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My Research for: CRADA_UU

Title	Accession Number	Corporate Author	Personal Authors	Report Date
Digital Humans and Electromagnetic Motion Capture	ADA583094	ARMY TANK AUTOMOTIVE RESEARCH DEVELOPMENT AND ENGINEERING CENTER WARREN MI	Nebel, Kyle J., Yee, Andrew	6/1/2000
An Analysis of Technology Transition Within the Department of Defense	ADA524765	NAVAL POSTGRADUATE SCHOOL MONTEREY CA	Tew, Donnie, Wallac e, Kevin	6/1/2010

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Navy Scientists and Engineers on
the Use of Scientific and
Technical Information

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AND LOGISTICS)
WASHINGTON

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Highest Possible Sensitivity of Information is CONTROLLED UNCLASSIFIED INFORMATION

Abstract	Descriptive Note	Pagination	Report Numbers
<p>This paper discusses the cooperative research and development work between Delphi Automotive Systems (formerly known as Delphi Interior & Lighting Systems) and the U.S. Army TACOM/TARDEC. Discussion will focus on past work and the evolution of the approaches currently being used by TARDEC and Delphi for digital human animation, real-time human interaction (man in the loop), and motion data library development, as it relates to TACOM/Delphi's electromagnetic motion capture systems and the Engineering Animation Incorporated (EAI)-Jack ergonomic analysis/animation software.</p>	<p>Conference paper</p>	<p>13</p>	<p>2000-01-2156, TARDEC-</p>
<p>Appropriate methods and the proper execution thereof are critical to the success of technology transition. A significant hurdle in this process is the phase in which the Science & Technology community is prepared to hand-off a technology, which has not achieved a sufficiently high enough Technology Readiness Level (TRL), Manufacturing Readiness Level (MRL), or System Readiness Level (SRL) for the Engineering and Manufacturing community. This analysis concentrated on three technology transition factors: Organization, Policy, and Metrics (OPM). Organizational transformation encompasses the recent expansion of technology transition groups and initiatives within DoD. Additionally, the overall mindset of cooperative development and open communication are detailed within the Organizational focal area. The Policy focal area delves into the various DoD technology transition governing principles included in the DoD 5000, the Defense Acquisition Guidebook, and other governing documents. Lastly, the Technology Metrics focal area concentrates on the importance of technology maturation and how to qualitatively and objectively assess technologies. Thorough research was conducted on these areas to demonstrate DoD's recent efforts to bridge the gap and provide innovative solutions to the Warfighter within a reduced timeframe. Additionally, a case study analysis was conducted on a Defense Advanced Research Projects Agency (DARPA) Program, Boomerang, to highlight attributes of a successful technology transition.</p>	<p>null</p>	<p>75</p>	<p>null</p>

A Rhizobium tropici-produced biopolymer was applied to an explosion protection berm at the Iowa Army Ammunition Plant (IAAAP) to stabilize the soil, prevent loss of berm height, reduce erosion, and increase the rate and extent of revegetation. The berm was recontoured, and a hydroseeder was used to apply biopolymer with grass seed. The control area received plain water and seed. Evaluated biopolymer application methods include: single surface application, double surface application, and a double application at depth, with the first application 2-ft below ground surface (bgs), and the second on the surface. A LiDAR (Light Detection and Ranging) survey evaluated soil movement from the berm slope over three years. The double application of the biopolymer at depth was the most effective application method as determined by calculating soil loss and surface roughness, followed closely by the double surface application. At 19 months post-treatment, a landslip was observed in the treated area that received the double surface application of biopolymer. There was no evidence of soil cracking in any other treated areas.

Technical
Report

48 ERDC-TR-16-5

The primary goal of the Acquisition Review Quarterly (ARQ) is to provide practicing acquisition professionals with relevant management tools and information based on recent advances in policy, management theory, and research. ARQ addresses the needs of professionals across the full spectrum of defense acquisition, and is intended to serve as a mechanism for fostering and disseminating scholarly research on acquisition issues, for exchanging opinions, for communicating policy decisions, and for maintaining a high level awareness regarding acquisition management philosophies.

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Our Combatant Commanders (CoComs) face an emerging strategic environment characterized by elusive, fast-adapting adversaries capable of gaining temporary operational advantage with creative tactics and technologies. Against such threats, our operational commanders and the soldiers, sailors, airmen, and marines who serve with them, cannot ensure successful mission accomplishment relying on past products, processes, and systems. They also cannot achieve the results our Nation expects of them on the promises of capabilities to come. The CoComs have one primary job-to successfully accomplish the missions assigned to them today. Advanced Systems and Concepts' (AS&C's)) Strategic Plan defines what we are doing to ensure joint warfighters have the options and tools required to perform successfully. This plan also outlines our performance goals, desired outcomes, and oversight strategies that we will use to accomplish our job. These goals are in line with the President's Management Agenda, SECDEF's Four Year Goals, AT&L's Goals and DDR&E's goals as displayed on the opposite page. It has been ten years since AS&C was created and first demonstrated the ability to rapidly accelerate the technology development cycle and actually field useable operational, %go to war prototypes to satisfy a critical operational customer need. That complex system

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22 null

The mission of the Air Force Institute of Technology (AFIT) graduate programs, to support national security through education, research, and consultation, continues to be intrinsically interwoven into the Air Force mission. AFIT maintains a close affiliation with Air Force research organizations and operational communities as well as Department of Defense Agencies. This affiliation enables AFIT to provide a unique environment for research essential to the training of future managers and engineers in disciplines critical to anticipated defense needs. This Research Report is prepared annually by the Office of Research and Consulting to solicit continued involvement and support from Air Force laboratories and DoD agencies, and to encourage new sponsors to participate in AFIT' 5 research program. AFIT recognizes that research provides a dual opportunity, to enhance military competitiveness and to ensure timely transfer of new technology to US industry.

Research rept.
1 Oct 1998-30
Sep 1999

AFIT/EN-TR-
147 00-01

This report describes a Cyber Mutual Assistance Workshop (CMAW), its significance, and its outcomes. The CMAW was intended to explore the interconnectedness of the North American Power Sector and possible sources of aid, should the sector fall victim to a cyber attack. The objective of the CMAW was to enable better understanding of capabilities, not only in the sectors own cyber security workforce, but in possible mutual support from city, state, and federal government entities, and across other sectors cyber security communities. The Army Cyber Institute, alongside the Electric Infrastructure Security Council and the Software Engineering Institutes CERT Coordination Center, aimed to explore and evoke national conversation on the possibility of mutual cyber assistance in times of duress and the importance to that endeavor of prior understanding and relationships between concerned parties.

Technical
Report

CMU/SEI-
53 2018-SR-007

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Annual rept.

76 null

Under a Cooperative Research Development Agreement between Seattle Photonics (Seattle, Washington) and the U.S. Army Aeromedical Research Laboratory (Fort Rucker, Alabama), a novel product called the Seattle Photonics' Light Homogenizing Sheet (LHS) is evaluated for use as a backlight in helmet-mounted display designs. The LHS is designed to spread the light from a source uniformly over a well-defined area with high light efficiency. Seattle Photonics provided two demonstration units (DEMO 1 and DEMO 2). The Seattle Photonics LHS contained in both DEMO 1 and DEMO 2 produced greater illumination uniformity and light efficiency than did a comparable device representing current technology. In the evaluation, the LHS in both DEMO 1 and DEMO 2 produced approximately 1.7 to 1.9 times greater light efficiency than did the comparison device. The illumination from the LSD screen is best described as a Gaussian distribution and produces a more highly uniform light distribution.

Final rept.

USAARL-2004-
13 22

The Naval Air Warfare Center, Aircraft Division is the full spectrum research, development, test and evaluation (RDT&E), engineering, and fleet support center for air platforms. The product test areas include aircraft systems (manned and unmanned), airborne technology, propulsion, flight test and engineering, avionics design and production, human systems and aircraftplatform interface. The most important assets are the more than 10,000 scientists and engineers (S&E s) and technicians and 15,000 acres and 7,400 square miles of test ranges supporting the RDT&E facilities. Our unique capabilities and state-of-the-art facilities are unmatched in the world. NAWCAD is located at Patuxent River, Maryland (65 miles south, southeast of Washington, DC). Expert technical cooperation is needed in various technical areas such as Physics, Chemistry, Mathematics, Electronics, Aerodynamics, Material Science & Engineering (software, hardware, processing, etc.).

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To investigate biomedical and materials laser-optical systems that have potential clinical and industrial applications. To develop clinical and industrial applications of Free-Electron laser technology and related broadly wavelength tunable, short pulse, ultrafast, high peak power, high average power laser systems that are efficient, compact, reliable and clinically and commercially practical systems. To carry out actual FEL experiments with collaborators at existing FEL facilities at Duke, Vanderbilt and Stanford Universities.

Final technical
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31 Mar 91,

18 null

The US Army Research Laboratory (ARL) Summer Student Symposium is an ARL Directors Award Program for all the students participating in various summer scholarship and contract activities across ARL. The goal of the program is to recognize and publicize exceptional achievements made by students and their mentors in support of Army science. All undergraduate and graduate interns are encouraged to submit an abstract summarizing their accomplishments and to participate in the symposium. Presentations given by all directorate finalists are published in Volume I of the Proceedings (Symposium Presentations; ARL-SR-0387), while abstracts are collected in Volume II (Compendium of Abstracts; ARL-SR-0388).

Technical
Report,01 Apr
2017,31 Aug
2017

172 ARL-SR-0388

Today's Fortune 500 companies must be agile, utilize pace, be financially flexible and continue to re-invent themselves in order to remain viable in our economy. Although the differences between corporate America and the Department of Defense (DoD) may seem vast in their philosophy and implementation, there are actually more similarities than differences. The driving factors in both worlds are still leadership, strategy, fiscal responsibility, and responsiveness, to name a few. This paper focuses on those areas the authors feel are beneficial for implementation into the DoD. The paper begins with an introduction of the Secretary of Defense Corporate Fellows Program and brief overview of each Fellow's assignment. Next, the authors introduce Booz Allen Hamilton, Sun Microsystems, and Johnson & Johnson providing an overview of companies in the program and giving the reader a baseline for reference. Next, the paper will walk through each corporate sponsor and will highlight those areas each Fellow observed that have the best opportunity for successful implementation in the DoD. Although the recommendations from each sponsor company are different, the authors feel this breadth provides a good cross section of ideas from all areas of corporate America. It must be noted that due to the non-disclosure agreements signed by all officers assigned to the Secretary of Defense Corporate Fellowship Program, the unfettered access to corporate sensitive information, and the legality associated with corporate proprietary information, the authors are unable to provide specific references for some of the data contained in this paper. Research paper

AU/CADRE/N
47 NN/2009-05

document, Release 3.1, provides technical guidance for protecting the information infrastructures of the United States (U.S.) Government and industry. The information infrastructure processes, stores, and transmits information critical to the mission and business operations of an organization. This information is protected through information assurance (IA) that addresses all the security requirements of today's information infrastructure. IA relies on people, operations, and technology to accomplish the mission/business and to manage the information infrastructure. Attaining robust IA means implementing policies, procedures, techniques, and mechanisms at all layers of the organization's information infrastructure. The IATF defines the information system security engineering (ISSE) process for developing a secure system. This process defines the principles, the activities, and the relationship to other processes. Applying these principles results in layers of protection known collectively as the Defense-in-Depth Strategy. The four major technology focus areas of the Defense-in-Depth Strategy are to Defend the Network and Infrastructure, Defend the Enclave Boundary, Defend the Computing Environment, and Defend Supporting Infrastructures. The Defense-in-Depth Strategy has been broadly adopted. For example, within the U.S. Department of Defense (DoD), the Global Information Grid (GIG) IA Policy and Implementation Guidance was built around the strategy. This departmental-level policy document cites the IATF as a source of information on technical solutions and guidance for the DoD IA implementation.

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915 null

The mission is to conduct a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems, and ocean, atmospheric, and space sciences and related technologies.

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237 null

The Engineer Research and Development Center, Geotechnical and Structures Lab (ERDC-GSL) has used Fort Polk as a large-scale testing site for many years. Many cementitious materials have been developed for design validation testing. These cementitious materials, their constituents, and their mechanical properties often went undocumented, making it difficult for researchers to replicate or draw comparison from previous testing. This report aims to begin a process of detailed cementitious material reports for all research efforts in the region. The objective of this report is to document the development of a field castable 6 ksi sanded grout mixture and a 7 ksi sanded grout mixture used in experimental testing programs at Fort Polk in January 2014 and February 2015. GSL required the development of a 6 ksi and 7 ksi mixture for testing scaled bridge columns. The reduced scaling of the test members resulted in very small rebar spacing. These designs lead to the development of very flowable specialized grouts. This report details the development of this specialized grout for the purpose of aiding future cementitious mixture developments in the region. These results are applicable to efforts where reduced scaling reduces the spacing between scaled reinforcing where all aggregates in the concrete mix would not fit between reinforcing.

Technical
Report

ERDC/GSL-TR-
67 19-37

This is the first of a series of interim reports which will be published during the Federal Infrastructure Strategy (FIS) Program, a three-year effort to explore the development of an integrated or multi-agency Federal infrastructure policy being conducted by the U.S. Army Corps of Engineers, Institute for Water Resources. This report documents the activities that took place in 1991 and 1992 during the first half of the program, including the results of the intergovernmental coordination facilitated by the Advisory Commission on Intergovernmental Relations (ACIR). The infrastructure issues essential to the development of a Federal strategy are outlined, and the opportunities for further interagency cooperation are discussed within the content of the FIS workplan elements. Infrastructure, Federal infrastructure Strategy, Dialogue, Investment, Performance, Outputs and outcomes.

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252 IWR-93-FIS-1

On April 27,1995, IDA hosted a round table to discuss the rationales for public sector technology investments and the means to evaluate and measure their impacts. Attendees included senior government officials from the White House, Departments of Defense, Commerce, and Energy, and NASA; senior industry participants; and distinguished academics. This paper summarizes the proceedings of the round table.

Final rept.,

136 IDA-P-3138

The objective of this study is to evaluate a test-drive strategy for prosthetic foot prescription using a prosthetic foot emulator (PFE) to accurately reproduce the experience of wearing several commercially available prosthetic feet. The aims of this research are to: (1) determine whether a PFE can be used to predict foot preference and mobility outcomes with corresponding commercial prosthetic feet, and (2) determine whether a brief trial of commercial prosthetic feet would be able to similarly predict longer-term foot preference and mobility outcomes with those feet. During the current reporting period, we have developed and finalized the project protocol manual of operations, study questionnaires and all IRB documents. We have fabricated and delivered the PFE to VA Puget Sound including training of local staff in PFE use. Mechanical testing of commercial study prosthetic feet for input to the PFE is ongoing. Once we receive all necessary IRB approvals, we will begin human subject testing.

Technical
Report,01 Sep
2016,31 Aug
2017

96 null

The inability of the Department of Defense (DOD) to accurately and completely specify requirements for hard real-time software systems has resulted in poor productivity, schedule overruns, and software that is unmaintainable and unreliable. The Computer-Aided Prototyping System (CAPS) provides a capability to quickly develop functional prototypes to verify feasibility of system requirements early in the software development process. It was built to help program managers and software engineers rapidly construct software prototypes of proposed software systems. CAPS was developed by the Software Engineering Group at the Naval Postgraduate School (NPS) in Monterey, California. This thesis investigates the transfer of technology of CAPS from NPS to DoD and the commercial industry. The effective transfer of technology requires user awareness of the technology and the ability to utilize the technology. Thus, a strategy is prepared for implementing the technology transfer of CAPS at NPS. To aid in this implementation, the quality and effectiveness of existing CAPS technical documentation is evaluated and recommendations for enhancement provided. Information dissemination materials are developed as part of this thesis which include three levels of CAPS briefings to potential sponsors, a home page, and a CD-ROM multimedia presentation. The implementation of this strategy will not only maximize the transfer of technology to the users, but also provide the optimum use of DoD software engineering resources available.

Master's thesis, 332 null

PART I - Points of Contact and Web Directories; PART II - Policy and Information-Related Appendices; PART III - Engineering Related Appendices; PART IV - Management Related Appendices; PART V - Additional Addenda.

null 490 null

Science writer Ivan Amato explores the origin development and accomplishments of NRL over the last 75 years. He analyzes the personalities institutional culture, and influences of what has become one of the preeminent research laboratories within the United States. Tracing the Laboratory from its small and often inauspicious origins of today's large, multi disciplinary research center, Amato sets in context many of the important research events and fronts of modern military science and technology.

null 419 null

The purpose of this MBA Project was to analyze the logistical and fiscal impact of replacing selected disposable batteries with rechargeable batteries and photovoltaic power converter chargers within Army and Marine Corps infantry battalions. This project was conducted with the sponsorship and assistance XVIII Airborne Corps, Marine Corps Systems Command, Fleet Numerical, and the Defense Advanced Research Projects Agency. The goal of this project was to identify how this new technology could be incorporated into current combat gear and what impact such an incorporation of the technology would have in decreasing the infantryman's combat load, reducing expenditures on batteries, and relieving the overall logistical burden for the subject services.

Master's thesis

111 null

The activities and accomplishments of Space and Naval Warfare Systems Center, San Diego (SSC San Diego) during calendar year 2000 are described, and the Center's mission and responsibilities are delineated.

Technical document Jan-Dec 2000

SSC/SD-TD-106 3119

The Topographic Engineering Center (TEC) and Coastal Oceanographics, Inc, initiated a 2-year CPAR Cooperative Research and Development Agreement (CPAR-CRDA) in March 1994. Coastal Oceanographics' hydrographic surveying software, HYPACK, was becoming the predominant system used aboard Corps and contractor survey vessels. The software also is used by various other Federal, state and local agencies, as well as commercial firms. Much of the software capability and functionality was driven by Corps requirements, so Coastal Oceanographics had a keen interest in application of technology developed or promoted in the Corps. TEC had significant activities in GPS development, tide datum and water level modeling techniques, and dredge volume algorithms and computation procedures. Use of these technologies would produce the first hydrographic survey system with such capabilities.

Final rept.

41 CPAR-TD-96-2

MIT Lincoln Laboratory employs some of the nation's best technical talent to support system and technology development for our national security needs. Principal core competencies are sensors, information extraction (signal processing and embedded computing), communications, and integrated sensing and decision support. Nearly all of the Lincoln Laboratory efforts are housed at the Hanscom Air Force Base complex in Massachusetts. MIT Lincoln Laboratory is designated a Department of Defense (DoD) Federally Funded Research and Development Center (FFRDC) and a DoD Research and Development Laboratory." The Laboratory conducts research and development pertinent to national defense on behalf of the Military Services

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49 null

This report contains project summaries of the research projects in the Graduate School of Business and Public Policy. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised by faculty in the Department are also included.

Summary rept.

NPS-09-02-
136 028

The US Army recognizes its obligation to ensure that Soldiers have the land, water, and air resources needed to train; a healthy environment; adaptable facilities; and the support of local communities, government officials, and the American people. An Integrated Strategic Sustainability Plan (ISSP) was developed to ensure that US Army Garrison Fort Leonard Wood (FLW) can pre-serve these resources, to continue meeting mission requirements in the future. This work represents the initial ISSP developed for FLW, a complex installation that meets multiple training needs for the Army and other military commands. To develop a viable long-range ISSP requires significant involvement by Garrison and Maneuver Support Center of Excellence personnel. Their important work was facilitated through collaboration with contractors, US Army Corps of Engineers, and Installation Management Command personnel. The result is a working plan containing six strategic sustainability goals that align with FLW's six core business areas. The work also includes related factors, such as action plans to guide and indicators to track FLW's progress in meeting its goals. This ISSP will evolve as various objectives, action plans, and measures may be refined. Team members will utilize online resources to facilitate development of the plan over its expected 25-year lifespan. The information and data presented in this document were current as of the end of FY11 (September 2011). Final rept.

ERDC/CERL-
129 SR-12-7

The budget is consistent with the 5-year deficit reduction law enacted last fall. It recommends discretionary spending levels that fall within the statutory caps for defense, international, and domestic discretionary programs. It implements the entitlement savings and reforms enacted in the Budget Agreement. It conforms to the new pay-as-you-go requirements. By holding the overall rate of growth of Federal Government spending to approx. 2.6 percent--below the inflation rate--the budget puts into effect the concept of a flexible freeze

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419 null

This collection of abstracts, compiled by the Federal Remediation Technologies Roundtable, describes field demonstrations of innovative technologies to treat hazardous waste at contaminated sites. This document updates and expands information presented in the second edition of the collection which was published in 1992. An asterisk (*) in the Table of Contents marks synopses appearing for the first time in this edition. The collection is intended to be an information resource for hazardous waste site project managers for assessing the availability and viability of innovative technologies for treating contaminated ground water, soils, and sludge. It also is intended to assist government agencies in coordinating ongoing hazardous waste remediation technology research initiatives, particularly those sponsored by the U.S. Environmental Protection Agency (EPA), the U.S. Department of Defense (DOD), the U.S. Department of Energy (DOE), and the U.S. Department of Interior (DOI). Innovative technologies, for the purposes of this compendium, are defined as those for which detailed performance and cost data are not readily available.

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EPA/542/B-
305 93/009

In 1993, Congress passed Public Law 103-160, Section 1703, which created a Joint Service Chemical and Biological Defense Program (CBDP). The mission of the CBDP is to provide world-class chemical and biological defense capabilities to allow the military forces of the United States to survive and successfully complete their operational missions from peacetime contingency missions through two nearly simultaneous major theater wars across the entire spectrum of conflict in battlespace environments contaminated with chemical or biological warfare agents. Under the oversight of a single office within the Office of the Secretary of Defense, the Deputy Assistant to the Secretary of Defense for Chemical and Biological Defense, the individual Services, working within the framework of a Joint Service Agreement, have planned and supported a robust, coordinated program. This overview document provides highlights of our major efforts within the program, providing a summary of FY00 accomplishments and goals for FY01 and beyond. A separate, more detailed DoD Annual Report to Congress on the Chemical and Biological Defense Program is provided to the Congress.

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90 null

This report contains information concerning the mission, organization, key staff, overall funding and significant research accomplishments of the US Army Research Institute of Environmental Medicine, a subordinate element of the US Army Medical Research and Development Command, for calendar year 1992. Also included are listings of published reports, abstracts, presentations and key briefings for each Research Division of the Institute and significant accomplishments and appointments of the professional staff Military medical research, Military medical technology, Environmental stress, Exercise physiology, Physical training, Military performance, Military nutrition, Military psychology

Annual rept.
1992.

