



DSB Newsletter



February 2006

Dr. William Schneider, Jr., Chairman

Mr. Vince Vitto, Vice Chairman

Mr. Brian Hughes, Executive Director

Chairman's Corner

Hope the holidays went well for everyone and we're now ready for another busy and productive year.

The reports from the 2005 Summer Studies are in the final stages of release. The *Reducing Vulnerability to Weapons of Mass Destruction* study has been extensively briefed within DoD and other Executive Branch agencies. In February we anticipate the first Congressional briefing as well as time with ADM Keating at U.S. Northern Command. The *Transformation: A Progress Assessment* was presented to Secretary Rumsfeld on 3 November and was well received.

The summer studies have taken shape and are getting underway. The Terms of Reference was signed 13 January for the *21st Century Strategic Technology Vectors* summer study and will be chaired by Drs. Ted Gold and Bill Graham. Mr. Vince Vitto and Dr. Ron Kerber will co-chair the study on *Information Enabled Operations*. I encourage every DSB member's participation in the upcoming summer studies.

If you haven't seen it yet, try to see the modified and improved Fubini Award display case. It was moved from outside the 3D865 DSB office due to the renovation and re-located to the B ring of the 6th Corridor.

The year 2005 was a busy one for the Defense Science Board and we're already starting our 2006 work lists. Your support and contributions are important for the continuing improvement of the Department of Defense.

Dr. William Schneider, Jr.

DSB MEETING DATES FOR 2006

- 1-2 February 2006 – Winter Quarterly
- 7-18 August 2006 – Summer Study, Irvine CA
- 17-18 May 2006 – Spring Quarterly
- 18-19 October 2006 – Fall Quarterly

DSB WEBSITE: www.acq.osd.mil/dsb

Travel Desk

When DSB travelers make reservations through Carlson Wagonlit Travel, the ticket is totally refundable and exchangeable. When DSB travelers use agents other than Carlson Wagonlit Travel to make their reservations, they run the risk of NOT being authorized reimbursement if something happens (that is not the gov'ts fault) and they incur costs beyond what the gov't would normally authorize for the travel.

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.

Task Force Status

- **Critical Homeland Infrastructure Protection** (Co-chaired by Dr. Mim John and Dr. Ron Kerber). This study is co-sponsored by Acting USD(AT&L) and the Assistant Secretary of Defense for Homeland Defense. The Task Force is chartered to assess best practices for protecting US homeland installations and recommending various approaches to enhancing security and protection of these facilities. The Task Force is to assess shortfalls, identify promising technology and/or processes, recommend methods to reduce manpower requirements, identify issues associated with military and private responsibilities for critical facility protection. **The final report is in draft.**
- **Identification Technologies of the Future** (Chair: Dr. Delores Etter; Vice-Chair: Mr. Jeffery Harris). This study is co-sponsored by Acting USD(AT&L) and the Director, Defense Research and Engineering. The Task Force is chartered to assess current technologies and operational concepts in identification and tracking. The investigation should encompass defense, intelligence, and commercial systems including promising technologies in the labs which are not yet deployed. **The classified report has been released.**
- **Future Strategic Strike Skills** (Chair: Mr. Walter Morrow). This study is co-sponsored by Acting USD(AT&L) and Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs). The Task Force is chartered to assess current skills available, identify new skills and recommend a strategy for achieving and maintaining the future strategic strike skill set. **The final report is in peer review.**
- **Identifying and Sustaining US Department of Defense/UK Ministry of Defence Defense Critical Technologies** (US Co-Chairs: Admiral William Studeman and Dr. Anita Jones; UK Chair: Dr. Julia King). The study is a joint US Defense Science Board and UK Defence Scientific Advisory Council effort. The Study is chartered to develop a methodology to identify unique defense technologies as well as commercially developed technologies needing augmentation to fulfill defense niche areas and apply this methodology to develop a list of defense critical technologies. **The final report is in security review.**
- **Mobility** (Chair: GEN William Tuttle, USA (Ret)) This study is co-sponsored by Acting USD(AT&L), and Director, Defense Systems. The Task Force is chartered to develop a comprehensive understanding of how the strengths and weaknesses of current military transport relate to the general structure of future mobility. **The final report has been released.**
- **Future of the Global Positioning System (GPS)** (Co-Chairs: Dr. James Schlesinger and Dr. Robert Hermann) This study, co-sponsored by Acting USD(AT&L) and the Assistant Secretary of Defense (Networks and Information Integration), will assess the range of issues dealing with Galileo or other future radio navigation satellite systems. This will include capabilities and services within GPS to ensure its viability in commercial markets, the impact on frequency spectrum use, access and denial issues, and possible alternatives. The Task Force should also assess areas the DoD should seek partnering relationships outside the DoD. **The final report has been released.**
- **Red Lessons Learned** (Chair: Mr. Rich Haver) This study is co-sponsored by Acting USD(AT&L), the Under Secretary of Defense (Intelligence), and the Director, Defense Research and Engineering. The Task Force will assess what information our adversaries learn from U.S. military engagements, and particularly, what might they have learned from OIF and OEF. The Task Force is to identify what channels adversaries learn of our capabilities, and if there is evidence an adversary is adjusting to U.S. capabilities. In addition to the operational phase, the Task Force is to assess the preparation and

