems in such a way that up-to-date technologies are affordably utilized throughout the service lifetime of the system. Today, new generations of technology become available as often as every two-to-three years, whereas the design-build cycle for a major Naval platform may be as long as seven-to-ten years, and service lives of 25-40 years are typical. Future Naval weapons platforms must be designed to facilitate affordable insertion of current-generation technologies throughout their service lifetimes with minimum impact on availability. This study will:

- Perform case studies of successful and unsuccessful attempts to provide for life cycle technology insertion on recent Naval platforms and extract lessons learned.
- Review and assess the appropriate refresh intervals for the various classes of technologies critical to Naval weapons platforms.
- Recommend a design strategy for ensuring and optimizing life cycle technology insertion opportunities for future Naval weapons platforms.

▪ **Science and Technology (S&T) Community in Crisis**

Proposed as a potential joint study with the Army Science Board and the Air Force Scientific Advisory Board, with sponsorship by the DUSD(S&T). The military services are experiencing difficulty recruiting and retaining qualified scientists and engineers to conduct the research and development (R&D) necessary to maintain operational superiority. This difficulty is due, in part, to declining production of new scientists and engineers for the U.S. job market. The services' lack of competitiveness for these scarce resources is

due to low salaries and lack of stability in its R&D programs. These trends must be reversed if the services are to ensure the innovative development of revolutionary capabilities for future Army, Air Force, Navy and Marine Corps forces. This study will:

- Review recent trends in generation of scientists and engineers for the U.S. job market and compare services' recruitment and retention of these individuals to that of the private sector.
- Assess factors contributing to: declining production of U.S. scientists and engineers; lack of the services' competitiveness in recruiting scientists and engineers; and difficulty in retaining qualified scientists and engineers.
- Recommend both near-term steps and a long-term strategy for ensuring continuing availability of a qualified R&D workforce to provide knowledge and technology necessary for continued military superiority.

- **Aging Aircraft** Sponsored by the Commander, Naval Air Systems Command, this study will identify the current state of need of legacy Naval Air Systems for inspection, repair and overhaul due to aging; identify known mitigation opportunities; link the needs and mitigation opportunities to Science and Technology Objectives for Platforms, Subsystems and Processes in the current Naval Technology Plan; and provide recommendations for technology transition across the board, Naval Technology Planning, and product/process technology insertion opportunities for the future.

For more information on NRAC activities visit, <http://nrac.onr.navy.mil/webSPACE/>

Air Force Scientific Advisory Board (SAB)

- Dr. Robert Selden – Chair**
Dr. Ron Fuchs – Vice Chair
Col Greg Bishop - Executive Director

This year three studies are underway; they are:

- **Sensor Technology for Difficult Targets**
This study addresses the concern that sensor technology and associated data processing and communication have evolved rapidly over the last decade and that the vision of realistically achievable military capabilities needs to be updated along with the technology investment strategy and future capability planning.
- **Availability and Survivability of Militarily Relevant Commercial Space Systems** This study addresses the concern that military operations are increasingly dependent on space-based assets and that DoD has become increasingly dependent on commercial systems as a major augmentation of military space systems.
- **Migration of Data Bases for Command & Control** This study addresses the concern that the successful implementation of Command and Control upgrades will require that the many data bases can be successfully migrated to emerging and future systems.

Future meeting dates:

24-26 Apr, Spring Board Meeting, Ogden, UT

18-29 Jun, Summer Session, Beckman Center, CA

13-14 Sep, S&T Kickoff, Woods Hole, MA

Oct Timeframe, Fall General Board Meeting will be held in the local area. Exact dates TBD.

Study Updates:

- **AFC2-The Path Ahead.** The Summary (Volume 1) report is now on the Web.

Volume II will follow.

- **S&T and the AF Vision.** The report is awaiting completion of the security review.
- **Hypersonics.** The report has been posted to the SAB Web Page.
- **AF Battlelabs Quick Look Study.** The report is released and posted to the Web.

For more information on SAB activities or past reports, please visit our Web Site at: <http://www.sab.hq.af.mil/index.htm>

DIA Science and Technology Advisory Board

Dr. Michael Wartell – Chairman

Ms. Victoria Prescott – Exec Sec & Dir

The Science and Technology Advisory Board (STAB) continues its representation on the Senior Steering Groups for the four defense intelligence priority thrusts, which are: Attack The Database Problem, Intelligence Integration/Interoperability with the Common Operating Picture, Shaping to Meet the Asymmetric Threat, and Revitalizing and Reshaping the Workforce. STAB members are taking part in separate panel studies to augment these efforts. These panels are assessing Human Intelligence (HUMINT) as an enabler within the asymmetric threat context, information technology and knowledge engineering tools for indications and warning (I&W), and enhancing workforce competency through expanded outreach or innovative partnerships with Federal laboratories. The STAB also has two members on the Joint Services Advisory Group, which is sponsored by the Army Science Board.

Defense Science Board Members and Ex Officio

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DSB Task Force Timelines