153 null

This is the third version of the glossary of missile defense terms issued by BMDO. The glossary provides a single source of terminology and acronyms related to ballistic missile defense. The purpose of the glossary is to facilitate a common language within the BMD community.

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319 null

both in-house and in external laboratories. The program consists of basic research, applied research, and advanced development, known by their respective budget codes of 6.1, 6.2, and 6.3. All of the interfaces among the in-house laboratories, academia, and industry serve to broaden and strengthen the Army S&T program. DoD sponsorship of the Independent Research and Development (IR&D) program in industry has the same goals. This paper presents the various ways in which the Army laboratories link their work with external laboratories and looks for ways to improve these interfaces, with special emphasis on the IR&D program. The paper begins with a review of some successful interfaces between in-house efforts and those in the private sector. Examples of important interfaces leading to successful development of Army systems are taken from earlier studies. In these references, the close working relationships between Army laboratories, especially the Research, Engineering, and Development Centers, and the contractors that were building the particular systems under review are shown. We then provide important background on the IR&D program, including a discussion of efforts by the other Services to improve their IR&D interface. We also review Service participation in the IR&D program and provide commentary from interviews with selected individuals who have had experience with the IR&D programs. These include personnel from the Army, the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, other DoD components, and the private sector. The paper concludes with a review of these comments and offers

Research rept.

29 null

Rapid evolution in the international political, social, and military environment, coupled with budget pressures within the federal government, have created a fluid setting for the military services. As fundamental as aircraft to the Air Force's ability to protect U.S. interests at home and abroad are the support functions that provide deployed basing for aircraft and aircrew alike. What are the factors that influence the civil engineer's ability to launch, support and sustain deployed military operations within the context of this environment and the national military strategy established to meet these challenges? Do current civil engineer capabilities fulfill Joint Vision 2010 and Air Force 'Global Engagement' strategies, now and in the future, for interaction in the New World order? What steps are Air Force civil engineers taking, or should they take, to improve their ability to support deployed military operations? This study concludes that Air Force civil engineering is substantially in step with the evolving character of the current strategies that enable the U.S. military to engage across the spectrum of new and anticipated future world environments. Major progress has been made in adjusting the organizational and doctrinal guidelines for CE mobilization. However, the application of technology readily available today, though actively sought and readily applied in the laboratory, suffers shortfalls in funding to adequately field the resulting advances. This study offers some recommendations in this and other key areas relevant to mobilization of U.S. forces whether joint or Air Force.

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102 null

Science and technology policy continues to be limited by how little is known about the drivers of innovation. One barrier in conducting systematic studies is the lack of an objective measure for innovation. Patents continue to be an attractive measurement tool, but many questions remain about their comprehensiveness, relevance in different domains, and accuracy given the highly skewed distributions seen in different estimates of patent value. This study develops a new approach to measuring research and innovation performance using patents by examining the trends in patent filings over time within organizations and within technology classes. Within any single organization's patent portfolio, the sequence of patent filings over time in any given class tends to follow one of four patterns. These within-organization, within-class patterns are potentially signatures of specific research and commercialization approaches which have innovative connotations. This study develops several hypotheses regarding the organizational drivers of these patenting patterns and, using data from the DOD laboratories demonstrates how these patenting patterns can be used to study the relationships between the rate and type of innovation and various quantitative and qualitative organizational characteristics.

Doctoral thesis

153 null

Single frequency microwave radiometry has been used to detect and estimate oil slick thicknesses. Because only a single sampling point is used, estimates of oil thickness can become ambiguous. MIT Lincoln Laboratory proposed the concept of using a frequency scanning radiometer to sample multiple points across a frequency band, thus resolving the problem of ambiguities in oil thickness estimation. A laboratory-prototype FSR capable of scanning over Ka-band (26 -40GHz) was designed, built, and tested. The FSR was used in laboratory proof-of-principle testing to (1) measure uniform thickness oil layers under various ambient weather conditions (day, night, clear, cloudy, drizzle, and snow) and different oil types, and (2) measure the phenomenology of non-uniform thickness oil layers and emulsions. Comparisons of measured data sets with theoretical predictions demonstrated that the expected response of oil is consistent regardless of oil type or ambient weather condition. Comparisons of uniform oil layer measurements and non-uniform measurements with theoretical predictions indicate that the radiometric brightness temperature (TB) of the oil above that of water is a function of the percentage of that thickness of oil within the antenna field-of-view. Water/oil emulsions were measured and have a higher TB than a uniform layer of pure oil at the same thickness. Recommendations for FSR modifications and improvements, as well as future collection work are included. -BKA

Final rept.Oct
92-Apr 94,

USCG-D-29-
141 24

Purpose: To assess if stigma and barriers to accessing mental health (MH) services in Air Force (AF) nurses are influenced by resilience, stress, demographics, deployment, use of MH services, or treatment-seeking. Methods: AF registered nurses (RNs) and medical technicians completed a survey, including demographic items, stigma scale, barriers scale, Conner-Davidson Resilience scale, and Perceived Stress Questionnaire. Sample: n=250 (RNs = 141, Medical Technicians = 104, Unknown= 5) Analysis: Descriptive statistics characterized demographics, MH access, deployment(s), and questionnaire scores. Multivariate analysis of variance examined stigma, barriers, stress, and resilience based on demographics and deployment. Logistic regression determined whether treatment-seeking was influenced by military grade, gender, stigma, barriers, stress, and resilience.

Technical
Report,01 Sep
2014,30 Nov
2016

17120,59th
56 Medical Wing

Document includes presentations and briefing charts of the Joint Armaments Conference, Exhibition and Firing Demonstration Held in Dallas, TX on 17-20 May 2010.	Conference Proceedings	615 null
The Annual Progress Report gives the CY 97 personnel and funding strength of the U.S. Army Aeromedical Research Laboratory. This report includes an overview of the Laboratory activities, current areas of research, and a brief description of the research being conducted.	Annual rept. Jan-Dec 97,	55 null
This report contains summaries of research projects in the Department of Electrical and Computer Engineering. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts.	Summary rept, 1 Jan-31 Dec 97	NPS-09-98-111 013
The Annual Progress Report gives the fiscal year 2009 personnel and funding strength of the U.S. Army Aeromedical Research Laboratory. This report includes an overview of the Laboratory activities, current areas of research, and a brief description of the research being conducted.	Annual rept. 1 Oct 2008-30 Sep 2009	79 null
Recent advancements in technology have enabled Additive Manufacturing (AM), also known as Three-Dimensional (3-D) printing, to become a powerful, viable tool in the research, development, and overall engineering of many products in the world today. This report will give an overview of the selection of AM equipment for the United States (U.S.) Army Aviation and Missile Research, Development and Engineering Center (AMRDEC) to use as a tool in the design, test, and fabrication of the systems within the AMRDEC portfolio.	Technical Report	TR-RDMR-WD-18 16-87

This Supplement to the President's FY 2003 Budget describes the Federal Networking and Information Technology Research and Development (NITRD) Program, the unique endeavor of Federal agencies collaboratively engaged in advanced research and development in these technologies. The multiagency NITRD portfolio spans a balanced, diverse set of long-term, fundamental research efforts in all aspects of large-scale and broadband networking and information technologies. This ongoing research provides leading-edge networks, technologies, and tools for vital Federal missions, drives innovation throughout the U.S. economy, and supports the research talent that sustains U.S. global leadership in science and technology. The first computers, the Internet, the graphical user interface, high-end parallel processing, the first end-to-end optical networks, advanced computational modeling and simulation, and search engine technologies are just a few of the results of Federal information technology (IT) research that have fueled the digital revolution from which we all benefit. Today the NITRD Program continues to be the Nation's primary source of fundamental technological breakthroughs and skilled human resources in the advanced computing, networking, software, and information management technologies on which our 21st century infrastructure and quality of life will rely.

Annual rept.

58 null

The last few years have clearly demonstrated the rapid changes and growing challenges that the aviation industry and the Federal Aviation Administration (FAA) must face. To meet these challenges, the FAA cannot proceed with a 'business as usual' attitude. We must develop innovative, cost-effective solutions to problems in the National Airspace System (NAS) that meet the aviation industry's needs in a timely manner. Also, we must take a total system approach when developing new systems so that we do not create a new problem in our attempt to solve an existing one. The 1994 FAA Plan for Research, Engineering and Development (R,E&D) describes the FAA's efforts to develop technologies that address both current and projected NAS issues so that our Nation can maintain a competitive, robust aviation infrastructure. Just as new systems must be integrated to achieve a total systems approach, the R,E&D Plan must be integrated with other FAA plans to create a system development and implementation pipeline. Also, the R,E&D Plan must be as dynamic as the aviation industry so that the FAA can respond in a timely manner to new requirements from its 'customers' in every segment of the aviation community.

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189 null

technology arm of the Air Force, supplying vast and unparalleled service in air, space, and cyber domains. AFRL's support of the warfighter is reflected in its enterprise-wide commitment to the future--game-changing technologies in all realms--and its laserlike focus on details that alter the face of battle. This one entity--AFRL--is in truth thousands of scientists and engineers whose work, while disparate, is unified in a dedication to the influential science and technology that positions the Air Force at the forefront of innovation. AFRL Technology Milestones Program The AFRL Technology Milestones program chronicles these endeavors and spotlights their significance on several fronts: addressing urgent warfighter needs, pursuing discovery, and transitioning results when other military or commercial interest warrants. AFRL's workforce (comprising more than 1,300 military; 5,200 civilian; and 4,300 on-site contractor personnel) is, on any given day, concentrating on technologies as diverse as insect-sized micro air vehicles, algae-based biofuels, aircrew comfort, and holographic optics. Diversity does not end there; the lab's dedication to workplace diversity is highlighted in the Diversity section, emphasizing the importance placed on this facet of technological achievement. In documenting AFRL's dedication to Air Force operational preeminence, these Technology Milestones summarize the lab's research and development contributions that commenced, concluded, or gained steady progress in 2010. Viewed individually, the stories provide snapshots of AFRL's myriad science and technology activities. Collectively, they paint a portrait of a lab strong in

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127 null

The Space and Naval Warfare (SPAWAR) Systems Center, San Diego (SSC San Diego) Simulation and Human Technology Division has developed and improved its second generation 3-D Volumetric Display System for displaying data, information, and scenes in a three dimensional volume of image space. The system has good potential for many military and commercial applications. Based on a computer controlled laser optics system that projects three laser beams simultaneously onto a 36-inch diameter/18-inch high double helix spinning at 600 revolutions per minute, this system presents 3-D images in an addressable 10 cubic feet of cylindrical volume. This report discusses the four basic disciplines used in development of the Improved Second Generation 3-D Volumetric Display System and provides examples of practical applications of the technology.

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SPAWAR-TR-
263 1763-REV-2

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Briefing charts

15 null

Through the years, there has been anecdotal and other piecemeal information about how technology transfer brings value to the DoD and the warfighter; however, to date there has been no study that collected all such information in one place. In September 2008, the Office of Technology Transition tasked L-3 Communications and SAIC to conduct a study of how T2 benefits the DoD and its private-sector partners. Benefits to be identified and quantified where possible included: * Did the technology transition to a DoD platform or product line? * Is it being used by the warfighter? * Has the technology enhanced capability; reduced labor hours, acquisition or maintenance costs; improved reliability, availability, and maintainability, etc.? * Has a new product been developed? * How did participation in the DoD's T2 program help the private sector partner? * Is the CRADA partner or licensee continuing to work with the DoD? * To what extent did the CRADA/PLA help the companies to become/remain economically viable? *What is the financial return on investment, if any? Did the CRADA or PLA generate income for the DoD laboratory and how is this income being used? This report, and the effort behind it, demonstrates that Federal T2 legislation not only allows private industry and academia to benefit from Federal R&D but also acts as a valuable tool for the DoD in solving mission-related problems and creating a significant revenue pool for the Government in an era of tightening budgets.

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49 null

Army AL&T (ISSN 0892-8657) is published bimonthly by the Acquisition Career Management Office. Articles reflect views of the authors and should not be interpreted as official opinion of the Department of the Army or any branch, command, or agency of the Army. The purpose is to instruct members of the Army Acquisition Corps and Workforce relative to AL&T processes, procedures, techniques, and management philosophy and to disseminate other information pertinent to the professional development of the Army Acquisition Corps and Workforce.

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DA-PB-70-00-
55 4

EM61 pulsed induction sensors and total field magnetometers are the two primary sensors employed for MEC detection on formerly used military properties. While these two sensors have a broadly overlapping performance envelope, each sensor has unique strengths. Unfortunately, co-deployment of the two sensors is normally impossible due to the active nature of pulsed EM which creates noise on any nearby magnetometer. A prior ESTCP project developed the technology needed to co-deploy these two sensors through the process of interleaving (sampling the magnetometer between the EM61's pulses when the EM61 is quiet), and deployed that technology on a vehicular platform. Under this project, a Man-Portable Simultaneous EMI and Magnetometer System (MSEMS) was developed. The interleaving hardware was made smaller and lighter to enable man-portable deployment. A box with standard interfaces was developed that allows any geophysical contractor with EM61's, total field magnetometers, and GPS equipment in inventory to connect them to the interleaving hardware and concurrently collect magnetometer and EM61 data.

Final rept. Mar
2004-Oct 2008

72 null

the field of Simulation-Based Engineering and Science (SBE&S). SBE&S involves use of computer modeling and simulation to solve mathematical formulations of physical models of engineered and natural systems. A panel of experts reviewed and assessed the state of the art in SBE&S as well as levels of activity overseas in the broad thematic areas of life sciences and medicine, materials, and energy and sustainability; and in the crosscutting issues of next generation hardware and algorithms; software development; engineering simulations; validation, verification, and uncertainty quantification; multiscale modeling and simulation; and SBE&S education. The panel hosted a U.S. baseline workshop, conducted a bibliometric analysis, consulted numerous experts and reports, and visited 59 institutions and companies throughout East Asia and Western Europe to explore the active research projects in those institutions, the computational infrastructure used for the projects, the funding schemes that enable the research, the collaborative interactions among universities, national laboratories, and corporate research centers, and workforce needs and development for SBE&S. The panel found that SBE&S activities abroad are strong, and compete with or lead the United States. Inadequate education and training of the next generation of computational scientists and engineers threatens growth of SBE&S. A persistent pattern of subcritical funding overall for SBE&S threatens U.S. leadership and continued needed advances, while a surge of strategic investments in SBE&S abroad reflects recognition by those countries of the role of simulation in advancing national

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426 null

physician manpower issue in the United States, and standards for availability of critical care specialists demand alternate solutions to continuous on-site critical care specialists. Telemedicine is one model of healthcare delivery which by design may address the shortage of critical care specialists, and has been variably reported to show significantly improved outcomes in clinical and process domains in some reports, and recently as showing no significant mortality differences in pooled data analysis. This project was designed to install, and operate a remote critical care consultation service by a remote telemedicine system between a hub at Tripler Army Medical Center (TAMC) in Honolulu, Hawaii and two remote intensive care units, at small military treatment facilities outside of the continental United States (OCONUS). Critical care specialists are not routinely assigned to the remote facilities. Critical care specialists are available at TAMC to provide consultative services. The remote facilities are Naval Hospital, Guam (NHG), and Brian Allgood Community Hospital (BAACH) in Seoul, South Korea. BAACH was renamed during the interval of this project, and is specified as the US Army 121 Combat Support Hospital in the contract documents. The project research objectives were focused on demonstrating a practical approach to delivery of critical care consultation by telemedicine using a commercially available critical care telemedicine system, eICU . The project partner for provision of the eICU system was specified as VISICU, Inc (Baltimore MD). VISICU, Inc was acquired during this project, and is now managed as Philips VISICU. The eICU system was utilized

Final rept. for
20 Apr 2006 -
30 Apr 2010

138 null

In accordance with 50 USC 1523, this report provides Congress with an assessment of the overall readiness of the Armed Forces to fight in a chemical and biological warfare environment. This is the ninth report submitted under 50 USC 1523.

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291 null

The ability of the AIRIS (Physical Sciences, Inc., Andover, MA) standoff sensor to detect chemical agents was examined in a series of laboratory measurements. Agents were passed through a flow cell, which was viewed against a blackbody that defined the thermal background. The cell was translated through the sensor's field of regard to simulate the impact of cloud motion on detection capability. This experiment used agent column densities and background thermal contrasts that were representative of those identified in the Commercial Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD) specifications. The sensor demonstrated the ability to detect the agents GB and GD at or above JSLSCAD threshold conditions. The ability to detect HD at threshold levels was marginally achieved, but the results were compromised by experimental limitations. Analysis of the test results using the spectra of agents that were not tested suggests similar capability could be expected.

Final rept. Sep-
Nov 2009

26 ECBC-TR-845

This report contains project summaries of the research projects in the Interdisciplinary Academic Groups: Command, Control, Communications, Computers and Intelligence; Information Systems; Information Warfare; Modeling, Virtual Environments and Simulation; Space Systems; Special Operations; and Undersea Warfare. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised of an interdisciplinary nature are also included.

Summary rept.
1 Oct 1999-30
Sep 2000

NPS-09-02-
152 013

The Office of Technology Transition (OTT) was created by the Secretary of Defense to serve as a focal point for the domestic technology transfer activities of the Department of Defense. This report, required by legislation, summarized OTT accomplishments for FY 99. OTT has played an active role in development and/or execution of technology transfer programs in development of technology/ dual use technology policy, and in coordination of the collection and dissemination of scientific and technical information in support of technology transfer. Specific activities conducted in FY 99 are discussed in this report and its appendices.

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61 null

In August 1995, I commissioned a one year study with the objective of assessing the effectiveness of the use of modeling and simulation (M&S) in the acquisition process. In particular, I was looking for the metrics by which the Department of Defense could ascertain the value-if any-that was returned on its investment in M&S in terms of the reduction in time, resources, and risk in weapons systems development and fielding and in terms of increase in the military utility of those systems. I also tasked the study team while gathering information to support the assessment to note technical and other challenges to realizing the postulated benefits and to report on specific M&S tools and processes being used to facilitate the acquisition of systems in the DoD and industry. This report, which documents the results of that study, provides tangible, quantitative indicators that the use of M&S can provide substantial benefit measured in time, cost, productivity, and system quality and performance. The evidence is consistent and pervasive, across both DoD and industry. I personally was impressed that the most significant return on investment was realized when M&S was used as an integrator of functions within the acquisition process, i.e., integrating design and manufacturing or linking requirements more closely to test. This leads me to believe that its real value lies as an enabler of Integrated Product and Process Development (IPPD).

Final rept.,

90 null

DoD-GEIS is a network of DoD medical professionals in multiple partnerships focused in outbreak response preparation. This report presents background about DoD-GEIS within the context of infectious disease outbreaks affecting DoD, the United States and the world. The assistance provided by DoD-GEIS to DoD in surveillance and response to disease emergencies is described along with DoD-GEIS activities through the five overseas military research laboratories that made substantial contributions to global outbreak detection and control and to public health capacity building and biosecurity.

Annual rept. FY
2003

46 null

The Air Force Science and Technology Milestones herein often represent the combined effort of several scientists and engineers working as a team. The basic and applied research, plus the follow-on technology development described, are essential to the continued success of the Air Force mission. This book contains Technology Milestones selected from one or more of the following categories: Support to the Warfighter (Air, Space, and Cyberspace)- Technology that has potential for, or has achieved, application on a Department of Defense system that is in development or operation or that has provided quick-reaction" response to problems or needs of field organizations. Sustainment (Support to the Warfighter-Air

null 126 null

This report contains summaries of research projects in the Department of Computer Science. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts.

Summary 1 Jan- NPS-09-98-
31 Dec 98 66 005

Approximately one-third of all energy consumption and two-thirds of total energy expenditures at Department of Defense (DoD) fixed facilities are electricity related. Summer air-conditioning loads account for 30 to 60 percent of the total energy expenditures. Moreover, peak cooling requirements at DoD facilities generally occur when utility rates are highest. This portion can exceed 50 percent of an installation's total bill. At DoD fixed facilities, energy costs can be reduced by conserving electrical energy or by replacing electrical consuming devices with alternate fuel-driven mechanisms, such as those that use natural gas, which currently accounts for only 38 percent of the fuel consumed and 20 percent of total energy expenditures. Absorption chillers, engine-driven chillers, and desiccant-based air-conditioning units are possible alternatives to electric cooling equipment. Using these state-of-the-art gas cooling technologies to replace existing electric-driven cooling devices may reduce the installation's electric demand, provide domestic hot water, and lessen environmental impacts normally attributed to electric-driven chillers. This study evaluated the effectiveness of gas cooling technologies at selected DOD installations.

Final rept., USACERL-TR-
54 96/62

This report investigated the application of accepted methods of pavement structural evaluation to independently assess the potential structural benefit of asphalt geogrid reinforcement of an operational flexible highway pavement. The asphalt interlayer consisted of an elastomeric polymer coated fiberglass grid with an open configuration. The reinforcing grid was installed in the asphalt layer during construction of a maintenance overlay and has been subjected to trafficking for several years. Our structural evaluation included a geotechnical investigation and non-destructive testing using a falling weight deflectometer. Field testing was conducted when both air temperatures were above 50 deg F and no recent precipitation events had occurred. Standard testing methods were applied during the field data collection and back-calculation procedure.

Final rept.

ERDC/CRREL
91 TR-16-7

The overall purpose of the work was to identify candidate approaches to solve Distributed Mission Operations (DMO) Modeling and Simulation (M&S) deficiencies in the optimal presentation of information to decision makers in multi-modal immersive environments. This report covers five main research and development areas that were completed towards this goal. Those areas included: Robust Immersive Decision Environments Research (RIDER), Rehearsal Enabling Simulation Technologies (REST), Entity Modeling and Full Spectrum Threat Simulation, Audio Integration/Demonstrations, and Ultra-High Resolution Deployable Projector Components for Simulation (this work centered on the Immersive Display Evaluation and Assessment Study or IDEAS).