stabilization phase as well. **The report is in draft.**

- **Manufacturing Technology Program** (Chair: Dr. Jacques Gansler) This study is co-sponsored by Acting USD(AT&L), and the Deputy Under Secretary of Defense (Advanced Systems & Concepts). The Task Force is to review the DoD Manufacturing Technology Program. The Task Force is to specifically address the program's investment strategy, program balance, programmatic and funding linkage, the ability of the program to mature and transition from laboratory to production, and the acquisition impact. **The report is pending release.**
- **Force Protection in Urban and Unconventional Environments** (Co-Chairs: Dr. Ted Gold and GEN Bill Hartzog, USA (Ret.)) This study is co-sponsored by the Chairman of the Joint Chiefs of Staff, the Acting USD(AT&L) and the Director, Defense Research and Engineering. The Task Force is to review and evaluate force protection capabilities in urban and unconventional environments and provide recommendations to effect change to the future Joint Force. The Task Force is to consider various issues to include relevant experiences of other countries and capabilities of civilian agencies. The Task Force is to review current efforts to negate the effects of improvised explosive devices, review the on-going Joint Urban Operations initiatives, and evaluate efforts in Intelligence, Surveillance & Reconnaissance. **The report is in draft.**
- **Test and Training Sub-scale and Full-scale Aerial Targets.** (Co-Chairs: Mr. Bill Delaney and Gen Mike Williams, USMC retired) This study is co-sponsored by the Acting USD(AT&L), the Director, Defense Systems, and the Director, Operational Test and Evaluation. The Task Force is to assess the future needs for sub-scale and full-scale aerial targets for developmental and operational testing. The Task Force is also examining to what extent alternatives including modeling and simulation can supplement live testing. **The final report has been released.**
- **Roles and Authorities of the Director of Defense Research and Engineering** (Co-Chairs: Mr. Don Latham, and Dr. Ted Gold) This study is sponsored by the Acting USD(AT&L). The Task Force is to examine

the past and current roles and authorities of the Director of Defense Research and Engineering (DDR&E), and determine appropriate future roles and authorities for the DDR&E. The Task Force is to examine the DDR&E in relation to other senior science and technology and acquisition officials of the Military Departments and the Defense Agencies. **This final report has been released.**

