
Physical Sciences March Test Memorandum 2013

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DOUGLAS ANGIE

National Library of Medicine Current Catalog National Academies Press

Non-lethal weapons (NLWs) are designed to minimize fatalities and other undesired collateral damage when used. Events of the last few years including the attack on the USS Cole have raised ideas about the role NLWs can play in enhancing support to naval forces. In particular to what extent and in what areas should Department of the Navy (DoN) -sponsored science and technology (S&T) provide a research base for developing NLW capabilities? To assist with this question and to evaluate the current NLWs program, the Joint Non-Lethal Weapons Directorate (JNLWD) and the Office of Naval Research (ONR) requested the National Research Council perform an assessment of NLWs science and technology. The report presents the results of that assessment. It discusses promising NLW S&T areas, development accomplishments and concerns about NLW, and series of recommendations about future NLW development and application.

[Live Fire Testing of the F-22](#) Ashgate Publishing, Ltd.

The Live Fire Test Law mandates realistic survivability and lethality testing of covered systems or programs. A provision of the law permits the Secretary of Defense to waive tests if live fire testing would be "unreasonably expensive and impractical." Though no waiver was requested before

the F-22 program entered engineering and manufacturing development, the Defense Department later asked that Congress enact legislation to permit a waiver to be granted retroactively. Rather than enact such legislation, Congress requested a study to explore the pros and cons of full-scale, full-up testing for the F-22 aircraft program. The book discusses the origin of testing requirements, evaluates the practicality, affordability, and cost-benefit of live fire tests, and examines the role of testing, modeling, and data bases in vulnerability assessment.

[British Nuclear Weapons and the Test Ban 1954-1973](#) National Academies Press

In 1962 Dean Acheson famously described Britain as having lost an Empire but not yet found a role. Perhaps nowhere is this more apparent than in the realms of nuclear weapons. An increasingly marginal world power, successive post-war British governments felt that an independent nuclear deterrent was essential if the country was to remain at the top table of world diplomacy. Focusing on a key twenty-year period, this study explores Britain's role in efforts to bring about a nuclear test ban treaty between 1954 and 1973. Taking a broadly chronological approach, it examines the nature of defence planning, the scientific goals that nuclear tests were designed to secure, Anglo-American relationships, the efficacy of British diplomacy and its contribution to arms control and disarmament. A key theme of the study is to show how the UK managed to balance the conflicting pressures created by its determination to remain a credible nuclear power whilst wanting to pursue disarmament objectives, and how these pressures shifted over the period in question. Based on a wealth of primary sources this book opens up the largely ignored subject of the impact of arms control on the UK nuclear weapons programme. Its appraisal of the relationship between the requirements and developments of the UK nuclear weapons

programme against international and domestic pressures for a test ban treaty will be of interest to anyone studying post-war British defence and foreign policy, history of science, arms control, disarmament and non-proliferation and international relations. It also provides important background information on current events involving nuclear proliferation and disarmament.

The Chemical News and Journal of Physical Science National Academies Press

The Army's ability to meet public and congressional demands to destroy expeditiously all of the U.S. declared chemical weapons would be enhanced by the selection and acquisition of appropriate explosive destruction technologies (EDTs) to augment the main technologies to be used to destroy the chemical weapons currently at the Blue Grass Army Depot (BGAD) in Kentucky and the Pueblo Chemical Depot (PCD) in Colorado. The Army is considering four EDTs for the destruction of chemical weapons: three from private sector vendors, and a fourth, Army-developed explosive destruction system (EDS). This book updates earlier evaluations of these technologies, as well as any other viable detonation technologies, based on several considerations including process maturity, process efficacy, process throughput, process safety, public and regulatory acceptability, and secondary waste issues, among others. It also provides detailed information on each of the requirements at BGAD and PCD and rates each of the existing suitable EDTs plus the Army's EDS with respect to how well it satisfies these requirements.