Final rept. 17
Dec 2008-16
Dec 2011

AFRL-RH-AZ-
61 TR-2012-0024

ongoing effort to identify and characterize genes relevant to environmental illnesses and to human physical performance. To accomplish this, the EMGB banks DNA samples from human volunteers who have participated in environmental and human performance studies or material obtained under approved Brigham and Women's Hospital protocols that would otherwise have been discarded. The EMGB maintains a registry of this phenotypic information. The EMGB can be used to identify polymorphisms in genes that are potentially of interest to environmental medicine and to obtain an estimate of the frequency of these polymorphisms in young, healthy U.S. adults because of the ethnically diverse and geographically dispersed backgrounds of the donors. Additionally, this resource also serves as a valuable source of control material for genetic studies of human diseases, such as asthma. The project is performed as part of a cooperative research and development agreement (CRDA) with the Division of Pulmonary and Critical Care Medicine at Brigham and Women's Hospital. B-lymphocytes immortalized using the Epstein Barr Virus (EBV) have been added to the EMGB in attempts to maintain stocks of genetic material that are phenotypically characterized. These samples include cells and DNA from asthmatics as well as characterized non-asthmatics. This report provides updated information about the samples currently stored in the EMGB. It is intended as a reference document for researchers who wish to make use of this resource, and fulfills the annual reporting requirement of CRDA number DAMD 17-00-0017.

Technical note

20 null

This report describes a Cyber Mutual Assistance Workshop (CMAW), its significance, and its outcomes. The CMAW was intended to explore the interconnectedness of the North American Power Sector and possible sources of aid, should the sector fall victim to a cyber attack. The objective of the CMAW was to enable better understanding of capabilities, not only in the sectors own cyber security workforce, but in possible mutual support from city, state, and federal government entities, and across other sectors cyber security communities. The Army Cyber Institute, alongside the Electric Infrastructure Security Council and the Software Engineering Institutes CERT Coordination Center, aimed to explore and evoke national conversation on the possibility of mutual cyber assistance in times of duress and the importance to that endeavor of prior understanding and relationships between concerned parties.

Technical Report

CMU/SEI-53 2018-SR-007

The overarching goal of the BADER Consortium is to advance and strengthen evidence based orthopaedic rehabilitation care that results in optimal functional outcomes for each wounded warrior. This will be accomplished by advancing each of the following strategic areas: 1: Strengthen and support orthopaedic rehabilitation research capabilities through infrastructures and partnerships; 2: Conduct a variety of innovative, high impact, and clinically relevant research studies; 3: Establish a self sustaining research enterprise by broadening the scope of impact and support for the BADER Consortium. Key Accomplishments to date: Established: Administrative Core, Clinical Research Core and Scientific Technical Cores; approval and establishment of eight clinical research projects; development and implementation of an Omnibus CRADA; established a consortium wide omnibus PDMS; partnership with the DoD and VA s Extremity Trauma and Amputation Center of Excellence (EACE); developed research focus (gap) areas in partnership with EACE; established and implemented a complete process for the call, submission, review and selection of Consortium funded projects; published the annual BADER call for clinical research proposals, established the BADER Consortium SOPs; completed the hiring of eight research support staff to be placed onsite at MTFs; established partnerships with the VA and NIH; obtained over \$4M of external funding.

Annual rept. 30
 Sep 2013 - 29
 Sep 2014

102 null

Analyze progress made on RX materials, manufacturing and structural development programs and assess the desirability and feasibility of transferring the technology to the commercial sector through Cooperative Research and Development Agreements (CRADAs) and other technology transfer vehicles. Assist in the identification of appropriate collaborators and potential technology applications; assist RX personnel in initiating and administrating CRADAs, Cooperative Agreements and Other Transactions; and perform other technology transfer functions as needed.

Final rept. 30
 Mar 2001-30
 Sep 2006

AFRL-RX-WP-
 TM-2008-
 29 4226

This MBA Professional Report proves the feasibility of using aircraft mounted RFID antennas to detect commercially available Radio Frequency Identification (RFID) tags affixed to small vessels. The project was conducted because monitoring small vessels in U.S. coastal and inland waters is considered a gap in homeland security, as well as problematic for marine resource managers tasked with enforcing sanctuary and fishing regulations. The premises of the project are that 1) RFID tags are less invasive and more cost effective than other current methods of proposed monitoring, 2) airborne platforms can monitor areas of interest faster and more efficiently than surface based monitoring systems, and 3) small vessel registration numbers can be electronically associated with the serial number of the affixed RFID tag. The cost of tagging each vessel is low (around \$50 per vessel), and the tag number of any vessel could be read remotely from 0.3 to 0.5 nautical miles away. The agency reading the tag would be able to retrieve the associated vessel registration information from a national database through a back-end data-link system. This system could improve coastal and port security by providing remote monitoring of real-time vessel location information, and could enable improvements in resource management methods by enabling correlation of location and identification data for recreational vessels engaged in natural resource use.

MBA
professional
rept.

132 null

This paper first defines domestic technology transfer and explains that this transfer of technology from government laboratories to defense industries is key to the U.S.'s national security strategy of 'Maintaining the Technology Edge' to ensure military superiority. The paper then provides examples of U.S. Air Force technology transfer that demonstrate that this transfer has not only resulted in military superiority but it has also been a crucial part of America's economic leadership and strength in some commercial markets. The rising importance of this technology transfer from government laboratories to the commercial sector is examined and a survey of recent technology transfer laws is presented. The U.S. Air Force response to these new laws is then covered. Finally, some current issues in domestic technology transfer are discussed.

Research rept.
Aug 1991-Apr
1992

NDU-ICAF-92-
36 F8

The Environmental Security Technology Certification Program (ESTCP) funded a technology demonstration of shock-absorbing concrete (SACON) bullet-trapping technology. SACON is a low-density, fiber-reinforced, foamed concrete developed by the Waterways Experiment Station (WES). SACON offers significant benefits in comparison to current commercial off-the-shelf (COTS) bullet-trapping technologies. SACON provides Range Managers with a means of effectively capturing and containing lead on small-arms ranges without sacrificing training realism. Demonstration objectives focused on identifying and validating the performance, cost, safety, logistics, training realism, and recycling aspects of the SACON bullet-trapping material. SACON bullet traps tested in a 25-Meter Range application contained 87 percent of the bullets fired at the trap. Exposure of the bullet debris to the SACON material and weathering resulted in the formation of insoluble lead corrosion products and the generation of nonhazardous waste products. The application of SACON reduced localized soil erosion typically found in the vicinity of target emplacements. Ricochet testing results indicated bullet impacts were within the surface danger zones (SDZs) for the range types chosen for the demonstration. A nonrecurring cost of approximately \$1600 per lane and an annual recurring cost of \$3800 per lane were estimated to outfit a 20-lane 25-Meter Range with SACON bullet traps.

Final rept.

ATC-
8183,SFIM-
AEC-ET-CR-
220 99017

monitoring, Graphite Furnace Atomic Absorption (GF-AA) spectroscopy and Inductively Coupled Plasma Mass Spectroscopy (ICP-MS) have been traditionally used to measure trace metals. These instruments are large, expensive and require a high level of infrastructure support. Because of this, trace metal measurement usually involves sampling, preservation and transport to a centralized laboratory for later analysis. Current field tests for metals are difficult to use under industrial conditions, usually lack simultaneous multianalyte capability, and require significant operator intervention. The Space and Naval Warfare Systems Center (SPAWAR) developed an Automated Trace Metals Analyzer (ATMA), which is based on Potentiometric Stripping Analysis (PSA). This automated instrument is designed for unattended collection and analysis of trace levels of heavy metals in water. PSA is capable of measuring multiple metals simultaneously at environmentally relevant concentrations. This instrument will allow users to make on-the-spot or continuous long-term measurements of metal contamination in an unattended automated mode. The ATMA can be set up to take measurements at timed intervals or in response to an external trigger. The ATMA enables near real-time (one sample/5 min), unattended on-site measurement of trace metals, such as lead, copper, mercury, arsenic and cadmium in aqueous media. It will reduce analytical costs over conventional monitoring and enable near real-time industrial process monitoring. The ATMA s

Windows-based interface enabled non-technical personnel to set up the instrument and collect data with minimal training. The

Cost and performance rept. 44 null

The Annual Progress Report gives the calendar year 2000 personnel and funding strength of the U.S. Army Aeromedical Research Laboratory. This report includes an overview of the Laboratory activities, current areas of research, and a brief description of the research being conducted.

Annual progress rept. 49 null

An experimental research program was conducted to determine certain critical material and design parameters of reinforced masonry necessary for the formulation of a new limit-states design standard. The research was divided into three subprograms: lap-splices, tension-stiffening, and biaxial compression-tension behavior. Tests were conducted to investigate lap splices in reinforced masonry, focusing on parameters which affect the strength and ductility of lap splices in both concrete and clay masonry construction. A performance criteria of 125 percent of the yield load of the reinforcement was adopted and used to establish critical lap lengths and maximum bar sizes. Tension-stiffening tests were conducted to develop data on the tensile behavior of reinforced masonry, especially in the postcracked state. The results of these experiments permitted the quantitative expression of tension-stiffening behavior in both the pre- and postyield range. Tests were conducted to determine the biaxial compressive-tensile behavior of reinforced concrete masonry panels. The tests were conducted in a unique load frame which permitted independent control of lateral tensile and vertical compressive loads. A model describing the influence of lateral tensile strain on the compressive stress and strain at compressive failure was obtained.

Final technical
rept.,

WES/CPAR-SL-
165 94-1

The authors have collaborated to conduct rocket engine firings of a newly discovered non-toxic homogeneous miscible fuel (NHMF) with 91% hydrogen peroxide. The synthesis of the NHMP and purification of the high test peroxide, as well as the preliminary spot-plate testing, were accomplished at the Naval Air Warfare Center Weapons Division, China Lake, California. The rocket engine firings were conducted at the Mojave Test Facility of HMX Incorporated located at the Mojave airport. These engine tests represent a continuation and enhancement of research started under a technology feasibility study. The synthesized fuels were found to be true polar solutions, were non-toxic, economical, and, most importantly, had actual hypergolic ignition delays in the millisecond region. These candidate fuels are applicable for use in divert/attitude control system, orbit transfer, and large launch vehicle applications.

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SURVIAC is applying business solutions with technical expertise in evaluating halon replacement systems. The banning of halon production and the search for nonhalon fire extinguishing alternatives have produced sizable development programs in Government, university, industry, and research and development (R&D) organizations. This SURVIAC Technical Area Task (TAT) will evaluate multiple platforms and multiple agents taking financial and technical variables into consideration. The fixed and variable costs associated with converting to fire suppression alternatives from conventional Halon 1301 systems are considerable. Quantification/qualification of costs and benefits will enable the decision maker to come up with the optimum solution. The goal of this task is to assist decision makers in selecting a retrofit halon replacement system, but it is also proving a cost benefit methodology with wider applications.

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The Federal Aviation Administration (FAA) manages and operates the National Airspace System (NAS), a significant national resource. The demands on this system are continuously growing, and changing technologies provide the opportunity to improve system effectiveness and efficiency. Today, 22 of the country's largest airports experience more than 20,000 hours of delay per year, and the number of major airports with more than 20,000 hours of delay is projected to grow to 33 by 2003. With an average aircraft operating cost of approximately \$1,600 per hour of delay, airlines operating at each of these airports currently incur at least \$32 million in annual delay costs.

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211 null

Environmental biotechnology for hazardous wastes is operationally defined as the use of living organisms or their processes for socio-economic benefit in environmental protection and restoration. Often, biotechnology for control of wastes and toxic materials is viewed as the extremes of either conventional biological waste treatment technology or genetically engineered 'super bugs' of consequent risk to the environment. Between these extremes, environmental biotechnology has evolved from the integration of Engineering, Environmental and Biological sciences as an important new research field contributing to the development, application and optimization of biological processes in hazardous waste control. An analysis of applications of biological process in hazardous waste control leads to the identification of major areas in which environmental biotechnology can contribute new problem solutions and directions for the development or more reliable technology.

Final rept. 1
Oct 90-30 Sep
91,

AFOSR-TR-91-
59 0823

Biomedical literature represents the primary source of experimental data and biological knowledge. This project aims to develop a text mining system for pathogens of biodefense relevance, focusing on mining pathogen-host protein-protein interactions (PH-PPI). We developed a Support Vector Machine (SVM)-based system to identify abstracts containing PH-PPI information using an annotated corpus of 1360 MEDLINE abstracts as the training set. It achieved good performance on document classification with a precision of over 80 among top 50 ranked abstracts. The SVM-based method is further augmented with other text mining tools (such as PIE) for mining and tagging PPI information. As part of an effort in enabling text mining tools for real-world applications, we are developing a basic framework, iProLINK, to connect text mining tools with ontology and systems biology for the biomedical research community. The PH-PPI text mining system developed in the first year will be coupled with the iProXpress proteomic data analysis system into a Pathogen Mining System" for the analysis of pathogen proteomics data."

Technical
Report,20 Sep
2007,19 Sep
2008

36 null

The manufacturing environment today is one of rapid change. Customer demands for low-cost, high-quality goods; a global market; and exponential growth in manufacturing technologies are challenging manufacturers. Many manufacturing companies in the United States and abroad are responding to next-generation challenges. The transition is not without its problems, however. Obstacles such as adversarial labor-management relations, a poorly educated entry-level workforce, and unfriendly government policies are hampering industry's ability to respond to these new challenges. Further, many manufacturers are finding it necessary to change their basic organizational structure and value chain to be flexible, agile, and globally competitive. Finally, manufacturers are discovering both the bright promise and the formidable task of embracing cutting-edge manufacturing technology.

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432 null

In order to formulate mathematical conjectures likely to be true, a number of base cases must be determined. However, many combinatorial problems are NP-hard and the computational complexity makes this research approach difficult using a standard brute force approach on a typical computer. One sample problem explored is that of finding a minimum identifying code. To work around the computational issues, a variety of methods are explored and consist of a parallel computing approach using Matlab, a quantum annealing approach using the D-Wave computer, and lastly using satisfiability modulo theory (SMT) and corresponding SMT solvers. Each of these methods requires the problem to be formulated in a unique manner. In this paper, we address the challenges of computing solutions to this NP-hard problem with respect to each of these methods.

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ARXIV:1504.0
24 8011V1

This report addresses the use of U.S. Army Research Laboratory (ARL) and industry technologies to prototype the XM194 gun mount shield. The prototyping was done with novel ideas and techniques in mind. It was used as an advanced technology demonstrator for sensor-based process control. First, a brief description of the XM194 gun mount shield is given. Second, Seemann's Composite Resin Infusion Molding Process (SCRIMP) was used as a fabrication process, which is possible through the establishment of a Cooperative Research and Development Agreement (CRADA) with SCRIMP Systems, Inc. Third, the state-of-the-art Sensors Mounted as Roving Threads (SMARTweave) system is detailed, along with the sensor-based control methodology utilized in the process. Fourth, the successful processing of the XM194 gun mount shield is illustrated. Finally, several possibilities for future sensor process and process control work are discussed.

Final rept. Dec
95-Dec 97

38 ARL-TR-1710

Distributed interactive simulation (DIS) is the linking of aircraft, tank, and other military simulators in diverse locations so that the crew of one simulator can see

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OTA-BP-ISS-
83 151

Welcome to the Systems Engineering Research Center (SERC) 2011 Annual Report. The SERC, competitively awarded by the Department of Defense to Stevens Institute of Technology in 2008, has grown to 22 collaborating institutions, over 20 research activities, and as we go to print, we have our 299th researcher. We welcomed the U.S. Army and U.S. Air Force as new strategic sponsors. In our third year, we are starting to see the impact of our research on the systems engineering community. The SERC engaged on an important endeavor this year to refine our vision, reflecting the dramatically evolving landscape of DoD science and technology priorities. We are exploring engineering transformation, security from a systems perspective, systems of systems and enterprise modeling, risk assessment techniques, and workforce development. We are also maturing our operational strategies and support systems to evolve the SERC into a national and global resource. To tackle these priorities requires us to strengthen our network. It is both a challenge and a reward to bring together multiple universities and facilitate opportunities for faculty and students to engage in impactful research. We are working to deepen our relationships with our collaborators, expand our work with sponsors, and go beyond research and into transition.

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17 null

A major issue facing the nation is securing sufficient and reliable future energy supplies to meet the increased U.S. Energy demand projected for the 1990's. Key questions in the energy supply and demand equation include: Does the United States have sufficient fossil fuel supplies-coal, oil, and natural gas-to meet growing demand? Can electric utilities adjust to the numerous changes affecting availability of these fuels amidst increasing demand for new capacity? Will end-use approaches such as energy conservation play a greater role in reducing demand? What steps should the nation take in the event of another major oil disruption? To address these issues, the Balancing Energy Supply and Demand panelists focused on four specific topics: the future role of natural gas, challenges facing the electricity industry in the 1990s, the importance of energy efficiency in reducing energy demand, and the need to analyze carefully the means used to ensure energy security.

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GAO/RCED-91-
196 66

Significant national resources are dedicated to research and development (R&D) at government laboratories. In an era of increasing deficits and resulting budget reductions, transfer of technology from these laboratories to the private sector is important in order to improve the return on this R&D investment, as well as to improve the US industrial technological base, thus enhancing our nation's economic security. However, no accurate measures to evaluate the efficiency of the technology transfer (TT) process exist. Likewise, accurate cost information, affording insight into the cost pattern and allowing more effective resource management, does not exist. This research draws on the principles of activity-based costing in order to develop a collection instrument, quantify the direct cost-over-time, and identify the cost patterns of eight TT projects managed at Wright Laboratory, all employing the cooperative research and development agreement vehicle. Results reveal 80 percent of a technology transfer's total resources were dedicated to the performance of the transfer activity. Additionally, human resources accounted for 80 percent of the total. Expenditures were linear and fairly consistent over the project's life, which begins nearly six months prior to signature and ends more than five months after expiration.

Master's thesis,

AFIT/GSM/LA
232 S/96S-2

This technology Plan, which has been prepared by Director of Defense Research and Engineering (DDR&E), Service and Defense Agency Teams is a compilation of individual plans - each covering one of the 19 technology areas comprising everything but basic research - that collectively describe the total Department of Defense Science and Technology effort. The primary purpose of this plan is to document the objectives that DDR&E and the Teams are trying to achieve, and the Science and Technology efforts that are being pursued in order to reach these objectives. The plan also identifies the funding that has been allocated for these objectives and the timeframes in which these technologies will be available to be transitioned to new warfighting capabilities. The 19 technology areas include: Aerospace Propulsion and Power; Air Vehicles; Space Vehicles; Battlespace Environments; Biomedical; Chemical and Biological Defense; Clothing, Textiles, and Food; Command, Control, and Communications (C3); Computing and Software; Conventional Weapons; Electronics, Electronic Warfare; Directed Energy Weapons; Environmental Quality; Civil Engineering; Human Systems Interface; Manpower, Personnel, and Training; Materials, Processes, and Structures; Sensors; Surface/Under Surface Vehicles - Ships and Watercraft; Ground Vehicles; Manufacturing Science & Technology (MS&T); and Modelling and Simulation (M&S).

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188 null

The Institute for Manufacturing and Sustainment Technologies (iMAST) is a Department of the Navy Manufacturing Technology (ManTech) Center of Excellence located at The Pennsylvania State University's Applied Research Laboratory in State College, Pennsylvania. This past year we supported 41 expiring, continuing and new projects with the dedicated effort of over 100 men and women from ARL and its subcontractors, from both small and large businesses. This report describes this years projects, executed within the six technical areas that are resident in the Materials and Manufacturing Office of the Applied Research Laboratory, Penn State. Along with the project specific technologies, descriptions of completed and ongoing projects are provided.

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69 null

philosophical society. As with many of that age, Franklin believed that science, like statesmanship, was a gentlemanly career pursued individually by those of independent means. What he had in mind was something like the Royal Society of London, to which he and other colonials belonged. Unlike the highly centralized royal academies of France or Sweden, the Royal Society was a loosely connected group of gentlemen scientists, professional and dabblers, who collected information, posed theories, conducted experiments, or advanced technology. The Society provided a forum to coordinate among members, publish findings, distribute funds, provide books or data, and in other ways support scientific research. Included among such efforts were topics that would clearly be considered engineering at various times in the future topography and cartography, mining and metallurgy, management of natural forces, development of instruments or other devices, and improvements to methods of everything from sailing ships to building roads and canals. Franklin's campaign to form a similar society in America was in essence the first attempt to develop a national capability for scientific and engineering research what would later occur in government laboratories.² Over the next 250 years, many other attempts were made to harness the scientific drive that was developing in America, including within the engineering profession. Central to the story of the evolution of scientific engineering was the U.S. Army Corps of Engineers, which Franklin played a role in helping to establish. As ambassador to France, he helped recruit highly educated French officers for

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425 null

The U.S. Army is having difficulty balancing its need for new technologies with the resources available to develop them. Since it is unlikely that the Army will devote substantially greater resources to its research and development (R&D), the Army must find better methods for developing the technologies needed to stage its revolution in military affairs (RMA) while keeping current equipment relevant and affordable. This issue paper introduces the idea that the Army should fund some of its technology development through a private venture capital organization. The concept exploits venture capital's efficiency in developing technology, its access to the growing commercial technology sector, its capacity to respond with agility to changing technology, and its ability to leverage additional resources throughout the development cycle. Venture capital describes a number of investing schemes that have two common characteristics. First, venture capital is generally targeted at new companies that have a concept, a plausible market, and a business plan but lack the resources to develop and market the concept. The risks associated with such investments make other types of financing unavailable and allow the venture capitalist to demand large rewards: most often, an equity stake in the funded business. Second, venture capitalists usually provide more than just money. They actively help manage and promote the businesses they are backing.

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4 null

An extensive effort has been made within both the military and commercial sectors to reduce the power consumed by millimeter- and microwave solid-state amplifiers. Low power consumption is essential in applications that require lightweight power supplies and long battery lifetimes. With the increased reliance on small platforms such as autonomous sensors, unmanned-air-vehicles, satellites and man-portable systems, the need for reduced operating power is becoming especially important to the DoD. NRL has long been recognized as a world leader in the material growth and fabrication of high electron mobility transistors (HEMTs) in the AlSb/InAs material system. The HEMT, which is an advanced version of the common field-effect transistor, uses band-gap engineered layer designs with feature sizes on the atomic scale to precisely control the material properties within the structure. When compared to InP or GaAs-based HEMTs (Fig. 7), the high performance of the AlSb/InAs HEMTs arises from the superior electronic properties of this material structure grown by molecular beam epitaxy (MBE) with a lattice constant of 6.1 . When combined with nanoscale patterning using electron-beam lithography, these HEMTs constitute the state of the art in high-frequency performance at low operating voltage. Recently, the NRL AlSb/InAs HEMT material growth and fabrication technology was transitioned to Northrop-Grumman Space Technology through a Cooperative Research and Development Agreement (CRADA). This resulted in the demonstration of the first X-band and W-band monolithic microwave integrated circuits in this material system.