- **2005 Summer Study on Reducing Vulnerabilities to Weapons of Mass Destruction (WMD)** (Co-Chairs: Mr. Larry Lynn and Mr. Bob Nesbit). This Summer Study is co-sponsored by the Acting USD(AT&L) and the Assistant to the Secretary of Defense (Nuclear, Chemical and Biological Defense Programs). The Summer Study is to develop a national enterprise architecture to reduce the US vulnerability to WMD. The Summer Study assessed which WMD modalities are the US most vulnerable to, and the functional "requirements" of envisioned WMD defense capability. The Task Force is to develop an overall architecture, examine current and planned US investments in WMD defense, and recommend a prioritized investment strategy. **The final report is in draft.**
- **2005 Summer Study on Transformation: A Progress Assessment** (Co-Chairs: Gen Larry Welch, USAF (retired), and Dr. Robert Hermann) This Summer Study is co-sponsored by the Acting USD(AT&L), the Under Secretary of Defense (Policy), the Under Secretary of Defense (Personnel and Readiness), the Director, Force Transformation, and the Director, Defense Research and Engineering. The Summer Study is to assess the Department's continuing transformation process. The assessment is to describe the current status of transformation efforts, identify appropriate transformation objectives, and recommend ways and means to meet emerging and persistent challenges. **Volume 1 of the final report is in security review. Volume 2 is in draft.)**
- **Improvised Explosive Devices** (Co-Chairs: Dr. Delores Etter, and Mr. Robert Stein) This Task Force is co-sponsored by the Acting USD(AT&L), Director of Defense Research and Engineering (DDR&E), and Director, Defense Systems. The Task Force originated as a panel on the Force Protection Task Force

before becoming a separate Task Force. This study is to explore methods and techniques to significantly reduce the effects of IEDs (i.e., injuries, casualties, hampered or disrupted operations) on U.S. and coalition forces in operations such as are currently being conducted in OIF. **The final report is in draft.**

- **Institutionalizing Stability Operations Within DoD** (Chair: Dr. Craig Fields) This study is sponsored by the Deputy Secretary of Defense. The Task Force is to determine the best way to organize DoD to conduct Stability Operations. The Task Force was asked to address a number of issues to include: what organizational change is needed within OSD Policy, the Joint Staff and the rest of DoD to manage implementation; what organizational change is needed within DoD to improve our ability to conduct or support stability operations; what should be the timing and sequence of organization change within DoD; and, what additional staffing is required for any new or reshaped stability operations entities in DoD? **The final report has been released.**
- **Nuclear Capabilities** (Co-Chairs: Gen Larry Welch, USAF (retired), and Dr. John Foster). This task Force is co-sponsored by the Acting USD(AT&L), and the Assistant to the Secretary of Defense³ (Nuclear, Chemical and Biological Defense Programs). The Task Force is to 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. The assessment is to describe the progress towards the goal of an integrated new triad and examine plans to transform the nuclear weapons complex. **A classified report is pending release.**
- **VTOL/STOL** (co-chairs: ADM Don Pilling, USN (Ret) and Dr. Bill Howard). The task force is sponsored by USD(AT&L) and Director, Defense Systems. The task force is to assess what features and capabilities Vertical Take-Off and Landing (VTOL)/Short Take-Off and Landing (STOL) aircraft should have in order to support the nation's defense needs through at least the first half of the 21st century. **The task force has had its first meeting.**

- **Software Assurance** (chair: Dr. Bob Lucky). The task force is sponsored by USD(AT&L), ASD(NII) and Commander, STRATCOM. The task force is to assess the risk the DoD runs as a result of foreign influence on its software and to suggest technology and other measures to mitigate that risk. **First meeting is planned for late February.**
- **2006 Summer Study on 21st Century Technology Vectors** (co-chairs: Dr. Bill Graham and Dr. Ted Gold). The Summer Study is to determine the operational capabilities to support the National Security objectives of the 21st Century. Once the operational capabilities are determined, the study will then identify the science and technology requirement that will support those capabilities and compare it to current science and technology planning as well as transitioning those technologies to a capability.
- **2006 Summer Study on Information Enabled Operations** (co-chairs: Mr. Vince Vitto, Dr. Ron Kerber). The Terms of Reference for this study is in coordination.

[DSB Reports published since Oct 2005:](#)

- [Identification Technologies of the Future](#)
- [Roles and Authorities of the Director, Defense Research and Engineering](#)
- [Nuclear Weapons Effects Test, Evaluation, and Simulation](#)
- [Institutionalizing Stability Operations within DoD](#)
- [Future Needs for Aerial Targets](#)
- [Mobility](#)
- [The Future of the Global Positioning System](#)
- [Institutionalizing Stability Operations Within DoD](#)

Army Science Board (ASB)

The ASB website is located at :
<https://webportal.saalt.army.mil/main/asb.htm>.