Testing of Body Armor Materials National Academies Press

In 2009, the Government Accountability Office (GAO) released the report Warfighter Support: Independent Expert Assessment of Army Body Armor Test Results and Procedures Needed Before Fielding, which commented on the conduct of the test procedures governing acceptance of body armor vest-plate inserts worn by military service members. This GAO report, as well as other observations, led the Department of Defense Director, Operational Test & Evaluation, to request that the National Research Council (NRC) Division on Engineering and Physical Sciences conduct a three-phase study to investigate issues related to the testing of body armor materials for use by the U.S. Army and other military departments. Phase I and II resulted in two NRC letter reports: one in 2009 and one in 2010. This report is Phase III in the study. Testing of Body Armor Materials: Phase III provides a roadmap to reduce the variability of clay processes and shows how to migrate from clay to future solutions, as well as considers the use of statistics to permit a more scientific determination of sample sizes to be used in body armor testing. This report also develops ideas for revising or replacing the Prather study methodology, as well as reviews comments on methodologies and technical approaches to military helmet testing.

Testing of Body Armor Materials: Phase III also considers the possibility of combining various national body armor testing standards.

STRATOSPHERIC OZONE & MAN MAN'S INTERACTIONS & CONCERNS Springer

Biosafety in the Laboratory is a concise set of practical guidelines for handling and disposing of biohazardous material. The consensus of top experts in laboratory safety, this volume provides the information needed for immediate improvement of safety practices. It discusses high- and low-risk biological agents (including the highest-risk materials handled in labs today), presents the "seven basic rules of biosafety," addresses special issues such as the shipping of dangerous materials, covers waste disposal in detail, offers a checklist for administering laboratory safety and more.

Telecommunications Research and Engineering at the Communications Technology Laboratory of the Department of Commerce National Academies Press

First multi-year cumulation covers six years: 1965-70.

An Assessment of Non-Lethal Weapons Science and Technology University of Texas Press

Combat helmets have evolved considerably over the years from those used in World War I to today's Advanced Combat Helmet. One of the key advances was the development of aramid fibers in the 1960s, which led to today's Kevlar-based helmets. The Department of Defense is continuing to invest in research to improve helmet performance, through better design and materials as well as better manufacturing processes. Review of the Department of Defense Test Protocols for Combat Helmets considers the technical issues relating to test protocols for military combat helmets. At the request of the DOD Director of Operational Test and Evaluation, this report evaluates the adequacy of the Advanced Combat Helmet test protocol for both first article testing and lot acceptance testing, including its use of the metrics of probability of no penetration and the upper tolerance limit (used to evaluate backface deformation). The report evaluates appropriate use of statistical techniques in gathering data; adequacy of current helmet testing procedures; procedures for the conduct of additional analysis of penetration and backface deformation data; and scope of characterization testing relative to the benefit of the information obtained.

British Nuclear Weapons and the Test Ban 1954-73 National Academies Press

During the 18-year program of atmospheric testing of nuclear weapons (1945-1962), some of the 225,000 participants were exposed to radiation.

Many of these participants have been experiencing sicknesses that may be test-related. Currently, test participants who had served in military units have pending over 6,000 claims for compensation at the Department of Veterans Affairs. This study presents improved methods for calculating the radiation doses to which these individuals were exposed, and are intended to be useful in the adjudication of their claims.

Assessment of Explosive Destruction Technologies for Specific Munitions at the Blue Grass and Pueblo Chemical Agent Destruction Pilot Plants CRC Press

The Department of Commerce operates two telecommunications research laboratories located at the Department of Commerce's Boulder, Colorado, campus: the National Telecommunications and Information Administration's (NTIA's) Institute for Telecommunications Sciences (ITS) and the National Institute of Standards and Technology's (NIST's) Communications Technology Laboratory (CTL). ITS serves as a principal federal resource for solving the telecommunications concerns of federal agencies, state and local governments, private corporations and associations, standards bodies, and international organizations. ITS could provide an essential service to the nation by being a principal provider of instrumentation and spectrum measurement services; however, the inter-related shortages of funding, staff, and a coherent strategy limits its ability to fully function as a research laboratory. This report examines the institute's performance, resources, and capabilities and the extent to which these meet customer needs. The Boulder telecommunications laboratories currently play an important role in the economic vitality of the country and can play an even greater role given the importance of access to spectrum and spectrum sharing to the wireless networking and mobile cellular industries. Research advances are needed to ensure the continued evolution and enhancement of the connected world the public has come to expect.

Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar National Academies Press

Focusing on a key twenty year period, this study explores Britain's role in efforts to bring about a nuclear test ban treaty between 1954 and 1973. Taking a broadly chronological approach, it examines the nature of defence planning, Anglo-American relationships, the efficacy of British diplomacy and UK contributions to arms control and disarmament. The appraisal of the relationship between the requirements and developments of the UK nuclear weapons programme against the countervailing international and domestic pressures for a test ban treaty will be of interest to anyone studying post-war British defence and foreign policy, history of science, arms control, disarmament and non-proliferation and international relations, or who is looking for background information on current events involving nuclear proliferation and disarmament.

Film Badge Dosimetry in Atmospheric Nuclear Tests Routledge

The Chemical Weapons Convention requires, among other things, that the signatories to the convention "which includes the United States" destroy by April 29, 2007, or as soon possible thereafter, any chemical warfare materiel that has been recovered from sites where it has been buried once discovered. For several years the United States and several other countries have been developing and using technologies to dispose of this non-stockpile materiel. To determine whether international efforts have resulted in technologies that would benefit the U.S. program, the U.S. Army asked the NRC to evaluate and compare such technologies to those now used by the United States. This book presents a discussion of factors used in the evaluations, summaries of evaluations of several promising international technologies for processing munitions and for agent-only processing, and summaries of other technologies that are less likely to be of benefit to the U.S. program at this time.

Research in the Teaching of Science National Academies Press

The Department of Commerce operates two telecommunications research laboratories located at the Department of Commerce's Boulder, Colorado, campus: the National Telecommunications and Information Administration's (NTIA's) Institute for Telecommunications Sciences (ITS) and the National Institute of Standards and Technology's (NIST's) Communications Technology Laboratory (CTL). CTL develops appropriate measurements and standards to enable interoperable public safety communications, effective and efficient spectrum use and sharing, and advanced communication technologies. CTL is a newly organized laboratory within NIST, formed mid-2014. As it is new and its planned work represents a departure from that carried out by the elements of which it was composed, this study focuses on its available resources and future plans rather than past work. The Boulder telecommunications laboratories currently play an important role in the economic vitality of the country and can play an even greater role given the importance of access to spectrum and spectrum sharing to the wireless networking and mobile cellular industries. Research advances are needed to ensure the continued evolution and enhancement of the connected world the public has come to expect.

Statistics of Land-grant Colleges and Universities National Academies Press

The book, as originally conceived, was to be limited to technical considerations, but the scientific course of event has been so interwoven with non-scientific, but nevertheless related events, the authors felt necessary to include an account of this situation. Accordingly, the book is divided into five sections entitled: Stratospheric ozone Atmospheric processes influencing stratospheric ozone Does man influence stratospheric ozone Effects and research Public policy

Monthly Catalog of United States Government Publications National Academies Press

Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and promote best practices with consistent application. Strengthening Forensic Science in the United States: A Path Forward provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and regulating the forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exoneration. Strengthening Forensic Science in the United States gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.

Bulletin National Academies Press

The Space Age began just as the struggle for civil rights forced Americans to confront the long and bitter legacy of slavery, discrimination, and violence against African Americans. Presidents John F. Kennedy and Lyndon Johnson utilized the space program as an agent for social change, using federal equal employment opportunity laws to open workplaces at NASA and NASA contractors to African Americans while creating thousands of research and technology jobs in the Deep South to ameliorate poverty. We Could Not Fail tells the inspiring, largely unknown story of how shooting for the stars helped to overcome segregation on earth. Richard Paul and Steven Moss profile ten pioneer African American space workers whose stories illustrate the role NASA and the space program played in promoting civil rights. They recount how these technicians, mathematicians, engineers, and an astronaut candidate surmounted barriers to move, in some cases literally, from the cotton fields to the launching pad. The authors vividly describe what it was like to be the sole African American in a NASA work group and how these brave and determined men also helped to transform Southern society by integrating colleges, patenting new inventions, holding elective office, and reviving and governing defunct towns. Adding new names to the roster of civil rights heroes and a new chapter to the story of space exploration, We Could Not Fail demonstrates how African Americans broke the color barrier by competing successfully at the highest level of American intellectual and technological achievement.

Review of Department of Defense Test Protocols for Combat Helmets

The Navy List

Army Research and Development

The Second Decade of the NDW-PRNC Board of Examiners for Scientific and Technical Personnel