Journal article

4 null

Many potential biological terrorism agents lack available countermeasures. President Bush proposed Project BioShield to address this need. The 108th Congress considered this proposal in S. 15 (Gregg), S. 1504 (Gregg), and H.R. 2122 (Tauzin). President Bush signed S. 15 into law on July 21, 2004 (The Project BioShield Act of 2004, P.L. 108-276). The main provisions of this law include the following; (1) relaxing procedures for bioterrorism-related procurement, hiring, and awarding research grants; (2) guaranteeing a federal government market for new biomedical countermeasures; and (3) permitting emergency use of unapproved countermeasures. Project BioShield countermeasure procurement is funded by the Department of Homeland Security Appropriations Act, 2004 (P.L. 108-90) which advance-appropriated \$5.593 billion for FY2004-FY2013. Additional measures to encourage the development of countermeasures are being considered by the 109th Congress in S. 3 (Gregg) and S. 975 (Lieberman). This report will be updated in response to legislative developments.

Congressional
rept.

7 CRS-RS21507

The primary objective of the Benthic Flux Sampling Device 2 demonstration was to perform deployments at contaminated sites in San Diego Bay, California, and Pearl Harbor, Hawaii, under the observation of California Environmental Protection Agency (EPA) certification evaluators. The demonstration evaluated the quality of water samples collected using the BFSD2, repeatability, logistical and economic resources necessary for BFSD2 operation, and the range of conditions in which BFSD2 operates. Other objectives included exposure of various user communities to the technology to encourage continued interest and applications.

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127 TR-1826

strengthen evidence-based orthopaedic rehabilitation care that results in optimal functional outcomes for each wounded warrior. Over the five-year award period, this will be accomplished by focusing on a MTF centric approach that will advance each of the following strategic areas: 1: INFRASTRUCTURES: Assist each MTF with strengthening a research-intensive culture 2: PARTNERSHIPS: Work to fully realize a robust orthopaedic rehabilitation research partnership across MTF and non-MTF clinical research sites 3: RESEARCH: Support MTF goals of conducting a variety of high impact research studies 4: SUSTAINMENT: Assist MTFs with the establishment of their self-sustaining research enterprises. Key Accomplishments year 1: Established Administrative Core, Clinical Research Core and Scientific Technical Core; Approval and establishment of two clinical research projects; HRPO clearance and start of first project; Initiated the development of first IRB of record outside the MTFs; Development and implementation of an Omnibus CRADA; Established a consortium-wide PDMS; Partnered with the DoD and VA s Extremity Trauma and Amputation Center of Excellence (EACE); Worked with the EACE to develop research focus (gap) areas for BADER Consortium s call for proposals; Established and implemented a complete process for the call, submission, review and selection of Consortium funded projects; Published the BADER Consortium call for clinical research proposals Established the BADER Consortium SOPs; Initiated the hiring of eight research support staff to be placed onsite at MTFs; Established partnerships with

Annual rept. 30
 Sep 2011-29
 Sep 2012

26 null

With the creation of the Department of Homeland Security and increased federal spending on homeland security products and services, comes increased interest in doing business with the federal government and obtaining federal funds. Small and large businesses, universities, and research organizations throughout the country want to provide the needed products and services. State and local governments desire federal funds to assist with their homeland security needs. Generally, the larger companies or organizations and state and local governments that have regularly done business with the federal government in the past are familiar with the often complex process of selling to the government or obtaining federal funds through grants. However, smaller companies and government officials who are new to the process may have a difficult time quickly identifying the resources and information needed to pursue grant or contract monies.

Congressional
 rept.

25 null

The Armstrong Laboratory is the Air Force laboratory uniquely positioned to engage a diverse and multi-disciplined technological arsenal to address the warfighter's human systems deficiencies. The capability of bringing to bear the full weight of physical, biological, biomedical, and behavioral sciences along with human factors engineering is now needed more than ever in the post Cold War era. Today, instead of facing a single massive threat, we are challenged with the potential for simultaneous multiple low intensity conflicts. Instead of a robust DoD budget, we are now faced with conducting both operations and acquisition in a fiscal climate that is highly resource constrained.

34 null

In January 1995 a Construction Productivity Advancement Research (CPAR) program agreement between Materials Technology Ltd. (MTL), Reno, NV, and the U.S. Army Engineer Waterways Experiment Station (WES) was initiated. The purpose was to develop a new system of building walls for residential and light-utility buildings. The new approach used stay-in-place, fiber-reinforced cement-board forms with foamed or cellular concrete cast between the forms. An immediate goal of the research was to prepare a formulation for cellular concrete that could be cast between cement-board forms in lifts as thick as 2.42 m and to optimize the mixture in terms of cost and strength. The project also involved investigating the compatibility of the formulation that was developed with the cement board and developing the optimum system for placing the foamed concrete in the forms. WES collaborated with the industry partner in developing an improved panel spacer and form tie system and further assisted by developing a versatile, low-cost panel fastening system that can be used with the stay-in-place forms. Because of the potential benefits of this developing technology for both the Federal Government and the private sector, this research on a new building system was well-suited to the CPAR Program.

Final rept.

WES/FR/CPAR-
58 SL-98-4

This study is comprised of three trials, referred to as the Assessment of Chiropractic Treatment (ACT). The following accomplishments have been made in each study during the reporting period of February 15, 2016 through February 14, 2017. ACT 1 is a randomized controlled trial of chiropractic for low back pain with a nested smoking cessation component in 750 active duty military personnel. During this reporting period the study: Completed long-term follow up assessments, closed study sites; published the protocol manuscript. ACT 2 is a randomized controlled trial of response and reaction times in Special Operations Forces at Ft. Campbell, KY: We completed recruitment at 100% (N=120/120); completed data collection; and closed study sites. ACT 3 is a randomized controlled trial of strength, balance, and re-injury comparing standard care with standard care plus chiropractic treatment: We launched study at Naval Hospital Pensacola; recruited 13/110 targets; contracted a new study provider in the wake of the passing away of the original chiropractic doctor in October; Awaiting final site approvals for new study chiropractor in order to reinstate recruitment activities for ACT 3.

Technical
Report, 15 Feb
2016, 14 Feb
2017

47 null

The Bionetics Corporation staffed and maintained laboratories to support red blood cell preservation and pathogen inactivation research for the Blood Research Detachment and Department, Walter Reed Army Institute of Research Building 503 Walter Reed Forest Glen Annex, Silver Spring, MD 20910. Contract staff completed three in vitro trials with another three are in progress at the conclusion of the reporting period. The three completed trials evaluated the effects on red cell storage of 1) incremental changes in salt and 2) phosphate content of the storage solution and the 3) incremental pH adjustment of the anticoagulant into which the blood was collected. The results of the three trials indicate potential for optimizing existing storage solutions. Two of three trials in progress are evaluations of separate pathogen inactivation processes. The first is to measure the effects of treatment on red cell storage; the second is to determine the ability of riboflavin to inactivate Plasmodium falciparum in red cells. The third trial in progress is designed to provide data on a process improvement for the processing of frozen red cells. Data from our laboratory resulted in four published manuscripts, a fifth has been accepted. The Bionetics Corporation advanced the WRAIR Blood Research mission.

Annual rept. 21
 Sep 2000-20
 Sep 2001

88 null

null

Briefing charts

TARDEC-
 18 20425RC

The 2018 Conference of the NDIA Human Systems Division (HSD) is designed to serve the Department of Defense and strengthen the defense industry. This is the mission of the NDIA and its members: 1,600 corporations and 85,000 individuals. The HSD conference supports the mission by bringing DoD S and T leadership, representatives of industry, and other guests into discussion over accomplishments of DoD human systems research and development, gaps in DoD human systems, and emerging research and technology that can bridge those gaps. This conference is a small and vital forum for all of us to learn, to envision new solutions, and to build the relationships and opportunities to collaborate. The NDIA Human Systems Division is chartered to support the DoD Human Systems Community of Interest (HS COI). Our subcommittee structure (represented by the list of technical sessions in this program) is identical that of the HS COI, with the exception of one addition: this Division has established a subcommittee on Human Systems Metrics to help assess and promote the value of human systems research and development, techniques, and technologies. The 2018 HSD Conference offers a dynamic exchange of technical information and dialogue among government, industry, and academic leaders from the Human Systems community who are interested in advancing the field through education, consultation, future research and collaboration opportunities. Secretary of Defense Ashton Carter endorsed the value of this partnership, noting our strength (DoD) also comes from the longstanding link between the technology community and the government.

Conference
Proceedings

239 null

created and evaluated on three different types of 3D electronic displays: one active-eyewear Stereo 3D (S3D) and two non-eyewear full parallax Field-of-Light Display (FoLD) systems. The two FoLD systems are the Actuality Integral Slice (AIS) swept-screen volumetric Perspecta and the Zebra Integral Ray (ZIR) hogel-based ZScape Motion Display (ZMD). The James test is designed so that the only factor examined is binocular single vision (BSV), aka stereoscopic parallax. The James Depth Perception Apparatus (DPA) comprises two vertical white 1cm wide rods (or thin strings) viewed at a reference distance (e.g. 6m) against a black background through a window in a black front. The eJ computer graphics white bar stimuli in this work are designed to visually emulate -- within limitations of the S3D, AIS, and ZIR -- the white rods in the James DPA. The unique artifacts of the three electronic display types impede creation of a single graphical representation of the two-bar stimuli and complicate cross-type comparisons. A compact variant of the James DPA developed by Howard made the left rod stationary and right rod adjustable by the subject (rather than the administrator) via a hand-crank to match distance via a mechanical string-pulley system. The Howard DPA variant also enabled depth acuity threshold determination by two methods: (a) forced-choice of nearest bar; (b) adjustment of right bar to match left. An AFRL-automated Howard DPA is included in the present study to enable a comparison of real-world stimuli versus the electronic displays. A hand-held computer game controller is used to automate data collection and subject trial initiation. Four

Technical
Report

AFRL-RH-WP-
96 TR-2016-0060

This publication is a compilation of significant events that occurred at the Naval Aerospace Medical Research Laboratory during 1993.

Final rept. Jan-
Dec 93,

145 null

This Concept of Operations Document provides an overview of the current system operation, changes necessary to meet the needs and a description of the proposed system operation for the ONR BAA 06-007- Navigation in a GPS Denied Environment phase I project activities. The contents of this document were derived from the original BAA content, FAQs, review of USMC field manuals and design modifications of the current TrakPoint application. This content will be utilized to design and construct the prototype systems that will be delivered as part of the Phase II effort.

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Traditional piling systems are inherently unsuited for harsh waterfront environments. Deterioration of wood, concrete, and steel piling systems is estimated to cost the U.S. military and civilian marine and waterfront communities over \$1 billion annually. Fiber-reinforced polymer (FRP) composites represent an alternative construction material without many of the performance disadvantages of traditional materials as described above. A proposal was submitted to develop composite piling systems under the U.S. Army Corps of Engineers' Construction Productivity Advancement Research (CPAR) Program. This CPAR Project developed, tested, and demonstrated high-performance polymer composite fender, load-bearing, and sheet pile (bulkheads) systems for marine/waterfront civil engineering applications. In phase one, mechanical, operating, and physical performance requirements were established. In phase two, laboratory tests were conducted to assess the preliminary designs. Promising designs were further developed and tested. Selected fender piles that met the established requirements, as determined by the laboratory tests, were installed in a field demonstration. Development and adoption of industry consensus specifications and standards for composite piling systems was initiated. The Composites Institute and member manufacturers have promoted and will continue to promote the commercialization of the composite pilings developed under this project.

Final rept.,

CERL-TR-
143 98/123

Department of the Navy (DoN) revolving fund organic industrial and supply facilities became financial components of the Defense Business Operations Fund (DBOF) in FY 1991. In December, 1996, the Under Secretary of Defense (Comptroller) (USD(C)) approved the formation of separate working capital funds for each of the Military Departments and for the Department of Defense (DoD). This budget incorporates the transformation of DoN DBOF facilities to Navy Working Capital Fund (NWCF) entities during FY 1997 execution. The NWCF is projected to be the largest of the Military Departments' working capital funds and employs approximately half of the DoN's civilian personnel. There are nine NWCF activity groups which can be separated into seventeen sub-activity groups.

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The Annual Progress Report, Fiscal Year 1990, summarizes the research performed by the U.S. Army Biomedical Research and Development Laboratory in projects authorized by the U.S. Army Surgeon General and the Commander, U.S. Army Medical Research and Development Command. This research was supported by RDTE funds from the U.S. Army Medical Research and Development Command, and as reimbursables from the U.S. Army Corps of Engineers, and from several additional sources.

Rept. for 1 Oct
89-30 Sep 91,

273 null

There are two high level drivers that led to the development of the AVPTA. The first is the elevation of energy efficiency and security as points of emphasis throughout the Army and the Department of Defense (DOD) as a whole. For the Army, a major milestone in this was the development of the Army Energy Security Implementation Plan (AESIP) in 2009. Within the AESIP goal to Increase Energy Efficiency across Platforms and Facilities, there was an objective to increase the efficiency of tactical equipment. At the DOD level, the Operational Energy Strategy is a principle-guidance document for the Departments approach to ensure energy security for operational forces. The second was a call by the DOD for strengthened interagency partnering. This was set forth in its 2010 Quadrennial Defense Review. Energy security was identified as an excellent opportunity area for such a partnership. To this end, the Department of Energy (DOE) and DOD worked to craft a Memorandum of Understanding (MOU) to establish a partnering framework to enhance national energy security. This MOU is included as Appendix A. The MOU calls for the Departments to work together in a wide range of technical areas; including efficient transportation and overall energy efficiency. DA and DOE worked together under the auspices of this MOU to develop a charter for working together in a wide range of vehicle technologies.

Technical
Report,01 Oct
2017,30 Sep
2018

244 OPSEC1890

The cost of characterizing and monitoring U.S. government hazardous waste sites could exceed \$100 billion utilizing traditional methods and technology. New sensor technologies are being developed to meet the nation's environmental remediation and compliance programs. In 1993, Armstrong Laboratory and Unisys Corporation signed a Cooperative Research and Development Agreement (CRDA) to commercialize fiber optic laser-induced fluorescence technology that had been developed with Air Force at North Dakota State University (NDSU). A consortia consisting of the CRDA partners, Dakota Technologies Inc., and NDSU submitted a proposal to the Advanced Research Projects Agency, Technology Reinvestment Project and won an award funding the commercialization. The result, Rapid Optical Screening Tool or ROST is a state-of-the-art laser spectroscopy system for analysis of aromatic hydrocarbon-contaminated soil and groundwater. With ROST, environmental investigators are able to find, classify, and map the distribution of many hazardous chemicals in the field instead of waiting for reports to come back from the analytical laboratory. The Tri-Service research and development program leading to prototype laser spectrometers is summarized along with the technology transition. Results from laboratory and field demonstrations will illustrate the current system performance.

Technical rept.
1994

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meteorology. The school's Department of Meteorology is internationally recognized for its outstanding record of research and instruction. Perhaps less known is the important role the Department is playing in addressing and solving key meteorological challenges facing the Department of the Navy and the Department of Defense. The mastery of the Battlespace Atmospheric Environment is a necessary component for the successful implementation of SEA POWER 21. This article presents a review of some of the unique and valuable efforts undertaken by the faculty and students within the Department in support of SEA POWER 21. Readers are asked to consider the diverse ways in which atmospheric processes and phenomena impact military and naval operations. Weather challenges take on many forms as the U.S. military defends this nation. The impact of major storms on military operations is well known. In December 1944 during World War II, Typhoon Cobra struck the Pacific Fleet, which was operating in support of the invasion of the Philippines. Three ships were lost with practically all hands, 28 other ships sustained serious damage, and 790 officers and sailors were lost. During the same year, military planners found weather, ocean, and tidal conditions were the key elements in determining the day and time of the largest amphibious operation in history, the Normandy D-Day invasion. In the recent Operation Iraqi Freedom, the fierce sandstorm of March 25-27 brought military operations to a near standstill. The main article in this issue is The Naval Postgraduate School's Department of Meteorology Addresses the Critical Role of Atmospheric Sciences Journal

53 null

The Office of Technology Transition (OTT) was created by the Secretary of Defense to serve as a focal point for the domestic technology transfer activities of the Department of Defense. This report, required by legislation, summarized OTT accomplishments for FY 2000. OTT provides leadership, oversight, and focus for programs supporting the technology transfer mission of the Department.

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In 2011, as the Massachusetts Institute of Technology marks its 150th anniversary, we celebrate its heritage of advancing scientific knowledge to benefit American industry and society. A vital factor in fulfilling that mission has been the work of Lincoln Laboratory, which in 2011 commemorates its 60th anniversary of providing cutting-edge systems and technologies in support of the Department of Defense and other federal agencies. Lincoln Laboratory has upheld the Institute-wide tradition of pioneering research. Its first project, the Semi-Automatic Ground Environment (SAGE) system, not only introduced real-time computer control of a system of geographically distant radars and direction centers but also empowered the emerging computer industry. Over decades, as the Laboratory developed systems for air and missile defense, space and terrestrial surveillance, and laser communications, it again brought to bear remarkable creativity and innovation. To enable these sophisticated systems, the Laboratory also redefined the state of the art in imaging, highperformance computing, signal processing, and decision support tools. These advances have benefited not only the defense industry but a wide range of other firms and sectors as well. Given the shifting character of the threats to national security, Lincoln Laboratory has continually adapted to meet Department of Defense needs, as evidenced by the broad range of its current research and development efforts. This sustained pursuit of innovative solutions to new problems springs from a dedication to excellence and a well-defined vision.

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This brochure presents brief summaries of the FY94 research efforts at the Naval Training Systems Center (NAVTRASYSCEN) in Orlando, FL. NAVTRASYSCEN has comprehensive simulation and training systems responsibilities ranging from research and technology base development through system acquisition and life cycle support. The NAVTRASYSCEN is unique in this integrated role because it performs research, specifies the training device's engineering, instructional, and operational requirements, selects the contractor, evaluates the trainer as it is being built, and ensures the trainer can be properly operated and maintained in the field. In addition to the Navy, NAVTRASYSCEN provides services for the Marine Corps, Army, Air Force, and foreign governments. The NAVTRASYSCEN's research mission is to plan and perform a full range of directed research and development in support of Naval training systems for all warfare areas and platforms, to maintain an expanding technology base, and to transition research results to the fleet. R&D program emphasis is on fleet and training command requirements, rapid transition of products, industry/university coordination, improved planning, coordination with other services, and improved quality and cost effectiveness of products. Helmet mounted displays,

Annual rept.

62 null

The U.S. Government has been sponsoring efforts in the development of intelligent tutoring system (ITSs). Information on current activities was collected from the Department of Defense, Department of Education, National Aeronautics and Space Administration, National Science Foundation, and the Technology Reinvestment Project, to be used as a resource for researchers in the field. Although not uniformly available, information was provided on each project's mission and role, planned products, approach, development status, architecture, operating environment, and future plans.

Final rept.,

253 IDA-P-3003

The impact of software in our lives continues to grow. The men and women of the SEI have a deep knowledge and understanding of today's software problems and opportunities. They play a crucial role in advancing the state of the practice in ways that have a positive impact, certainly for our customers, but also for the industries they participate in and the world at large. The SEI's women and men perform innovative research and interact with the global software community to find best practices and important new research, but most importantly, work hard to effectively transition technology, techniques, and methods to our clients and stakeholders. We teach individuals about architecture, security, interoperability, the integration of systems, and process improvement across the entire development life cycle. We conduct workshops for software educators, and through our Virtual Training Environment (VTE), we enable customers to have anywhere, anytime access to some of the best software training. Through our SEI Webinar and CERT Podcast series, we are engaging in Web 2.0 technologies to reach new audiences. And through direct support of government and industry clients, we improve the acquisition and development of software-intensive systems.

Annual rept.

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This section provides a short introduction to some important concepts related to applications and production of diamond coatings. The first part highlights the properties and applications of diamond, while the second part describes issues related to the production of diamond films.

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This document has been prepared to provide information on the United States Air Force (USAF) Research, Development, Test and Evaluation (RDT and E) program to Congressional committees during the Fiscal Year 1993 hearings. This information is in addition to the testimony given by DOD witnesses. The Descriptive Summaries provide narrative information to all RDT and E program elements and projects, except those listed in paragraph 4b, within the USAF FY 1993 RDT and E program. The format and contents of this document are in accordance with the guidelines and requirements of the Congressional committees insofar as possible. The 'RESOURCES' portion of the Descriptive Summaries includes, in addition to RDT and E funds, Procurement funds and quantities, Military Construction appropriation funds on specific development programs, Operations and Maintenance appropriation funds where they are essential to the development effort described, and where appropriate, Department of Energy (DOE) costs.

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873 null

Because of New Hampshire's hilly landscape, mapped values of ground snow load are not available for much of its area. We conducted snow load case studies to establish ground snow loads for a specific elevation in each of the 259 towns in the state. That work was done by three researchers and three structural engineers practicing in New Hampshire. While our methods of analysis varied somewhat, our results were comparable and the feedback we received from each other was quite valuable. We also established a statewide elevation adjustment factor to transfer our snow load answers to other elevations in each town. We suggest that similar studies be conducted for other places in the United States where mapped values are not available because of extreme local variations in ground snow loads.

Technical rept.

ERDC/CRREL-
46 TR-02-6

laboratories to industrial and academic partners and vice versa is the primary reason why technology transfer exists today. Without the cooperation of federal, state, and private agencies working together to resolve technology quandaries, a lot of the breakthroughs that are evident today would not exist. This research attempts to uncover the mechanisms currently used by scientists and engineers at the Air Force Research Laboratory (AFRL), Wright-Patterson AFB, to transfer technology to industries, corporations, and universities. The research encompasses both official and unofficial mechanisms and investigates why some methods are preferred over others. The study also attempts to determine which barriers are preventing technology transfer from occurring in a more fluid fashion, and what lab employees are doing to overcome these obstacles. Interviews were conducted with personnel at all levels of the Air Force Research Laboratory, Wright-Patterson, to identify the preferred transfer mechanisms and the reasons for their use. The results show that there AFRL directorates leveraging the use of official mechanisms and reaping the benefits. Those that are not using these mechanisms say the reason is that they either lack the knowledge or the infrastructure to do so. Unofficial mechanisms are used almost as often as official ones. The problem is that there isn't any guidance for using unofficial mechanisms. Most directorates lack a sense of strategic vision, which is a barrier to technology transfer, and this lack of vision is linked to the other three barriers: lack of trust, funding issues, and lack of training. All of these barriers are related to

Master's thesis

AFIT/GRD/EN
92 V/07-M6

NPS Research is published by the Director of Research Administration in accordance with NAVSO P-35. This issue includes articles on the following topics: featured project, featured laboratory, research and education, NSAP projects, student research, recognition and awards, conferences and workshops, faculty news and conference calendar. Other articles include: modeling and prediction of the global ocean and Arctic sea ice, the advanced networking laboratory, information warfare and information operations, participation in fleet battle experiment Echo, computer science labs, utility of electro-optical devices, development of a helicopter vortex ring state warning system, outstanding research achievements and other articles of interest.