Naval Research Advisory Committee (NRAC)

Study Selections for 2006: Of the 30-plus 2006 NRAC study topics proposed for consideration, two were selected to be topics for the spring-summer period: *Distributed Operations* and *Software Intensive Systems*. Once these are completed, NRAC will commence another study entitled *Biometrics*.

The *Distributed Operations (DO)* study will focus on the extent to which a system of systems approach, enabled by emerging technologies in areas such as materials, communications, information technology, and nanotechnology, mitigate the challenges posed by Distributed Operations scenarios. The study will determine the appropriate areas for technology insertion over the next several decades, identify feasible time phasing for exploration and implementation of technology options to address critical DO capability shortfalls, and address risk associated with pursuit of particular options. The results of the study would help guide acquisition planning and science and technology investments to facilitate rapid fielding of improved DO-capable Marine Rifle Squads. Additionally, results could help filter future warfighting concept proposals by supplying constraints on anticipated advances in technology.

Software-Intensive Systems study will examine how systems engineering, model driven architecture, and modular software specification and implementation methods can be applied in a realistic manner to specifying, bidding, and engineering of new complex systems, across multiple organizations. Particular opportunities include the application of ideas developed in industry for the decomposition of software systems into interacting modules with clearly defined interfaces in a comprehensive manner, touching multiple points in the acquisition process. This study will also investigate challenges with fielding computer-based acquisition tools in the context of existing Navy organizational structures, policies, and the overall workflow associated with the acquisition of new systems. The study requires understanding of the status quo of the Navy's acquisition process, systems engineering, modeling and simulation, and modular design principles. The study will build on the prior NRAC study on system modularity, but will direct attention to the technical and organizational challenges of acquisition.

In March 2005, NRAC released the report for the study: *S&T for Modular Systems*. It concluded that the Navy must define a taxonomy for modularity that characterizes the choices and sets guidance/parameters for implementing modularity. Also, S&T should assist in developing methodology and tools for decomposing systems into modules to help define modularity across systems, based on understood drivers and tradeoffs.

Three other NRAC study reports are in the final editing and review stage: *Future Fuels Technologies*, *Lighter Than Air Technologies*, and *Venture Capital*.

Information on NRAC and ongoing and completed studies can be obtained from the NRAC website. <http://onr.navy.mil/nrac>

Air Force Scientific Advisory Board (SAB)

General Board Meetings. Fall Board was held 5-7 October 2005 in Rosslyn, VA. New board members were introduced and familiarized with the board processes, as well as the newly selected Executive Officers and Technical Writers for the upcoming studies. Outgoing members were also recognized for their dedicated service to the board. On 1 Nov 05 a Spring Board planning meeting was held in Las Vegas, NV in preparation for the upcoming Spring Board session 11-13 April 2006 in Las Vegas, NV. The board held its annual Study Kickoff 10-13 January 2006 in Rosslyn, VA. Study teams were organized and heard briefings to begin data gathering activities. Study Chairs charted the direction of their respective studies and outlined potential briefings they would like to receive and various site visits they would like to make over the next few months. There are four FY06 studies: Air Defense Against Unmanned Aerial Vehicles (UAVs), Space Survivability, System-Level Experimentation in Air Force S&T Programs (SLE), and Technology Options for Improved Air Vehicle Fuel Efficiency (Fuels). The Fuels study was commissioned by the former acting SecAF and has already concluded. The remaining studies are scheduled to conclude by July 2006.

FY05 Systems-of-Systems Engineering (SOSE) Study Outbriefs. The SOSE outbrief was presented to Lt Gen Hoffman and Lt Gen

Hobbins on 7 Oct. On 8 Nov the study was outbriefed to DISA. AFC2ISRC/CC and ACC/A8 were outbriefed on 15 Dec. Mr. Kern (OASD/NII) and Lt Gen Peterson, SAF/XC were outbriefed on 9 Jan 06. RADM Mauldin, J-7, was outbriefed on 12 Jan 06.

FY05 Domain Integration (DI) Outbriefs. The DI outbrief was presented to Maj Gen Lattif at the NRO on 19 Oct. DISA was outbriefed on 8 Nov and ACC/CC was outbriefed on 9 Nov. On 7 Dec the outbrief was presented to Gen Lord and on 21 Dec to Deputy XO, Maj Gen Seip.

FY05 Persistence at Near Space Altitudes (NS) Outbrief. The NS study was outbriefed to Dr. Rustan at the NRO on 5 Oct and an outbrief was presented to DARPA on 27 Jan.

FY06 S&T Reviews/Meetings. The following S&T site visits were conducted during October and November 2005: The HE Directorate site visit was conducted on 11 Oct at Brooks City Base, San Antonio, TX, followed by the HE S&T Review 17-21 Oct at Wright-Patterson AFB, OH; the MN Directorate S&T Quality Review was conducted 24-28 Oct at Eglin AFB, FL ; the ML Directorate S&T Review and the VA Directorate S&T Review was conducted 31 Oct-4 Nov at Wright-Patterson AFB, OH; and the IF S&T Review was conducted 14-18 Nov at Rome, NY. The results of the S&T reviews were briefed to the entire Air Force SAB at the Study Kickoff meeting on 10 Jan 06 so a board consensus could be reached. A transition meeting was held with the board chairs, the incoming S&T Chair, Dr. Luzzi and the outgoing S&T Chair, Dr. Wilson on 1 Dec 05. A meeting is scheduled with Maj Gen Bowlds, AFRL/CC on 31 Jan 06.

FY06 UAV Study Meetings. The UAV study panel chairs met to discuss the direction of the study on 2 Dec 05.

FY06 Space Survivability Study Meetings. The Space Survivability Study team held a planning meeting and office call with Lt Gen Hoffman on 12 Oct 05. They held a fact-finding meeting in Chantilly, VA on 21 Oct. A meeting was held with Gen Lord at the Pentagon on 7 Dec. Additional fact-finding meetings were conducted in the DC area on 15 Dec and in Los Angeles, CA on 16 Dec.

FY06 SLE Study Meetings. **The SLE study conducted a planning telecom on 28 Oct 05**

and held their kickoff meeting at the Pentagon on 9 Nov. Vector checks were held with the CSAF (via SAF/AQ) and the SecAF on 30 Nov. The study team held a fact-finding meetings at Hurlburt Field on 13 Dec and 5 Jan 06.

FY06 Fuels Study Meetings. **The Fuels study held a fact-finding meeting at Wright-Patterson AFB, OH on 31 Oct 05. They followed with meetings in Los Angeles, CA on 10-11 Nov and 12-13 Dec. The outbrief to the SecAF, USecAF, and other air staff senior leaders is scheduled for 26 Jan 06.**

SAB Chair Meetings. The SAB Chair, Ms. Heidi Shyu, met with the NRAC for their 177th Winter Quarterly Meeting in Arlington, VA on 7 Dec 05. She also met to discuss the SAB roles and responsibilities with the new SecAF on 7 Dec 05. She had courtesy visits with the VCSAF on 19 Dec, the CSAF on 29 Dec, and has a courtesy visit schedules with Mr. Tether, DARPA Director, on 26 Jan 06.

Publishing Status. The following FY05 studies have been released:

- *Domain Integration, Public Release*
- *Systems-of-Systems Engineering for Air Force Capability Development, Public Release*
- *Persistence at Near Space Altitudes, FOUO Distribution C*
- *Air Force Operations in Urban Environments, Volume 1, Public Release*
- *Academic Audit of AFIT Programs in Systems Engineering, Public Release*

The following FY05 studies are in review and pending publication:

- *Air Force Operations in Urban Environments, Volume 2*
- *Automatic Target Recognition*

Defense Business Board (DBB)

In 2005, the DBB released reports, which can be found on the website (www.dod.mil/dbb) on the following topics:

- Task Group on the Role of a Chief Management Officer in the Department of Defense
- Business Management Modernization Program Task Group
- Performance-Based Management Task Group

- Healthcare for Military Retirees Task Group
- Military Postal Service Task Group

The 2006 topics will focus on solutions to address key human resource management issues related to the SES corps, and organizational change management strategies. Specific Task Groups will be confirmed in March.