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Because of its impact on the health and productivity of building occupants, indoor air quality (IAQ) should be an important consideration in the design of any building to be used by U.S. Army military personnel or civilian employees. Frequently, however, IAQ does not receive adequate attention during design because the interrelationships between IAQ and design are often too complex or subtle to be fully understood by the architect or engineer. An effective IAQ model could help the designer take into account the major elements that contribute to poor IAQ and understand the implications his or her design decisions may have on IAQ. This report discusses key issues to be addressed in the development of an effective computer-based IAQ modeling system. The major indicators of an IAQ problem are outlined, and the contaminants that most commonly create such problems are identified. The state of modeling technology is surveyed, and gaps in modeling methodology are identified. The general requirements for a useful IAQ modeling and diagnostic tool are discussed, followed by a detailed outline of the specific research and development components required for the creation of such a tool.

Final rept.,

CERL-TR-FF-
27 92/04

A comprehensive review of Federal Aviation Administration programs intended to improve the capacity of the National Air Transportation System. The Plan identifies the causes and extent of capacity and delay problems currently associated with air travel in the U.S. and outlines various planned and ongoing FAA projects with the potential to reduce the severity of the problems in the future. The major areas of discussion are: (1) Airport Development; (2) Airport Capacity; (3) Airspace Capacity; (4) New Instrument Approach Procedures; (5) Technology for Capacity Improvement; (6) Marketplace Solutions

null

DOT/FAA/ASC-
364 94-1

Market research is a critical step in the acquisition process and requires due diligence; however, in October 2014, the Government Accountability Office identified limitations in market research performed on Department of Defense (DoD) procurements. To address these limitations, the authors evaluated issues that DoD acquisition professionals face in completing market research. They reviewed current federal literature pertaining to market research and analyzed data received from a questionnaire sent to more than 75 contracting and acquisition personnel, ranging from GS-09 contract specialists to Senior Executive Service-level assistant secretaries of the Navy. Different tools for market research were analyzed and benefits of a command-level staffed Market Research Center of Excellence were explored. Finally, the authors presented seven recommendations to improve market research effectiveness.

Technical
Report

97 null

The purpose of this project was to investigate the performance of a roller-compacted concrete (RCC) pavement for use as a high-speed surface. A test section consisting of a small parking lot and a two-lane roadway was constructed. During construction, three major parameters were varied: paver speed, rolling amount, and joint spacing. The paver speed was varied to determine what effect, if any, this has on average lay-down density, average final density, rideability, skid resistance, load transfer, and density profiles. The average lay-down and final densities of the RCC pavement were determined using a nuclear density device, which determined the density of various depths throughout the pavement. The load transfer was determined at transverse joints and transverse cracks by using falling weight deflectometer data. The rolling amount was varied to determine its effect on all of the same properties as paver speed except lay-down density. The joint spacing was varied to examine an optimum spacing that would not develop intermediate cracking and would provide the desired rideability and load transfer. From this project, it was determined that no adjustments in paver speed, rolling (types of patterns), or joint spacing will significantly enhance RCC pavement properties so that it may be used for high-speed applications.

Final rept.,

WES/TR/GL-
150 94-1

This report reviews the development and applications of molecular and materials modeling in Europe and Japan in comparison to those in the United States. Topics covered include computational quantum chemistry, molecular simulations by molecular dynamics and Monte Carlo methods, mesoscale modeling of material domains, molecular-structure/mesoscale property correlations like QSARs and QSPRs, and related information technologies like informatics and special-purpose molecular-modeling computers. The panel's findings include the following: The United States leads this field in many scientific areas. However, Canada has particular strengths in DFT methods and homogeneous catalysis; Europe in heterogeneous catalysis, mesoscale, and materials modeling; and Japan in materials modeling and special-purpose computing. Major government-industry initiatives are underway in Europe and Japan, notably in multi-scale materials modeling and in development of chemistry-capable ab-initio molecular dynamics codes. In European and U.S. assessments of nanotechnology, it was also concluded that to advance the field most quickly and competitively the need is acute for applying new and existing methods of molecularly based modeling. Additional findings are outlined in the panel's executive summary.

Final rept.

453 null

In 1986 the U.S. Congress passed the Federal Technology Transfer Act. This legislation created opportunities for greater utilization of the \$70 billion per year federal research and development budget. This enhanced utilization, accomplished by technology transfer from federal labs to the public and private sector, is intended to boost the economy and improve national competitiveness. However, laboratory and commercial response to this legislation has been slow and there appears to be a reluctance or inability to tap these vital technology resources. Understanding the technology transfer barriers and issues is key to improving the process and capitalizing upon this national investment. This research was accomplished through extensive documentation reviews and interviews with representatives from federal laboratories and the commercial industrial sector.

Master's thesis,

AFIT/CI/CIA-
171 91-034

The activities and accomplishments of Space and Naval Warfare Systems Center, San Diego (SSC San Diego) during calendar year 2001 are described, and the Center's mission and responsibilities are delineated.

Technical document Jan-Dec 2001

SSC/SD-TD-57 3131

Zero Discharge Organic Coatings project developed powder paint, Ultraviolet (UV) curable paint, and electro-coating (E-coat) paint for military Applications. These technologies offer potential for high performance coatings with little or no volatile organic compound (VOC) emissions or hazardous waste generation. The ZDOC project focused on formulating non-toxic corrosion inhibitors into these coating technologies, and the applications development of powder coatings. Non-toxic replacements for traditional lead and chromate inhibitors were selected based on a previous NAWCADWAR investigation. Once incorporated, the performance of the coatings with and without inhibitors was compared. Also, the protective mechanisms of these inhibitors were studied. The applications development for powder coatings analyzed technologies to allow powder coating of non-conductive substrates and evaluated the use of IR energy to cure powder coatings. Inhibitors were successfully incorporated into electrocoatings and powder coatings, however corrosion performance results varied with coating formulation. jg p. 2

Final rept. Jun 93-Jun 95,

187 null

The economic realities of declining defense budgets and a smaller global arms market have, in recent years, forced governments to look beyond their own national borders when purchasing new armaments. This new global approach by governments in both the United States and Western Europe has resulted in an unprecedented consolidation of defense industries on both sides of the Atlantic. The key to understanding these events and what the future will hold is found in an examination of the government-industrial relationship, national corporate governance systems, the direction of the consolidation process in Western Europe, obstacles to future consolidation, and the prospects for transatlantic cooperation. An analysis of corporate profit data from British, French, and German defense companies was completed to study the effects of government involvement in industry and ownership concentration. While no direct connection between corporate performance and these issues is possible, both government involvement and ownership concentration are shown to play a significant role in determining the national composition of mergers and investments. Cross-border mergers of defense firms are currently obstructed, however, by a state focus on employment issues, foreign investment restrictions, industrial security regulations, and arms export controls. An understanding of these issues and the will to enact reforms is necessary for the future of transatlantic cooperation.

User training on computer-aided design (CAD) systems traditionally has been expensive and ineffective. In addition, rapid changes in CAD software demand frequent update instruction to be able to take full advantage of the system's capabilities. As the U.S. Army Corps of Engineers begins using CAD technology to an increasing degree, there is a great need for low-cost, effective teaching programs. Embedded instruction programs represent a promising answer to this need. This technology involves the incorporation of tutorial programs directly into the software being taught, with the software used to drive the training session. Such a teaching method allows users to participate in self-paced study on the system they will be using in actual day-to-day operations. The U.S. Army Construction Engineering Research Laboratory (USE-CERL) has developed and tested an embedded instruction program for teaching CAD. The Program was demonstrated in a field test funded under the Technology Transfer Test Bed program. The field test results indicate that architects and engineers profit from online instruction embedded in the CAD system that they are learning. There is wide variability in the time spent studying the lessons as well as in learning strategies employed by different students. Follow-up questionnaires revealed a preference for this type of instruction over traditional methods. Technical rept.

CERL-TR-P-
51 89/03

MIT Lincoln Laboratory is a Department of Defense (DoD) federally funded research and development center working on problems critical to national security. The Laboratory's core competencies are in sensors, information extraction (signal processing and embedded computing), communications, cyber security, integrated sensing, and decision support. Technology development is geared to the Laboratory's primary mission areas- space control; air and missile defense; communication systems; intelligence, surveillance, and reconnaissance systems; advanced electronics; tactical systems; homeland protection and chemical and biological defense; cyber security; and air traffic control. Two of the Laboratory's principal technical objectives are (1) the development of components and systems for experiments, engineering measurements, and tests under field operating conditions and (2) the dissemination of information to the government, academia, and industry.

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A number of technical innovations were made to an existing helicopter magnetometry (HeliMag) platform to improve performance in wide area assessment applications. The HeliMag technology was originally developed by the Naval Research Laboratory (NRL), for deployment of seven total-field magnetometers on a Kevlar reinforced boom mounted on a Bell 206L helicopter. The objectives of this demonstration were to: (1) Improve data acquisition speeds through implementation of advanced data sampling and noise suppression methodologies; (2) Enhance HeliMag detection by optimizing sensor configurations (to ensure that the magnetic field is fully and optimally sampled), and by improving noise suppression techniques (to maximize the signal-to-noise ratio [SNR] of targets of interest); (3) Enhance HeliMag data interpretation using automated detection and characterization algorithms to improve productivity and produce objective, repeatable results; (4) Implement real-time data telemetry to remove the requirement to have a systems operator on board the aircraft, thereby increasing productivity, expanding applicability, and reducing risk.

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On September 16, 1988, the Committee asked us to develop a plan for assessing the results of the Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96-480), as amended by the Technology Transfer Act of 1986 (P.L. 99-502), and Executive Order No. 12591: Facilitating Access to Science and Technology." In response

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GAO/PEMD-114 91-23

The Civilian Americana and European Surface Anthropometry Resource (CAESAR) project was a survey of the civilian populations of three countries representing the North Atlantic Treaty Organization (NATO) countries: The United States of America (USA), The Netherlands, and Italy (Robinette et al. 1999, Robinette 2000). One site in Ottawa, Canada was added to the USA sample and it is henceforth referred to as the North American sample. The survey was carried out by the U.S. Air Force, with the of 1) the contractor, Sytronics Inc., 2) The Netherlands Organization for Applied Scientific Research (TNO), 3) the subcontractor D'Appolonia in Italy, and 4) a consortium of companies under the umbrella of the Society of automotive Engineers (SAB).

Interim rept. Dec 1997-Jun 2002

AFRL-HE-WP-74 TR-2002-0169

Characterizing submersed aquatic vegetation (SAV) is important for a variety of purposes including ecological assessments, impact analyses of human activities, and planning control operations to manage nuisance aquatic plants. Until recently, the standard techniques for characterizing SAV distribution and conditions were by manual means (grab and rake samples, and diver observation and collection) and remote optical techniques (aerial photography and digital satellite image analysis). Manual techniques provided detailed and accurate information, but only for very limited areas. Remote optical techniques provide a large-area synoptic view of SAV distribution but only in limited detail. These techniques are limited by water clarity, commonly underestimating extent of SAV in deeper waters. Recently, an automated digital technique was developed that employs a digital echo sounder, global positioning system, and digital signal processing on a PC in near real time.² This technique fills the void in methodology by rapidly providing high-resolution information on SAV canopy geometry from a small survey boat." Final rept.

ERDC/EL-TR-
25 02-30

Defense AT&L magazine is a vehicle for transmitting information on policies, trends, events, and current thinking affecting program management and Defense Acquisition, Technology and Logistics. As the flagship publication of the Defense Acquisition University, Defense AT&L also disseminates information on training and education, continuous learning, and e-Learning to those acquisition professionals serving in career positions covered by the Defense Acquisition Workforce Improvement Act (DAWIA). null

93 null

This report describes work conducted as part of a Construction Productivity Advancement Research (CPAR) project intended to demonstrate the effectiveness of fiber-reinforced plastic (FRP) reinforcement bars used in a fill I-scale bridge deck. The main benefit of FRP over mild steel reinforcement is its resistance to corrosive environments, which could significantly extend the service life of various reinforced concrete structures. A bridge needing replacement was identified near McKinleyville, WV, and the replacement was designed and constructed using FRP rebar instead of steel. This report describes the design methodologies necessary for utilizing FRP rebars in concrete reinforcement, and uses the actual replacement McKinleyville bridge deck design as an example. Also included are descriptions of activities by various research and standards organizations working to develop material specifications and design criteria for using FRP rebars as concrete reinforcement.

Final rept.,

CERL-TR-
50 97/119

In the wake of the defense drawdown and end of the Cold War, government laboratories are facing a changing mission. It is not only to maintain technology superiority, but also to promote commercialization of their technologies. Although Congress has tried to facilitate technology transfer from the government to the private sector, the transfer process has been inconsistent. The need for assistance has initiated the use of third parties or intermediaries in the technology transfer process. This thesis evaluates the utility of a third party in the technology transfer process. An examination of Wright Technology Network (WTN), a third party, is used to form a case study of its value added to Wright Laboratory (WL) in striving to meet WL's mission. Interviews with employees at WTN and WL are used to obtain the data for this case study. The key findings of this research suggest recommendations that can be applied to understand the utility of third parties. Some key findings found include: Third parties assist firms in targeting and defining a technology problem or interest and third parties facilitate the transfer process through their ties with industry. Opportunities for additional research in this area are also offered.

Master's thesis,

AFIT/GSM/LA
131 S/96S-7

NPS Research contains articles on the Naval Postgraduate School, naval research, academic source network, information operations planning, joint task forces, planning and analysis laboratory at NPS, student research, technology transfer, projects, faculty news and achievement, and other items of interest.

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49 null

The Hydrogeomorphic (HGM) Approach is a system for developing functional indices to assess a wetland's capacity to perform functions similar to those of comparable wetlands in a region. The approach was initially designed to be used in the context of the Clean Water Act Section 404 Regulatory Program permit review sequence. This Regional Guidebook (a) characterizes the Headwater Slope wetlands on the South Carolina Coastal Plain, (b) describes and provides the rationale used to select functions for the Headwater Slope wetland subclass, (c) describes model variables and metrics, (d) describes the development of assessment models, (e) provides data from reference wetlands and documents their use in calibrating model variables and assessment models, and (f) outlines protocols for applying the functional indices to the assessment of wetland functions. .

Final rept.

ERDC/EL-TR-129 11-11

This is a summary of research conducted on the high-G onset Air Force Research Laboratory centrifuge at Brooks City-Base TX. G-LOC and A-LOC research on the centrifuge is summarized. It was found that the G-LOC episode lasts longer than the nominal 24 sec previously described. It was found that pilot performance can be impaired up to EO sec after a G-LOC. No adverse effect of sustained acceleration was observed in Subjects who had PRK-treated eyes. There has been a proposal to eliminate the counter-pressure vest in pilots flying high-performance aircraft. Subjects reported no adverse effects of using Positive Pressure Breathing without the counter-pressure vest. The Navy's Smart Aircrew Integrated Life Support System (SAILSS) was evaluated on the centrifuge. The SAILSS is an advanced development project for the Navy with the objective of developing the next-generation aircrew life support system. The Human Information Processing under Dynamic Environment program was evaluated on both the Brooks and Wright-Patterson AFB centrifuges.

Interim rept.
Oct 2001-Aug
2005

AFRL-HE-WP-19 TR-2006-0025

cleanup technology transfer initiatives and points of contact for further information. The summaries describe the mission and goals, the modus operandi or actual activities and projects implemented to achieve the goals, the source and amount of funding for the initiative, and other general information. The initiatives are programs, committees, organizations, and demonstration projects that promote development of innovative environmental cleanup technologies and help ensure the transfer of lower cost technologies into full-scale use. Opinions differ on the meaning of innovative technology. Most of the initiative described here consider a technology innovative if it has been demonstrated at the pilot scale but performance and cost data are lacking. Innovative technologies do not get widely used for many reasons such as risk of failure to meet cleanup standards or unknown cost information. Even if the cleanup succeeds, the project could fail if the public or the regulatory agency distrust a new and different technology. Federal and State agencies, legislatures, and private firms are working to reduce the barriers to technology innovations and commercialization through the initiatives described here. Lower cost technologies are needed to meet environmental cleanup standards in a time of shrinking budgets. Federal lands (military bases, defense production and research facilities, park, forest, and range lands) contain thousands of past disposal sites. The Federal government is committed to the environmental cleanup of these sites although estimates of the cleanup cost exceed \$250 billion. Adding in the further cleanup costs of state and

Technical rept.
Jun-Jul 1994

NFESC-TR-
61 2023-ENV

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228 null

The workshop objectives were: (1) Discussion of current IMO standards and the trend foreseen for the future; (2) Discussion of policies for IMO compliance by the US and European Navies; (3) Discussion of advanced incineration technologies, plasma treatment technologies, and supercritical water oxidation technologies; (4) Discussion and summary of development risks for the different thermal waste treatment systems under consideration and future research and technical reasons, why some countries use and other countries don't use state-of-the-art incineration; (5) Discussion and summary of adaptation of current and future thermal treatment technologies for development of Naval ship board waste treatment systems (including next generation of ships and platforms); (6) Discussion and development of recommendations to industries and governments for policies and international collaboration potential; and (7) Exhibition of thermal waste treatment technologies applicable to a ship board employment by Industry. 50 Professionals in this field from Industry, Governments and Universities attended the Workshop. Deerberg Systems, Oldenburg, Germany exhibited a display of its MULTIPURPOSE WASTE MANAGMENT SYSTEM.

Rept. 29 Oct-31
Oct 97

392 null

The purpose of this Guidebook is to help facilitate collaborative human subject healthcare research between the Department of Veterans Affairs (VA) and the Department of Defense (DoD). This Guidebook provides researchers with an introduction to collaboration and the information needed to more effectively identify and partner with others who have common research interests. It identifies the types, benefits, and challenges of interagency research collaboration and provides resources to identify ongoing research efforts. Each Department's administrative and funding mechanisms are summarized, and procedures and protocols that VA and DoD researchers need to follow in their collaborative efforts are introduced. The Guidebook gives suggestions for seeking a collaborator, planning, crafting and submitting a proposal and formalizing the collaboration. In addition, it provides examples of successful and unsuccessful research collaborations, a list of commonly used acronyms, and links to additional resources. We provide tips from experienced researchers on how to maximize available resources and make recommendations for future consideration. We hope readers of this Guidebook will find it valuable in collaborative research efforts for the continuing benefit of our service members, Veterans, and both healthcare systems.

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In response to Congressional direction, an assessment was undertaken of programs developed by the Department of Defense (DoD) that can be made available to civilian organizations to provide immediate support and assistance to upgrade skills for better civilian employment opportunities. The assessment focuses on interactive courseware (ICW) programs and their transfer to non-DoD activities. Several initiatives have been undertaken by the DoD to effect this transfer, but three sets of issues remain to be resolved: (1) specific civilian instructional requirements must be articulated; (2) methods must be developed to overcome fundamental differences between instructional materials that support the warfighting missions of the DoD and the instructional needs of non-DoD activities; and (3) resources and responsibilities in non-DoD activities must be allocated for determining civilian requirements, modifying instructional content, reprogramming, marketing and producing, warehousing, and distributing materials.

Final rept. Jan-
Feb 91,

IDA-D-
939,IDA/HQ-
91-37230,SBI-
38 AD-E501 428

Authorization for Government-operated Federal laboratories to enter into Cooperative Research and Development Agreements (CRADAs) was initially provided by the Stevenson-Wydler Technology Innovation Act of 1980, which was amended by the Federal Technology Transfer Act of 1986. The Department of Defense and the Department of the Navy have each issued specific guidelines governing technology transfer. This guidebook was prepared for the Naval Surface Warfare Center, Dahlgren Division (NSWCDD), Dahlgren, Virginia, and provides guidelines concerning responsibilities, requirements, options, types, format, and contents of CRADAs.

Final rept.,

NSWCDD/MP-
20 97/208

The U.S. Army Engineer Waterways Experiment Station (WES) and Synthetic Industries, Chattanooga, TN, in a joint research effort investigated the advantages of adding discrete fibrillated polypropylene fibers to a silty sand and a high plasticity clay for enhancement of engineering properties. The investigation centered on the use of the materials in pavement layers; however, other applications such as slope stabilization have been successfully completed by Synthetic Industries. Various combinations of fibers with raw soils and chemically stabilized soils were placed in test track sections and subjected to trafficking of a single-axle dual-wheel vehicle. Progressive damage due to trafficking was monitored, and various field and laboratory tests were conducted to determine performance of the test sections. Performance of fiber-reinforced sections was determined based on comparison with the performance of sections without fiber added. The trafficking tests showed a definite improvement in strength and durability for the soil materials with fiber added. Uniaxial laboratory tests also reflected improvement in modulus, peak strength, and strain energy density with addition of fibers. Fiber reinforcement, Pavement subgrades, Soil stabilization.

null

WES/TR/CPA
112 R-GL-94-2

This report summarizes Naval Surface Warfare Center (NAVSWC) participation in the following five principal areas involving technology interactions with the public and private sectors: (1) Domestic Technology Transfer (DTT), (2) Navy Potential Contractor Program (NPCP), (3) Industry Independent Research and Development (IR and D), (4) Small Business Innovation Research (SBIR), and (5) Science and Technology Contracting. Domestic Technology Transfer (DTT), Navy Potential Contractor Program (NPCP), Small Business Innovation Research (SBIR) Contracting.

Final rept.,

NAVSWC-MP-
58 91-805

This briefing looks at the various partnerships, agreements and arrangements that the government has with industry and academia to foster technology development and transfer.

Briefing charts

TARDEC-
15 20027RC

This is the second component of the Federal Laboratory Linkages; Midwest Region Demonstration Project, sponsored by the Federal Laboratory Consortium; Midwest Region, the Edison Industrial Systems Center, and the Great Lakes Industrial Technology Center. This catalog is an in depth portrait of federal laboratories and facilities in the FLC Midwest Region. Each listing provides a contact name and address, a description of the lab or facility and research activities, information regarding unique equipment or facilities, a listing of unique personnel, and a list of current cooperative Research and Development Agreements (CRDAs or CRADAs) and patents for license. Laboratories are not listed alphabetically under their respective departments. In addition, technology transfer intermediaries are listed by state in a separate section.

Final rept. 3
Apr 91-3 May
93.

WL*-TR-97-
211 6005

Northrop Grumman and Ethicon Endo-Surgery, along with Armstrong Laboratory's Aircrew Training Research Division, are developing prototype training systems to assist surgeons in triage assessment and in procedures for battlefield casualty management. The goal is to develop an integrated training system built around three major components: (1) a Biomedical Instructional Systems Decision Support System (BISD DSS) to characterize training tasks and set instructional objectives and performance standards; (2) a simulation based on the Preceptor™ virtual reality patient to support training for battlefield wound diagnosis and laparoscopic surgery; and (3) an intelligent tutoring system hosted on Preceptor™ to teach decision making skills for battlefield wound diagnosis and subsequent laparoscopic procedures.

null

AL/HR-TP-
12 1997-0030

The American imagination challenged to invent new technologies to meet vital national needs launched and powered a digital revolution that ultimately swept around the globe Today U.S. ingenuity is extending advances in computing networking, software, and information management technologies to a vast array of new applications and devices that are shaping national defense and national security capabilities driving rising economic productivity, supporting leading-edge scientific and medical research, and adding powerful new dimensions to the ways citizens work, learn, communicate, and interact with government. The Federal agencies whose fundamental information technology (IT) research is described in this document sponsored many of the scientific breakthroughs that set the foundations for the information age (see timeline on front-cover foldout). Working collaboratively in the multiagency Federal Networking and Information Technology Research and Development (NITRD) Program these agencies continue to foster an unrivalled U.S. capacity for innovation - the Nation's most vital resource for national security, economic development and continuous improvements in living standards for all Americans. null

MIT Lincoln Laboratory is a Department of Defense (DoD) federally funded research and development center working on problems critical to national security. The Laboratory's core competencies are in sensors, information extraction (signal processing and embedded computing), communications, cyber security, integrated sensing, and decision support. Technology development is geared to the Laboratory's primary mission areas: space control; air and missile defense; communication systems; intelligence, surveillance, and reconnaissance systems; advanced electronics; tactical systems; homeland protection; cyber security; and air traffic control. Two of the Laboratory's principal technical objectives are (1) the development of components and systems for experiments, engineering measurements, and tests under field operating conditions and (2) the dissemination of information to the government, academia, and industry. Program activities extend from fundamental investigations through the design process and finally to field demonstrations of prototype systems. Emphasis is placed on transitioning systems and technology to industry. As a DoD Research and Development Laboratory, Lincoln Laboratory focuses on developing and prototyping innovative technologies and enhanced capabilities to meet the evolving needs of the DoD.

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56 null

This Research Status Report summarizes ongoing research tasks, technology transfer efforts, and technical support activities performed by the US Army Institute for Research in Management Information, Communications, and Computer Sciences (AIRMICS) during Fiscal Year 1990. Software engineering, Communications and networks, Decision support, Database, Distributed systems, Management information, Information mission area, Technology transfer

Research status
rept. Oct 89-
Sep 90.

ASQB-GB-91-
130 001

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Conference
Proceedings

205 null

null

null

226 null

Researchers at the U.S. Army Corps of Engineers Construction Engineering Research Laboratories (USACERL) have been developing a collaborative engineering (CE) software environment to enable sharing of design information as it is created and refined during the facility design and construction process. Improved information sharing capabilities and conflict management during collaborative design enables a team to resolve design issues and conflicts earlier in design development, resulting in an improved facility design, fewer errors and omissions, and better interdisciplinary coordination of design goals and building systems. An integrated information model to bridge the gap between product and process information for a construction project not only encourages those involved in construction to use and add to design information, but also provides richer information representation, better efficiency and data consistency, and the flexibility to support life-cycle information management. An important part of the CE research program at USACERL is the development of an integrated information model that allows agents to communicate/collaborate over the life cycle of the project. This report presents a CE environment that was developed to support collaboration among design and construction agents. Lessons learned during this case study will be used to reengineer the facility delivery process using a CE approach.

Final rept.,

CERL-TR-
77 98/32

The featured topic of this issue of the AMEDD Journal is electronic medical records. The journal contains the following articles: Perspective

Journal

72 null

Contents: Federal Initiatives to Transfer Technology to Private Industry; The Defense Acquisition Challenge: Fielding Affordable Weapons; Testing: The Bridge to Success for the New Science and Technology Strategy; Technology Timeliness from a Soldier's Perspective; and Defense Decision Making Under a Technology-Maximizing Acquisition Policy.

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64 null

The use of Building Information Modeling (BIM) technology beyond geometric collision detection requires that owners specify minimum content standards and define the formats in which BIM data are to be delivered. Such standards can be viewed as performance-based specifications for information deliverables that may be objectively tested and enforced. This report documents the specification of minimum BIM object definitions of 498 BIM object classes. These specifications were derived from Unified Facilities Guide Specifications (UFGS) requirements and typical equipment schedules published in The COBie Guide" (<http://buildingsmartalliance.org/index.php/projects/cobieguide/>). Each object is classified based on the OmniClass Product Table Schema (<http://www.omniclass.org/>). The National Building Information Model Standard (NBIMS-US) has begun the process of coordinating the development of information-exchange standards in the United States. This document establishes the proposed minimum BIM object definitions for submittal under the round of NBIMS-US balloting scheduled for 2013."

Final rept.

ERDC/CERL-
243 CR-13-1

LONG TERM GOALS: Evaluate biocides and application techniques for optical sensors that will be optically valid and maintenance-free when exposed in marine-estuarine environments for periods ranging from weeks to months. Materials must be cost-effective, clandestine, and exhibit low toxicity directly and indirectly to humans, terrestrial, and marine life. OBJECTIVES: Identify candidate biocides and obtain commercially available materials. Perform laboratory and littoral exposures with microscopic evaluation of fouling at intervals up to 3 months. Verify optical sensing performance of successful biocide-impregnated/coated candidates from initial exposures. This work is supported by ONR Biological Oceanography.

Annual rept.

5 null

A recognized vital and integrated component of the Military Health System (MHS), USU continues to provide essential support to Force Health Protection through its unique training centered in preventive medicine and combat-related health care. In accordance with strategic guidance, the University continues to successfully focus on: RELEVANCE - the critical, or core relevance, of its essential mission to provide continuity, leadership, and responsiveness to the special needs of the MHS; READINESS - the provision of uniformed physicians, advanced practice nurses, and graduate degree recipients who are uniquely qualified to practice and address combat casualty care, tropical medicine, combat stress, disaster medicine, and the medical response to unconventional, disaster, or operational contingencies; and, OPTIMIZATION - the cost-effective management of its resources to ensure the generation of annual cost avoidance for the MHS through its multiple, fully accredited programs (estimated cost avoidance during 2004 was \$33.6 million).

Annual rept.

680 null

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DOD-5500.7-728 R

The speed with which a promising military critical technology becomes available for military use is determined to a great extent by the effort and support focused on that technology. Determining which space technologies deserve this attention requires knowing at what performance level or technical parameter the technology becomes militarily critical. The Space System Technology Working Group (SSTWG) identified and parametrized those space technologies that are militarily critical, space unique, and dual-use and those that should be considered for cooperative agreements with industry and academia and memorandum of understanding (MOU) with other countries. This Executive Report provides government, industry, and academic personnel concerned with space technologies the purpose, methodology, and results of the SSTWG study. It includes tables that identify critical space technologies and their parameters.

Final rept. Sep 1993-Jun 1994

IDA-D-1519-REV, IDA/HQ-83 94-45918

The report enclosed contains analyses of key trends that illuminate the scope, quality, and vitality of research and education in the Nation and in an international context. In addition to a special history chapter, the report presents trends in U.S. and international R&D funds and alliances, on the S&E workforce, on science and mathematics education from the elementary level through graduate school and beyond, and on public attitudes and understanding of science and engineering. S&E Indicators-2000 also devotes a chapter to the significance of information technologies for science and the daily lives of our citizens in schools, the workplace, home, and community.

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474 null

A Condition Index (CI) is a snapshot look at the physical condition of a structure or structure component. CIs for Civil Works infrastructure were developed at the direction of the Civil Works Directorate Headquarters, U.S. Army Corps of Engineers as part of the Operations Management Problem Area of the Repair, Evaluation, Maintenance, and Rehabilitation research program to assist in the prioritization and justification of the operations and management (O&M) budget. This working document describes how CIs were developed, what they were intended to accomplish, current and potential benefits from using CIs, and current policy relative to CI utilization. The O&M Management Tools program, scheduled for funding in FY00-02, allows this opportunity to reassess CIs and ensure they both meet their original and modified design intent and are sufficiently user friendly to assure technology transfer and utilization.

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ERDC/CERL-
150 SR-01-12

This Test Plan was developed to demonstrate the feasibility of using an alternative fuel in USCG gasoline-powered boats. A blend of 16.1 percent biobutanol and gasoline (BU16) was selected as the test fuel and a USCG 25 Response Boat-Small (RB-S) with Honda Marine outboard gasoline engines and a 38 Special Craft-Training Boat (SPC-TB) with Mercury Marine outboard gasoline engines were chosen as the demonstration boats. Testing consists of four phases: materials, bench, field, and operational testing. Materials testing will ensure all components in the engine and fuel system are compatible with BU16. Bench testing will ensure the engines operate satisfactorily on BU16. Field testing will ensure there are no problems with using BU16 on the USCG boats prior to operational testing. Operational testing will ensure there are no problems with using BU16 on the test boats over an extended period that encompasses typical operational and environmental factors. Prior to commencing field testing, the RB-S and SPC-TB engines and fuel systems will be modified in accordance with a Time Compliance Technical Order (TCTO) to ensure compatibility with BU16.

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88 CG-D-12-15

The term 'Cooperative Research and Development Agreement' means any agreement between one or more Federal laboratories and one or more non-Federal parties under which the Government, through its laboratories, provides personnel, services, facilities, equipment, or other resources with or without reimbursement (but not funds to non-Federal parties) and the non-Federal parties provide funds, personnel, services, facilities, equipment, or other resources toward the conduct of specified research or development efforts which are consistent with the missions of the laboratory; except that such term does not include a procurement contract or cooperative agreement as those terms are used in Sections 6303, 6304, and 6305 of Title 31, U.S. Code.

Final rept.,

NOSC/TD-
123 2074

This report shows a series of photographs and what are apparently slides that were presented at the Proceedings of the U.S. Army Aviation and Missile Command 1997 Advance Planning Briefing for Industry, held in Redstone Arsenal, Alabama on 20-22 Oct 97.

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299 null

The NRL Fact Book is a reference source for information about the Naval Research Laboratory (NRL). The mission of the NRL is to conduct a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems, and ocean, atmospheric, and space sciences and related technologies.

null

NRL/PU-5211-
135 -03-456

This research investigated a new concept that uses fiber-reinforced plastic (FRP) composite grid to reinforce concrete structural members. Prefabricated two- and three-dimensional FRP grid structures were investigated as a possible alternative to conventional one-dimensional steel reinforcement rods. Currently available commercial grid manufacturing techniques were found to be inadequate due to material flaws, poor fiber volume fraction, and low strength and stiffness. Through laboratory investigations, significant improvements in fiber volume fraction in orthogrid and isogrid systems were achieved. Laboratory-scale samples demonstrated excellent results under loading tests. Concurrent investigations showed that although the FRP grid-reinforced concrete is more flexible than steel-reinforced concrete, its post failure deformation was pseudo-ductile, characterized by continuous structural deformation through multiple low-level brittle failures before the onset of catastrophic failure. It was also found that a combined concrete/composite reinforcement structure, with a higher volume of FRP composite fraction in the concrete, would substantially increase stiffness, load capacity, and postfailure concrete containmenL This study addressed not only the possible replacement of steel reinforcement with composite grids, but also investigated enhancement of the composite application through load-sharing with steel reinforcement in a complementary fashion. Various manufacturing improvements also were explored, including the novel use of disposable toolings.

Final rept.,

CERL-TR-
170 98/81

The State Department studied the practical potential for large-scale, Cooperative defense development and production efforts between the United States and Europe. The study included a review of the political-economic influence of technology upon war and post-war history; an analysis of prior American and European cooperative projects in defense, space and civil technology; an examination of the obstacles to cooperation, and the methods, costs, benefits and burdens of cooperative effort. This Issues-Oriented report addresses only the major issues involving the utilization of European-American defense resources. It is concerned with finding how these resources can better be deployed for the common North Atlantic defense effort, through U.S./European cooperation.

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laboratories is 'to ensure technology preeminence of United States air and space forces.' The Armstrong Laboratory is the provider-of-choice to meet the Air Force users' needs for human systems science and technology. Our guiding principle is that there are no 'unmanned systems' in Air Force operations. The laboratory is unique in the Department of Defense, bringing together in one organization the physical, biomedical, behavioral science and engineering disciplines, and specialized research facilities required to address all aspects of the human role in Air Force combat operations. The scope of the Armstrong Laboratory research and technology programs includes personnel selection and classification, computer based training technology for both air and ground crews, personal protection concepts and criteria, crew performance enhancement in sustained operations, occupational risk assessment, and environmental characterization and remediation technology development. Five major trends are likely to impact Air Force operations over the next decade: A highly mobile, deployed, tactical force relying on the composite wing concept; Short-notice, long-duration strategic mission execution from a CONUS-based combination of regular and reserve forces; New warfighting strategies focusing on regional threats and crisis response; Increased high-technology weaponry coupled with the need for the human operator to successfully cope with the information-rich characteristics of high intensity conflict; The continued importance of weapon system affordability and protection of the environment. The Armstrong Laboratory, as the null

34 null

The Naval Research Laboratory is the Department of the Navy's corporate laboratory; it is under the command of the Chief of Naval Research. As the corporate laboratory of the Navy NRL is the principal in-house component in the Office of Naval Research's (ONR) effort to meet its science and technology responsibilities. NRL has had a long and fruitful relationship with industry as a collaborator, contractor, and most recently in Cooperative Research and Development Agreements (CRADAs). NRL values this linkage and continues to develop it. NRL is an important link in the Navy Research, Development, and Acquisition (RD&A) chain. Through NRL, the Navy has direct ties with sources of fundamental ideas in industry and the academic community throughout the world and provides an effective coupling point to the R&D chain for ONR.

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148 null

This research effort investigated fundamental techniques to provide perpetual model validation, where design-time models are validated continuously during runtime. The research considered two fronts: validation of the software model, and validation of the model of the system interacting with the physical world. Since the field of runtime verification has extensively focused on the challenge of runtime model validation in software using direct models, the approach employed here instead considered using indirect models of software execution, for example memory access patterns, to check for security intrusions. Additional research was performed to tackle the essential problem of model validation for systems which contain interactions with the physical world using hybrid automata models. Perpetual model validation will ensure that the actual behavior of the system conforms to the analysis model, raising the level of confidence that can be placed in the results due to formal nature of the analysis.

Technical
Report,01 Oct
2014,01 Sep
2016

AFRL-RI-RS-TR-
2017-
042,AFRL/RI-
AFRL-RI-RS-TR-
29 2017-042

The DoD In-House RDT&E Activities Report and Database Project is the DDR&E's central source of information on laboratory status, and serves four essential purposes: (1) Since inception, it has been the only compilation of statistics organized by location on DoD RDT&E activities; (2) It provides the basis for prompt responses to many general queries about DoD RDT&E activities without recourse to special surveys, etc.; (3) It provides a historical database which can be used for tracing consolidations and organizational changes, and for special analyses and trend studies; and, (4) It provides insight into the technical and organizational environment of the DoD laboratories and the financial manpower and facility investments made in them.

Final rept.,

387 null

The technology demonstrated under this Environmental Security Technology Certification Program (ESTCP) project proved the Vibratory Shear Enhanced Processing (VSEP) system effectively recycled alkaline solutions contaminated with oil and dirt during manufacturing cleaning of material. Benet Labs, Watervliet Arsenal Environmental Office, Pacific Northwest National Lab and New Logic International teamed to successfully demonstrate the use of VSEP to recycle hot alkaline cleaning solutions. High pH alkaline solutions are used at Watervliet Arsenal in bath tanks to clean metal parts prior to further processing and must be replaced every 6 to 8 weeks. The spent solution is disposed of as hazardous waste. The VSEP system offered a new dimension to membrane separation by imparting a shear force at the membrane surface to prevent fouling while maintaining high separation efficiency. Chemical testing verified that contaminants are removed while the active chemical cleaning elements were returned to the tank. This increased the alkaline bath life to 12 months with only small additions of new chemicals and water makeup to compensate for evaporative losses.

Cost and performance rept.

36 null

This report fulfills the requirement that the SERDP Council provide an annual Report to Congress that summarizes SERDP's activities and most significant accomplishments during FY 1998, plans for FY 1999, and new research initiatives that will be addressed in FY 2000. This section, Section 1, is the Executive Summary of the SERDP Program, including an overview of the SERDP mission and goals, an explanation of how the SERDP Program is managed, and highlights of SERDP activities in FY 1998. Section II summarizes significant accomplishments in each of the four thrust areas. Section III provides a description of each thrust area, including driving requirements, a list of completed, ongoing, and new start projects; and a brief summary of FY 2000 research initiatives. Detailed project descriptions for each of the SERDP thrust areas are provided in Appendices A through D. Appendix E contains Statements of Need for research proposals that will be funded in FY 2000.

310 null

The NRL Fact Book is a reference source for information about the Naval Research Laboratory (NRL). It is updated and placed on NRL's Web site annually. It is printed every other year. To provide additional information to the reader, a point of contact is listed for each activity.

130 null

...the federal government spends approximately \$10 billion each year in annual research and development budget for intramural R&D to meet mission requirements in over 700 government laboratories (including Federally Funded Research and Development Centers). The technology and expertise generated by this endeavor may have application beyond the immediate goals or intent of federally funded R&D. These applications can result from technology transfer, a process by which technology developed in one organization, in one area, or for one purpose is applied in another organization, in another area, or for another purpose. It is a way for the results of the federal R&D enterprise to be used to meet other national needs, including the economic growth that flows from new commercialization in the private sector; the government's requirements for products and processes to operate effectively and efficiently; and the demand for increased goods and services at the state and local level. Congress has established a system to facilitate the transfer of technology to the private sector and to state and local governments. Despite this, use of federal R&D results has remained restrained, although there has been a significant increase in private sector interest and activities over the past several years. Critics argue that working with the agencies and laboratories continues to be difficult and time-consuming. Proponents of the current effort assert that while the laboratories are open to interested parties, the industrial community is making little effort to use them. At the same time, State governments are increasingly involved in the process. At issue is whether incentives for technology transfer remain necessary, if additional legislative initiatives are

Congressional
rept

23 CRS-RL33527

The Department's objective is to develop, procure, and deploy TMD at a level that will enhance U.S. warfighting capabilities and complement the effectiveness of its combat forces. This plan envisions the time phased acquisition of a multitier defensive capability. The first phase consists of near term improvements to existing systems using low risk, and quick reaction programs, while simultaneously refining concepts of operations and tactics. The second phase develops a significant core capability. This core capability consists of land based defenses to protect critical assets and to provide theater-wide protection, and Navy capability to protect U.S. and friendly forces in littoral (coastal) areas. The core capability also provides improved lethality and probability of kill through the use of interceptors which employ advanced concepts such as hit-to-kill or improved guidance techniques combined with fragmentation warheads as well as engagement opportunities at both lower altitudes and shorter ranges (lower tier intercepts within the atmosphere), and at higher altitudes and longer ranges (upper tier, exoatmospheric and high endoatmospheric intercepts). In the final phase, advanced concepts for TMD will be developed. (MM)

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154 null

SPACECAST 2020 was a Chief of Staff of the Air Force (CSAF)-directed space study, challenged to identify and conceptually develop high-leverage space technologies and systems that will best support the warfighter in the twenty-first century. The study produced a series of white naners which have been assembled into clusters of concern for future space capabilities. Volume I consists of 11 unclassified white papers: Leveraging the Infosphere: Surveillance and Reconnaissance in 2020; Space Traffic Control: The Culmination of Improved Spave Operations; 21st Century Weather Support Architecture; Space-Based Solar Monitoring and Alert Satellite System; Space Weather Support for Communications; Spacelift: Suborbital, Earth to Orbit, and On Orbit; Unconventional Spacelift; Rapid Space Force Reconstitution (RASEOR); Space Modular Systems; Professional Military Education (PME) in 2020; and Preparing for Planetary Defense: Detection and Interception of Asteroids on Collision Course with Earth. The Volume also contains an Operational Analysis and listings of Project Contributors and Project Participants.

Final rept.,

486 null

Army Engineer Firefighting Detachments require increased firefighting capability to compensate for deficiencies in structural, brush, or wildland and large petroleum storage site fires. Additionally, Army fire departments responsible for protection and prevention on posts, camps and stations have difficulty accessing new or emerging technology do not possess state-of-the-art equipment. The results of this evaluation and subsequent projects, will be reported throughout the Army in an attempt to mitigate operational deficiencies and widen the scope of knowledge in the Army fire service. The evaluation of non-developmental retrofitted compressed air foam systems show an efficiency of suppressive capabilities of water superseded by water alone. Retrofitting the equipment was not easy or inexpensive but it was very successful.

Final rept.

TARDEC-TR-
26 13606

This report contains project summaries of the research projects in the Department of Aeronautics and Astronautics A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports Thesis abstracts of students advised by faculty in the Department are also included.

Summary rept.
1 Oct 2000-30
Sep 2001

NPS-AA-09-02-
59 020

This section has been prepared for the purpose of providing information concerning the US Army Research, Development, Test and Evaluation program. The Descriptive Summaries provide narrative information on all RDT and E, Army program elements and projects

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718 null

The FY97 Geophysics Technology Area Plan describes Phillips Laboratory's exploratory and advanced technology development strategy to support AF environmental and Army air and combat operations. Systems that sense environmental conditions from space will be increasingly important in providing this support. Objective is to improve the specification and forecasting, for longer periods and more precisely, of performance limiting battlespace conditions wherever our forces operate.

null

PL-TM-97-
34 1002

The Clinton Administration expects great things from the DoD laboratories' participation in technology transfer. Following an overview of the laboratories, their funding, acquisition role and legislative history, the paper details implementation policy. Based on review of directives and interviews with DoD and individual service coordinators, DoD guidance is minimal and service implementation varies. Comparisons of progress are difficult with no agreed standard for measurement or management. The marketing of technology transfer, President Clinton's goals, a relevant Japanese technology transfer case study, partnerships with educational institutions and the issue of reconstitution are discussed. Recommendations are given to address major implementation problems. The case is made for an overall increase in DoD leadership in the entire spectrum of technology transfer.

Research rept.
Aug 1992-Apr
1993

NDU-ICAF-93-
54 F13

The Army's FY16 projected defense budget continues on a declining trend necessitating end strength reductions and deferring some modernization programs. The Army's Operating Concept to Win In a Complex World requires a more efficient means to develop an increasingly capable Army while meeting affordability levels. Discovering and developing technologies to ensure battlefield dominance is a key component of Army modernization even under fiscal constraints. The research investigates how collaboration between Government Research, Development, and Engineering (RDEC) organizations and industry can further enhance the Army's ability to meet this important mission in defense of the nation.

Technical
Report

62 null

This report documents the results from an investigation of a new polymer fiber and unique delivery system for charging fibers into concrete mixtures. The straight Polyolefin fibers are available in two sizes: (1) 0.63 mm in diameter and 50 mm long, and (2) 0.38 mm in diameter and 25 mm long. Each of the two sizes of fibers is packaged in bundles approximately 50 mm in diameter. Each bundle is encased with paper tape bound with a water-soluble glue. The fibers are charged into the concrete mixture in mass. Approximately 3 to 10 min of mixing time is necessary to uniformly distribute the fibers throughout the concrete mixture, depending upon the fiber content, consistency of the concrete mixture, and the type of mixer being used. Fresh and hardened properties were evaluated in mixtures containing up to 15 kg/cu m. The results indicate that concrete mixtures with the Polyolefin fibers can be produced having adequate workability and finishability if proportioned properly. Addition of the Polyolefin fibers does not significantly influence the compressive nor first-crack flexural strength, freezing-and-thawing resistance, drying shrinkage, nor the chloride permeability of concrete mixtures. However, the presence of the Polyolefin fibers does influence the post-crack behavior of concrete mixtures. Impact resistance and flexural toughness are improved as the fiber loading increases. A 6,100-m whitetopping demonstration project was constructed on a heavily traveled interstate in Mississippi. The whitetopping was 100 mm thick. Details of the specifications, construction, and early-time performance are given.

Final rept.

WES/TR/CPA
242 R-SL-98-5

The U.S. Advanced Ceramics Industry is identified as a critical technology by the Department of Commerce, Department of Defense, and the National Critical Technologies Panel. Advanced Ceramics, which include ceramic matrix composites, are found in every major weapons system in the U.S. inventory. Like many of our subtler technologies, the U.S. has long maintained the lead in research and development of new applications while most production has moved overseas. This paper reviews the current status of the industry. In light of a decreasing DOD budget for both R&D and production, it offers a series of policy recommendations to help ensure the industry stays responsive to the needs of this country.

Research rept.

NDU-ICAF-93-
42 DIS1

This report contains project summaries of the research undertaken at the Naval Postgraduate School. A list of recent publications is also included which consists of conference presentations, books, contributions to books, published journal papers, and technical reports. The research was conducted in the areas of National Security Affairs, Computer Science, Defense Analysis, Information Science, Operations Research, Aeronautics and Astronautics, Electrical and Computer Engineering, Mathematics, Mechanical Engineering, Meteorology, Oceanography, Physics and Business and Public Policy. This also includes research by the Space Systems Academic Group, Institute for Information Innovation and Superiority (I2SI), Institute for Defense Systems Engineering and Analysis (IDSEA), The Modeling, Virtual Environments and Simulation (MOVES) Institute, School of Aviation Safety and Center for Interdisciplinary Remotely Piloted Aircraft Studies (CIRPAS).

Summary rept
1 Oct 2000-30
Sep 2001 NPS-09-02-
517 014

This annual report summarizes the research work of the Naval Academy faculty and midshipman for the period July 1993 through June 1994. Sponsored and independent research projects are listed by title, followed by the names of the investigators and an abstract. A list of publications and their abstracts are included as well as presentations at professional meetings, conferences, and seminars. (AN)

Annual rept.
Jun 93-Jun 94, USNA-3910-3-
251 1.8

This report examines the structure, characteristics, and motivations of major participants in the housing industry to explore how innovation might be improved or accelerated within the industry as it currently exists. This approach recognizes that the housing industry is large and complex and changing any part would be difficult and changing the whole practically impossible. In this context, the report identifies options and strategies for the federal government to consider as it continues to further advance innovation in housing to make homes more affordable, durable, and safe for their occupants and builders, and to provide other benefits to society.

null 125 null

The Naval Research Laboratory provides primary in-house research for the physical, engineering, space, and environmental sciences; broadly based exploratory and advanced development programs in response to identified and anticipated Navy needs; broad multidisciplinary support to the Naval Warfare Centers; and space and space systems technology development and support.

null NRL/PU/5230-
139 95-275

This DOD in-house RDT&E activities report and database project is the DDR&E's central source of information on laboratory status and serves four essential purposes: (1) since inception, it has been the only compilation of statistics organized by location on DOD RDT&E activities; (2) it provides the basis for prompt responses to many general queries about DOD RDT&E activities without recourse to special surveys, etc.; (3) it provides a historical database which can be used for tracing consolidations and organizational changes, and for special analyses and trend studies; and (4) it provides insight into the technical and organizational environment of the DOD laboratories and the financial manpower and facility investments made in them.

Final rept. 1
Oct 96-30 Sep
97

338 null

The National Institute of Standards and Technology (NIST) of the Department of Commerce has been a major player in the Administration's strategy for civilian technology investment. However, the 104 Congress curtailed the expansion of the NIST budget; overall funding levels declined by 18% between FY1995 and FY1997. For FY1998, the Administration had proposed support for NIST at \$692.5 million. The amount appropriated by P.L. 105-119 was \$677.9 million. Although less than requested, the funding was 20% above FY1997. This support included \$276.9 million for Scientific and Technical Research and Services (\$5 million of which was vetoed by the President), \$192.5 million for the Advanced Technology Program (ATP), \$113.5 million for the Manufacturing Extension Partnership (MEP), and \$95 million for construction. The Administration's budget request for FY1999 is \$715 million, a 6% increase over the past year.

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7 null

Pipeline drag-reducing additives have been used for many years in crude oil and some products to increase throughput in the pipeline. In recent years, interest in using drag-reducing additives in jet fuel has increased because of greater demand on the petroleum product pipelines for jet fuel. Thus, testing was completed on the Baker Flo-XS pipeline drag-reducing additive to determine if the additive had any negative impact on the fuel. The proposed use of the additive was to add 2 ppm at up to 4 points along the pipeline(s). Thus, the majority of testing was completed using 8.8 ppm (8 ppm total plus 0.8 ppm for errors in injection). Through a CRADA with Buckeye Pipeline Inc, thermal stability testing of the additive was completed. Additionally, low temperature testing, additive/additive compatibility testing and specification testing of additized fuel was also completed.

Final rept. 1
Sep-1 Nov
2000

AFRL-PR-WP-
50 TR-2001-2060

Material compatibility testing was also taken into consideration. Controversies, problems, and proposed solutions related to information security and privacy are becoming increasingly prominent among government, business, academia, and the general public. At the same time, use of information networks for business has continued to expand, and ventures to bring electronic commerce and electronic cash" into homes and offices are materializing rapidly. Government agencies have continued to expand both the scale and scope of their network connectivities; information technologies and networks are featured prominently in plans to make government more efficient

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OTA-BP-ITC-
150 147

The Annual Progress Report gives the CY99 personnel and funding strength of the U.S. Army Aeromedical Research Laboratory. This report includes an overview of the Laboratory activities, current areas of research, and a brief description of the research being conducted.

Rept. for Jan-
Dec 1999

65 null

This paper presents some thoughts about research in science and technology (S&T) gleaned from my more than 50 years working in scientific and engineering research- first in the chemical industry, then at two different government laboratories, and later some years in S&T policy. It elaborates on a paper by Richard Chait in which he interviews three former S&T executives in the Department of Defense (DOD) on how to manage a research laboratory. In this paper, I expand on the comments made to Dr. Chait and provide a broad context for my discussion. In addition, this paper connects a number of subjects discussed in several other papers published by the Center for Technology and National Security Policy (CTNSP). My objective is to provide some insights on what it is like to work in a scientific research establishment. My hope is that this will be of some value for the senior manager who has no laboratory experience but is responsible for overseeing a research department. I also hope the paper will help new technical personnel just entering the laboratory for the first time. For experienced laboratory staff, the paper will contain many familiar ideas and perhaps some that are controversial. Some of the paper deals with the DOD technical programs.

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35 null

Prior to this year, Congress required the Administration to submit a National Drug Control Strategy each year. The most recent strategy was submitted in February 1999. Public Law 105-277 now requires the President to submit to Congress only an annual report on the progress in implementing the Strategy.* General reporting requirements for the Annual Report include: 1. Assessment of federal success in achieving the National Drug Control Strategy goals and objectives (using the Strategy Performance Measures of Effectiveness system). This analysis includes an assessment of drug use and availability in the United States as well as prevention, treatment, law enforcement, interdiction, and international programs. 2. Modifications during the preceding year of the National Drug Control Strategy or national drug control performance measurement system. 3. Explanation of how the Administration's budget proposal is intended to implement the National Drug Control Strategy. 4. Measurable data from the annual performance measures. 5. An assessment of private-sector initiatives and cooperative efforts dealing with drug control among federal, state, and local governments. This annual report addresses the specific reporting requirements outlined in PL 105-277.

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173 null

Nineteen ninety-four was a year of accomplishment for the Ballistic Missile Defense Organization (BMDO). Our Clementine satellite thrilled the nation and inspired the aerospace community with its multispectral images of the moon's surface, viewable daily on any personal computer linked to the Internet. Clementine tested 2 dozen advanced BMDO technologies in deep space, and she was launched in less than 2 years for an unfathomable \$75 million. Also, the Delta Clipper Experiment showcased BMDO's single-stage-to-orbit technology with a second successful demonstration of vertical takeoff and landing. As this publication will attest, however, BMDO has continued to exploit these and many other technological successes for their commercial as well as military value. The aggressive technology transfer program that we began in 1986 drives our investment strategy to consider the market and military application of our research at the start of every endeavor.

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94 null

The NRL Fact Book is a reference source for information about the Naval Research Laboratory (NRL). It is updated and placed on NRL's Web site (<http://www.nrl.navy.mill>) annually. It is printed every other year. To provide additional information to the reader, a point of contact is listed for each activity.

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NRL/PU/5211-
134 -01-420

The objective of this project is to explore the concept of Venture Capitalism (VC) as a vehicle for technology transference. Currently, the United States Air Force (USAF) relies on an inefficient timeline for research and development to acquire new technologies. In an effort to improve efficiency in technology development the USAF needs to adopt alternative processes such as VC. This project explores the use of a VC firm, technology transference, USAF policies and procedures, required USAF infrastructure, and funding. Ultimately, the product from this research is an implementation plan for a USAF VC initiative.

MBA
professional
rept.

91 null

The Vehicle Research Section (VRS) at the Naval Research Laboratory (NRL) in Washington, DC, has been developing airborne unmanned air platforms to support electronic warfare (EW) and intelligence, surveillance, and reconnaissance (ISR) missions for over 30 years. The Vantage(trademark) unmanned air vehicle (UAV) is one such platform. Here at NRL the goal is to push technology and develop concept vehicles that can be transitioned into industry to better meet the needs of the Armed Forces. NRL conceives and develops designs for the technologically advanced warfare needs of the future.

null

3 null

Considerable public scrutiny has been focused on the Federal Government's, especially the Federal Emergency Management Agency's (FEMA) supposed inadequate, misdirected, and slow response to the acquisition needs required for responding to the aftermath of Hurricane Katrina. This seemingly failed response quite possibly cost the Federal Government billions in wasted taxpayer dollars and has affected the livelihood of thousands. Analyzing what went wrong and examining available acquisition concepts, organizations, processes, and technologies that could be leveraged for future disaster responses is the focus of our MBA project. The project's product provides some proposed solutions to assist FEMA's acquisition mission, along with some recommended technologies for executing these solutions.

MBA
professional
rept.

140 null

U.S. Special Operations forces require secure and reliable network communications for Command and Control (C2) when operating in austere environments, such as enemy combatant or disaster relief operations. During these operations, current communication procedures present a significant risk to network operators who must be physically present to construct tactical networks. An extensive amount of research has been conducted utilizing unmanned ground, air, and surface vehicles to extend communication links; however, unmanned systems generally require direct human interaction at a close range for network configuration and control. This research examines methods to increase the standoff distance for network operators working in hazardous environments by employing unmanned systems and communications equipment in the construction and deployment of a self-moving network infrastructure. Through several phases of experimentation, we demonstrate that selected unmanned ground vehicles and communications equipment can be successfully integrated to construct and mobilize tactical networks for special operations teams.

Technical
Report

123 null

Ricin a type II ribosome inactivating protein (a heterodimeric glycoprotein containing two subunits joined together by a disulfide bond) is a biological toxin with a history of use as a weapon of war and bioterrorism. Biological toxins act in concert with various (mostly unknown) host proteins; specific host proteins are essential for toxin action. In an effort to identify possible targets for pharmaceutical intervention that may lead to an effective treatment for ricin toxicosis this study investigates the effects of inactivating specific host proteins and cellular response when exposed to ricin. Specifically 278 genes were selected for challenge based on the criteria developed by Lexicon Genetics to identify genes that might encode pharmaceutically tractable proteins. A full phenotypic analysis of all knockout mouse lines (278) was performed and fibroblast cell cultures were established for all 278 KO lines. A kill curve was established for the mouse fibroblast cells and the fibroblast cell cultures were challenged in triplicate (3 separate homozygous knockout mice for each KO line) with ricin at different points in the curve. Through a cooperative research and development agreement (CRDA) with investigators at USAMRIID specific whole animal gene knockout models will also be made available for testing of modified responses to ricin toxin; this task awaits approval from the USAMRMC Animal Care and Use Review Office (ACURO). A 12-month extension of the performance period (to December 14 2006) was granted in December 2005 to allow time for breeding and shipping mouse lines to USAMRIID.

Final rept. 15
Dec 2004-14
Dec 2005

7 null

The exploding use of social media and digital monitoring presents the Coast Guard with a crucial new domain for mission operations. At the very least, the digital domain is a source of situational awareness for maritime operations. Over time and with creative engagement, the digital domain offers the Coast Guard potentially powerful tools to intelligently inform policy, strategy and planning decision making across most even all mission sets. The study explores the Data Driven Decision Making Cycle metaphorical concepts of a Digital Ocean and a pilot project as means to contextually define the exploding data streams associated with the emergence of the socio-technological domain and a means for engaging this domain. The study shows how a pilot project institutionalizes a Coast Guard capability to build tools(mobile applications) that: identify data escapes where digital pheromones are being produced; capture them; identify trends and patterns; and produce a mechanism that allows decision makers to visualize and decide where, when and how to intervene, as well as visualize the results of that intervention.

Technical
Report

CG-D-09-16,
R&DC UDI
60 1402

This document highlights the collaborative research efforts resulting from the US Army Combat Capabilities Development Command (CCDC) Army Research Laboratory's (ARLs) Open Campus initiative. The ARL South research summarized in this document is integral to the CCDC ARL overarching research strategy; each project is a component of one or more of ARLs essential research programs. While ARLs research primarily falls in the basic research arena with projected longer-term transitions, critical shorter-term outcomes will be recognized and exploited along the way. The research summaries include current technical readiness levels (TRLs), and in some cases identify the time it will take to reach TRL 6.

Technical
Report,01 Apr
2017,29 Apr
2019

29 ARL-SR-0416

This issue describes the concept of using dredged material as an ingredient in manufactured soil products. This innovative process offers an alternative for beneficial use of both dredged material and biosolids from sewage sludge.

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6 null

In March 1995, President Clinton ordered a sweeping reexamination of the United States Government's approach to putting science and technology to the service of national security and global stability in light of the changed security environment, increasing global economic competition, and growing budgetary pressures. This National Security Science and Technology Strategy, the product of that reexamination, is the country's first comprehensive Presidential statement of national security science and technology priorities. It augments the President's National Security Strategy of Engagement and Enlargement by articulating science and technology policies and initiatives that support the President's three primary national security objectives: enhancing our military readiness and capabilities, preventing conflict from occurring through engagement with other nations, and promoting prosperity at home. It advances that document's central approach of preventing conflict and maintaining the capability to respond should conflict occur. It is built on the recognition that our security depends on economic strength as well as military power. And it is grounded in the conviction that investment in science and technology is central to our ability to meet the challenges ahead. This National Security Science and Technology Strategy defines our new approaches to applying science and technology to the challenges that most directly affect our nation's security.

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84 null

The Naval Postgraduate School (NPS) is the Navy's principal institution for providing advanced education to the Navy and Marine Corps. Funded in part by direct funding through annual appropriations, NPS also receives a substantial amount of reimbursable funding through sponsored research, education, professional development, and other sponsored activities. In recent years, the amount of reimbursable funding NPS receives on an annual basis has grown considerably while direct funding has remained relatively constant. Consequently, the Naval Inspector General conducted inspections of NPS in 2009 and 2012 to address this as well as other issues. As a result, there has been ongoing discussion regarding NPS's mission and the role reimbursable funded work should play at the school. Like other Navy organizations, NPS is also working toward achieving auditable financial statements in compliance with the Department of Defense Comptroller's Financial Improvement and Audit Readiness Plan by 30 September 2017. The purpose of this MBA professional report is to evaluate the feasibility and appropriateness of converting NPS from a direct and reimbursable funded organization to a Navy Working Capital Fund activity to uphold the school's mission and support the Navy in achieving financial auditability.

Research paper 97 null

Annual rept. 1
 Oct 2000-30
 Sep 2001

It is software that provides a system's brains

70 null

educate, train, and inspire men and women to become officers of character motivated to lead the United States Air Force in service to our nation. This is accomplished through a combination of academic, military, athletic, and character development programs spread across the four-year experience. One of the primary ways we can develop these desired outcomes and give our future officers the skills they need to be successful is by having them conduct research that is relevant in today's highly technical, globally complex world. At the Academy, the top priority for any research is cadet development. Our faculty and staff play a critical role in this effort. According to U.S. News and World Report annual rankings, USAFA is consistently in the top 5% for accessibility to professors. This accessibility and the desire for cadets to learn and grow in a research environment are critical ingredients to the successful programs that have made USAFA so successful. Just as cadets are learning that research does not always follow a textbook approach, USAFA faculty are getting the opportunity to develop new skills as educators so they can energize their classes and make them truly learning focused. As our Air Force Academy cadets graduate to become officers of character for the U.S. Air Force, they are increasingly finding themselves in a volatile, uncertain, complex, and ambiguous world. Similar to conducting research, they will need to be able to take vague guidance on a task for which they are untrained, identify hurdles, and find a way to overcome them to be successful. They will be challenged to solve critical problems for the Air Force such as operating manned or unmanned

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63 null

Mild traumatic brain injury (mTBI) and post-traumatic stress disorder (PTSD) are major medical issues for the warfighter. The current project is designed to evaluate the impact of mild traumatic brain injury (using blast over pressure) and traumatic stress (using a predator exposure procedure and conditioned fear procedure) in a rodent model. The studies evaluate these insults alone and in combination to specifically address the question of whether mTBI can exacerbate the effects of psychological stress. Additionally, following the insults, a molecular biological evaluation is performed based upon the discovery of biomarkers that have been shown to be correlated with other forms of TBI. Thus, the project aims to systematically assess the combined effects of blast overpressure, traumatic stress and learned stress responses in rodents with the aim of understanding how these forces may interact to impact behavior as well as evaluating their outcome on known biomarkers involved in TBI and stress response system activation. This project is a new start and while progressing, results are too incomplete to provide conclusions at this point.

Annual rept. 1
 Sep 2010-31
 Aug 2011

19 null

Partnership Mechanisms: Small Business Innovation Research (SBIR) * Testing Services Agreements * Education Partnerships * Cooperative Research And Development Agreements (CRADA). Small Business Innovation Research (SBIR) Overview: What is SBIR? Established in 1982, P.L. 97-219 * Federal Government wide (11 Federal agencies and 12 DoD components participate) * 2.5% of Extramural RDT&E (>\$100M) * Stimulate technological innovation * Increase small business participation in federally funded R&D * Transition Federal R&D into: * Government Programs * Industry Initiatives.

Briefing charts

TARDEC-
 49 21202

The Project Management Support Division (PMSD) provides centralized program-wide administrative, financial, contracting, regulatory affairs and logistical support. Automated Data Processing Support: A3Com local area network (LAN) was installed, providing new capabilities for laser quality printing for all Macintoshes and Zeniths; data exchanges within USAMMDA and other USAMRDC facilities on post; and networkable software. Additional Mcintosh IIs were procured to meet the expanding presentation graphics needs of the staff. General Analysis/Priority System (GAPS): Development was completed on an enhanced version of GAPS, an automated resource management tool designed to assist in planning and programming for the cost of product development. GAPS contains vital product identification and funding data concerning all products managed by USAMMDA. GAPS provides easy on-line access to all product data (Z Sheets) and a wide array of management reports which serve as invaluable tools in allocating limited dollar resources.

Progress rept.
1 Jan-31 Dec
1990, 71 null

This report contains 344 summaries of research projects which were carried out under funding of the Naval Postgraduate School Research Program. A list of recent publications is also included which consists of conference presentations, contributions to books, published papers, magazine articles, and technical reports. The research was conducted under the areas Administrative Sciences, Aeronautics and Astronautics, Computer Science, Electrical and Computer Engineering Mathematics, Mechanical Engineering, Meteorology, National Security Affairs, Oceanography, Operations Research, Physics, C3 Joint Academic Group, Electronic Warfare Academic Group, Antisubmarine Warfare Group, and Space Systems Academic Group.

Summary rept.
Oct 1991-Dec
1992 NPS-08-92-
481 002

This document is a technical assessment of the Defense Advanced Research Projects Agency (DARPA) Affordable Polymer Matrix Composite (PMC) program. The projects under this program were initiated to develop and demonstrate technologies that would reduce the acquisition costs of composites for high performance air vehicles and other platforms by 30+ percent, develop a composite structure equal to or lower than the cost of a metallic structure for transports and other 'lower performance' applications, and reduce prototype tooling costs and lead times by 40+ percent. The projects that were originally planned had to refocus their efforts and/or finish earlier than planned. This document summarizes the technical achievements of these projects, assesses the readiness of the technologies for systems applications, and discussed the process and exit criteria that were developed to assess the technology readiness.

Final rept. Jun
96-Jul 97,

46 IDA-D-2068

Previous efforts by the US Army Engineer Research and Development Center, Construction Engineering Research Laboratory (ERDC-CERL) to develop a life-cycle building model have resulted in the definition of a core" building information model that contains general information describing facility assets such as spaces and equipment. To describe how facility assets (i.e.

Final rept.

ERDC/CERL-
70 CR-13-5

These proceedings document a workshop held in January 1996 to identify requirements for design review and related lessons learned systems in the U.S. Army, Corps of Engineers. Individual papers, written by the workshop participants, document the experience of the Corps in the creation and use of processes and systems to support design review and related lessons learned systems. A summary paper abstracts the reports of individual participants and documents conclusions reached at the workshop.

Final rept.,

74 CERL-97/71

This document describes the methodology and requirements for a subset of the functionality of the JIFFY R&D Program Management software, scheduled for deployment at the Air Force Research Laboratory (AFRL) in September 2003. The incorporation of new capabilities for the Laboratory Management Review process and the AFRL 2913 LMR reporting form required the formation of a focus group to investigate current business processes and make recommendations for the software design, build and testing of new software modules for JIFFY. This document specifically describes the outcome of the focus group's efforts. The purpose of the JIFFY software program is to provide an automated tool that is customized for managing AFRL Research and Development (R&D) program execution and to host a common repository for data elements related to Technical Programs for Scientists and Engineers (S&E), Financial & Administrative, Plans & Programs and Management Staff.

Technical rept.
Jan-Sep 2003

AFRL-IF-RS-TR-
41 2004-4

The overarching goal of the BADER Consortium is to advance and strengthen evidence-based orthopaedic rehabilitation care that results in optimal functional outcomes for each wounded warrior. This will be accomplished by advancing each of the following strategic areas: 1: Strengthen and support orthopaedic rehabilitation research capabilities through infrastructures and partnerships; 2: Conduct a variety of innovative, high impact, and clinically relevant research studies; 3: Establish a self-sustaining research enterprise by broadening the scope of impact and support for the BADER Consortium. Key Accomplishments to date: Established: Administrative Core, Clinical Research Core and Scientific Technical Cores; approval and establishment of five clinical research projects; development and implementation of an Omnibus CRADA; established a consortium-wide omnibus PDMS; partnership with the DoD and VA s Extremity Trauma and Amputation Center of Excellence (EACE); developed research focus (gap) areas in partnership with EACE; established and implemented a complete process for the call, submission, review and selection of Consortium funded projects; published the annual BADER call for clinical research proposals, established the BADER Consortium SOPs; completed the hiring of eight research support staff to be placed onsite at MTFs; established partnerships with the VA and NIH; obtained \$4M of external funding.

Annual rept. 30
Sep 2012-29
Sep 2013

105 null

This brochure presents brief summaries of the FY93 research efforts at the Naval Training Systems Center (NAVTRASYSCEN) in Orlando, FL. NAVTRASYSCEN has comprehensive simulation and training systems responsibilities ranging from research and technology base development through system acquisition and life cycle support. The NAVTRASYSCEN is unique in this integrated role because it performs research, specifies the training device's engineering, instructional, and operational requirements, selects the contractor, evaluates the trainer as it is being built, and ensures the trainer can be properly operated and maintained in the field. In addition to the Navy, NAVTRASYSCEN provides services for the Marine Corps, Army, Air Force, and foreign governments. The NAVTRASYSCEN's research mission is to plan and perform a full range of directed research and development in support of Naval training systems for all warfare areas and platforms, to maintain an expanding technology base, and to transition research results to the fleet. R and D program emphasis is on fleet and training command requirements, rapid transition of products, industry/university coordination, improved planning, coordination with other services, and improved quality and cost effectiveness of products. Helmet Mounted Displays; Flight Simulation; Visual Display Technology; Team Training; Embedded Training; Part Task Training, Human Factors Engineering.

Annual rept.

74 NTSC-93-01

The Naval Postgraduate School is required to report activity costs and set tuition rates annually. The requirement to adequately identify and charge appropriate tuition rates for Naval Postgraduate School programs is critical for complete cost recovery. This thesis reviews the Naval Postgraduate School product lines and applies Activity-Based Costing Theory to provide management with a standard to gauge program and price growth. All Naval Postgraduate School costs are assigned into service and production department costs. Service department costs (indirect and overhead) are accumulated individually and allocated to the Naval Postgraduate School product lines based on cost drivers. The Naval Postgraduate School student load and product line totals are used to reach an average cost per student year.

MBA
professional
rept.

69 null

This report summarizes Naval Surface Warfare Center (NAVSWC) participation in the following five principal areas involving technology interactions with the public and private sectors: (1) Domestic Technology Transfer (DTT), (2) Navy Potential Contractor Program (NPCP), (3) Industry Independent Research and Development (IR and D), (4) Small Business Innovation Research (SBIR), and (5) Technology Base Contracting.

Final rept.,

NAVSWC-MP-50 91-142

This report outlines a concept for developing a system to integrate computer-aided drafting and design (CADD) and cost estimating through automated data processing methods. The result of this combination will be twofold: (1) Designers will have continuous, real-time access to cost estimating information, and will know the implications of design decisions upon construction duration time and costs; and (2) Cost engineers/estimators will be freed from most of the laborious analysis of labor, equipment, and material, allowing them more time to evaluate cost estimates on the basis of local market conditions. A fully automated integration of the CADD environment and cost estimating data will reduce the cost of preparing cost estimates, improve the accuracy of estimates, and reduce redesign costs due to cost overruns.

Final rept.

CREL-TR-P-21 90/13

The Zero Discharge Organic Coatings (ZDOC) R&D project will substantially advance coatings technology through the development of high performance zero-discharge coating systems. Development efforts are proceeding on three coating technologies, powder paint, Ultraviolet (UV) curable paint and electro-coating (E-coat) paint. These three paint technologies offer the potential of high performance coatings with no volatile organic compound (VOC) emissions or hazardous waste generation. These three technologies and their associated application processes will be applicable to a wide variety of military equipment and structures, thereby eliminating volatile organic compound (VOC's) and toxic heavy metals from coatings and painting operations. The ZDOC team of Hughes Aircraft Company, Lehigh University, University of Arizona, and the Naval Air Warfare Center Aircraft Division Warminster offers a blend of experience, expertise, and capabilities in all aspects of organic coatings technology. This quarterly report reviews the team's technical activities and results during the period January 1995 - March 1995. jg

Quarterly technical rept. Jan-Mar 95,

30 ZDOC/9501

The goal of the DARPA Shaped Sonic Boom Demonstration (SSBD) Program was to demonstrate for the first time in flight that sonic booms can be substantially reduced by incorporating specialized aircraft shaping techniques. Although mitigation of the sonic boom via specialized shaping techniques was theorized decades ago, until now this theory had never been tested with a flight vehicle subjected to actual flight conditions in a real atmosphere. The demonstrative success, which occurred on 27 August 2003 with repeat flights in the supersonic corridor at Edwards Air Force Base, is a critical milestone in the development of next-generation supersonic aircraft that could one day fly unrestricted over land and help usher in a new era of time-critical air transport. Pressure measurements obtained on the ground and in the air confirmed that the specific modifications made to a Northrop Grumman F-5E aircraft not only changed the shape of the shock wave signature emanating from the aircraft, but also produced a flat-top" signature whose shape persisted

Final rept.

AFRL-VA-WP-
41 TP-2005-300

The American Society for Engineering Education (ASEE) manages Research Grant number N00014-90-J-1422 for the United States Navy. Under the terms and conditions of the grant, ASEE is responsible for submitting an Annual Management Report. This is the 16th Annual Management Report for Grant # N00014-90-J-1422. This report contains the pertinent statistical and financial information for the 634 applicants and 168 participants in the 1994 Navy-ASEE Summer Faculty Research Program. This report also contains the pertinent statistical and financial information for the participants of the 1994 Navy-ASEE Sabbatical Leave Program. This report also includes the statistical and financial information for grant #N00014-94-1-0515 and N00014-94-C-0043. During the summer of 1994, 168 engineering and science faculty members from universities and colleges from 37 states, the District of Columbia and Puerto Rico conducted research at 17 Navy Research and Development Centers. This brings the total number of participant since the program began in 1979 to over 1,600. Additionally, six faculty members received support from the Navy-ASEE Sabbatical Leave Program in 1994. To date, 23 university faculty members have completed their Sabbatical appointments.

Annual rept.
no. 16,

84 null

The Advanced Vehicle Power Technology Alliance (AVPTA) between the Department of Energy (DOE) and the Department of the Army (DA) underscores the urgency for energy security; in particular, an emphasis on developing advanced technologies that enable military ground vehicles to become significantly more energy efficient. Individually and collaboratively, the DOE and DA have a long history of successfully developing innovative vehicle technologies. This new alliance will accelerate the generation of inventive and creative energy-saving concepts that our Nation needs to achieve energy security.

Technical rept.

TARDEC-
74 22480

The applied research program focuses on developing innovative technologies and procedures and transitioning them to field use. Frequently these products have application not only for Air Force use, but also for use by the Army, Navy, Marine Corps, and civilian sectors. Some examples of recent in-house and contract-developed technologies include the Attenuating Custom Communication Earpiece System (ACCES), high performance active noise reduction earplugs, helmets specifically designed to reduce bone conducted noise, tactical hearing protection (earplugs or earmuffs with active electronics to provide ambient listening, communication, and localization capabilities while protecting from continuous and impulsive noise? frequently also providing a radio communication interface), low-cost head orientation system, for dismounted airmen and soldiers, and spatial auditory symbology.

Final rept. 3
Apr 2008-30
Sep 2010

AFRL-RH-WP-
22 TR-2011-0038

Various DoD Components invite small business firms to submit proposals under this solicitation for the Small Business Innovation Research (SBIR) program. Firms with the capability to conduct research and development (R&D) in any of the defense-related topic areas described in Section 8.0, and to commercialize the results of that R&D, are encouraged to participate. Objectives of the DoD SBIR Program include stimulating technological innovation, strengthening the role of small business in meeting DoD research and development needs, fostering and encouraging participation by minority and disadvantaged persons in technological innovation, and increasing the commercial application of DoD-supported research or research and development results. The Federal SBIR Program is mandated by Public Laws PL 97-219, PL 99-443, PL 102-564 and PL 106-554. The basic design of the DoD SBIR Program is in accordance with the Small Business Administration (SBA) SBIR Policy Directive, January 1993. The DoD Program presented in this solicitation strives to encourage scientific and technical innovation in areas specifically identified by DoD Components. The guidelines presented in this solicitation incorporate and exploit the flexibility of the SBA Policy Directive to encourage proposals based on scientific and technical approaches most likely to yield results important to the DoD and the private sector.

null

488 null

The Field Information Support Tool (FIST) is a field-based collection system using commercial-off-the-shelf (COTS) smartphones, customized software, and a robust information management backend known as FusionPortal with a deployable sensor fusion system known as FusionView that enables information to flow from the point of capture to an analyst in near real-time regardless of location or physical proximity. FIST is designed to operate in a variety of environments and supports a variety of mission sets such as counterinsurgency operations (COIN), counter-narcotic missions (CN), and humanitarian assistance and disaster response (HA/DR). The overarching principle of FIST is the development of a user-friendly data collection tool that utilizes automated information systems to enable unstructured data to be collected, processed, and structured for analysis and visualization in a variety of analytic packages. FusionView enables real-time integration of disparate sensor systems that provides a powerful common operating picture critical for today's decision makers. FusionPortal allows for data to be exported and analyzed using geospatial, geo-statistical, link, and social network analysis in addition to enabling the exchange of information with external databases such as the Worldwide Civil Information Database (WCID), the International Studies of Violent Groups (ISVG), and the Combined Information Data Network Exchange (CIDNE).

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Foundation completed the Internet-based Navy Manufacturing Information Innovation Program for the Office of Naval Research (ONR). The effort was initiated to aid the Navy and the Department of Defense (DoD) in designing and developing a tool to utilize 21st Century technology to shape both the industrial base research and development efforts to fit current and future needs, and to effectively transfer advanced technology between the commercial sector and DoD. The initial phase of this effort involved meeting with representatives from the Industrial and Corporate Programs Department (Code 36) at ONR to fully understand their technology transfer/transition needs. The initial goal was to create a tool that would provide a single location for Navy Laboratory and Facility information, and a searchable database of licensable Navy patents. The Phase I system was delivered in October, 2003. During the development more needs were identified through interviews with ONR Code 36 personnel, Office of Research & Technology Application Managers (ORTAs), and industry representatives. These new features included an Opportunities module that provides a searchable database for Navy technology research and development needs, a Success Stories module that provides a single location for Navy related success stories, and a Calendar module that provides a single location for Navy related events. The Phase II, Navy TechMatch system launched in August, 2004 at the Naval/Industry R&D Partnership Conference. Because of the positive response of the system, Navy TechMatch was expanded to include Army and AirForce. DoD TechMatch launched in December, 2004 at the

Final rept.

83 null

The Air Force Research Laboratory (AFRL), in cooperation with the University of Dayton Research Institute (UDRI) and Fairchild Controls Corporation, is operating an in-house advanced vapor compression refrigeration cycle system (VCS) test rig known as ToTEMS (Two-Phase Thermal Energy Management System). This test rig is dedicated to the study and development of VCS control and operation in support of the Energy Optimized Aircraft (EOA) initiative and the Integrated Vehicle ENergy Technology (INVENT) program. Previous papers on ToTEMS have discussed the hardware setup and some of the preliminary data collected from the system, as well as the first steps towards developing an optimum-seeking control scheme. A key goal of the ToTEMS program is to reduce the risk associated with operating VCS in the dynamic aircraft environment. One of the key questions regarding the operability of VCS in aircraft which will be addressed is the in-situ measurement of refrigerant charge within the VCS system. Several potential methods of determining whether an appropriate charge of refrigerant exists will be discussed. An appropriate charge level is one which enables safe and efficient operation of the VCS over its designed operating envelop.

Conference
paper

AFRL-RQ-WP-
13 TP-2013-0073

null

Briefing charts

20 null

This report summarizes the activities under the Distributed Computing Design System program. The DCDS program was responsible for the support of the DCDS environment, developed under contract to USASDC. The DCDS environment is an integrated set of tools, languages, and methodologies designed to support the entire life-cycle of system/software development. This LOE contract provided technical assistance, training, distribution, configuration management, sustainment, and enhancement of DCDS.

Final rept. 1
Jun 1990-30
Sep 1993

12 null

Fuel logistics are a huge burden to the Army mission and supply lines. Improving efficiency and fuel flexibility will, in the long run, save lives as well as dollars. Fuel cells have long been looked on as a viable method to achieving efficiency and flexibility. The direct carbon fuel cell (DCFC) technology is one potential game-changing technology which could support meeting this challenge. It has the potential to convert carbon at high efficiency to a safe, non-explosive fuel, and one which could be produced from waste on-site at forward-deployed installations. The objective of this work was to produce a single-cell DCFC with a minimum performance of 120 W/L at 50% efficiency. This report summarizes a 2-year work effort by Contained Energy, LLC (CEL) to achieve this objective. The report explains the challenge of high temperature that is required to achieve the power densities necessary to produce feasible-sized, operational units. It also explains problems encountered with partial oxidation of the carbon at high temperatures which causes low efficiencies (due to the Boudouard reaction). Finally, CEL's novel and new ceramic DCFC concept is explained, along with lessons learned in advancing DCFC technology.

Final rept.

ERDC/CERL-
50 TR-12-10

The Government of the United States, in particular the Department of Defense, invests a significant amount of funding into the development of technology. This technology, as a critical component of its weaponry, allows the United States to maintain a world-wide qualitative superiority over potential adversaries who may have a quantitative advantage. As industry and government continue to downsize, the transfer of technology from the federal government to the private sector becomes important to ensure the industrial base can continue supporting the military. In addition, transferring technology allows the industrial base to gain international competitive advantages and increase the breadth of the industrial base supporting the Department of Defense. To ensure technology transfer is successful, the military must aggressively market its research and development capabilities and its applicability to the commercial sector. This research marries the efforts of technology transfer programs with the principles of strategic market planning. This paper outlines the motivational aspects of integrating technology transfer and marketing. In addition, considering the importance of objectives in market planning, this research postulates technology transfer objectives. The final product of the research effort is the development of a technology transfer market planning worksheet for use by organizations which desire to develop a market plan that meets their organizational goals.

Master's thesis,

AFIT/GSM/LA
133 S/96J-1

Although written primarily for Air Force and DOD managers of research and development. This report is intended to interest an even broader audience. For this audience, the report relates the Laboratory's programs to the larger scientific fields of which they are a part. The work of each of the Laboratory's six scientific divisions is discussed in a separate chapter, followed by a listing of its publications. The report also included an introductory chapter on GL management and logistic activities related to the reporting period.

Interim
scientific rept.
Jan 1987-Dec
1988,

GL-TR-89-
0119, GL-SR-
290 260

This report contains project summaries of the research projects in the Department of Systems Management. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised by faculty in the Department are also included. The mission of the Department is: To improve the managerial capabilities and leadership qualities of US and international officers and government civilians through graduate education, research, and professional service. To develop students' abilities to analyze, think critically, and take intelligent action so they can more effectively carry out their professional responsibilities, and lead their organizations in complex, and sometimes life-threatening, environment. To conduct research that supports military decision-making, problem solving, and policy setting, improves administrative processes and organizational effectiveness, contributes knowledge to academic disciplines, and advances the mission of graduate education, and To provide professional expertise that supports the development of the Naval Postgraduate School, the Departments of Navy and Defense, and other branches of Government, as well as our professional and academic organizations.

Summary rept.
1 Oct 1999-30
Sep 2000

NPS-09-02-
136 010

surveillance and identification system for locating Mode Select Beacon System (Mode S) equipped aircraft and vehicles. Its primary use is as a surface Beacon surveillance system to provide Flight Number Identification (ID) to the existing Airport Surface Detection Equipment Model 3 (ASDE-3) radar and Airport Movement Area Safety System (AMASS) . The system is also capable of locating and identifying aircraft in flight or on the ground, which permits the use of the ATIDS system for Parallel Runway Monitor (PRM) and other airborne and surface surveillance applications. ATIDS is compatible with Mode S Automatic Dependent Surveillance (Mode S ADS-B), and can display the location and ID of properly equipped aircraft. ATIDS consists of three or more Receiver/Transmitters (R/Ts) encircling a predetermined coverage area. The system operates by receiving and time stamping the Mode S squitter from a target at three or more R/Ts; transmitting the squitter ID and time stamp to a central computer; measuring the Time Difference of Arrival (TDOA) of the squitter from each time stamp; and calculating the target's position by hyperbolic multilateration. The ATIDS system was evaluated using Federal Aviation Administration (FAA) test aircraft equipped with standard Mode S transponders. Surface accuracy performance was tested first at the Atlantic City International Airport (ACY) and then at the Atlanta Hartsfield International Airport (ATL), and was found to be adequate for the ASDE-3 labeling application, with a Root Mean Square (RMS) error of better than 3% feet. Airborne accuracy performance was evaluated at the ATL and found to be as accurate as the current null

DOT/FAA/CT-62 TN98/4

In an era of declining defense budgets, the North American defense industrial base faces the challenges of advancing and maintaining technological superiority with reduced government research and development funding. In response to this challenge, the North American Defense Industrial Base Organization (NADIBO) sponsored the Metal Matrix Composites (MMCs) assessment as a case study to assess the potential for emerging technologies to continue to advance and to remain viable in the current and projected economic environment. This assessment provides a methodology and framework for conducting similar studies in the future and identifies opportunities to enhance the level of joint effort between the U.S. and Canada in creating and sustaining a viable MMC marketplace. null

218 null

Previous efforts by the US Army Engineer Research and Development Center, Construction Engineering Research Laboratory (ERDC-CERL) to develop a life-cycle building model have resulted in the definition of a core building information model that contains general information describing facility assets such as spaces and equipment. To describe how facility assets (i.e., components) function together, information about assemblies of assets and their connections must also be defined. The definitions of assets, assemblies, and connections for the various building-information domains are discipline-specific. The work documented here addresses the process flow and data exchange requirements for the design of electrical distribution systems in typical Army facilities. This ontology advances the state of the art by defining an Industry Foundation Class (IFC) Model View for electrical system design supporting end users in developing compliant BIM models suggesting potential areas of automation in electrical system design.

Final rept.

ERDC/CERL-
74 CR-13-2

The Aero Propulsion and Power Technology Area is responsible for developing air breathing propulsion and power technology for Air Force use. Besides developing new technologies, product centers are supported by helping acquire systems and providing expertise to help solve developmental problems. Current research and development includes aircraft gas turbine engines (components, gas generators, technology demonstrator engines, fuels and lubricants) , missile propulsion, (solid fuel ramjets, ducted rockets, and small turbine engines) , aircraft and missile power (electrical and mechanical power generation, conditioning and distribution, energy storage, and thermal management), and plasma physics. Work is conducted primarily under contract, although an aggressive in-house program exploits new opportunities, maintains technical expertise, and verifies contractor findings. Supporting this are two dozen major in-house R&D facilities and an annual budget of over \$150 million.

Final rept.

WL-TR-96-
36 2000

The former Plum Brook Ordnance Works in Sandusky, OH, manufactured explosives from 1941 to 1945. The Reservoir No. 2 Burning Ground has soil contaminated with explosives, 2,4,6-trinitrotoluene (TNT) and 2,4-/2,6-dinitrotoluene (DNT), a polychlorinated biphenyl (PCB), Araclor 1260, polycyclic aromatic hydrocarbons (PAHs), particularly benzo(a)pyrene, and lead. The U.S. Army Engineer Research and Development Center (ERDC) Environmental Laboratory (EL) investigated a series of chemical based treatments to address this complex matrix. Lime treatment was tested to treat the explosives. Advanced oxidation (persulfate treatment and Fenton's reagent) was studied for treatment of PCBs and PAHs. Phosphate treatment was investigated for stabilizing lead. Lime treatment degraded 98 percent of TNT, 75 percent of DNT, and 80 percent of PCBs. There was minimal removal of PAHs (41 percent). Similar removal levels were found for persulfate treatment and lime followed by persulfate. Lower destruction rates of explosives were obtained by a single Fenton's reagent treatment, probably due to rapidity of the reaction. Loss percentages were roughly the same for highly contaminated soils (burn layer) and less contaminated soil (west surface soil). Treatments of the most contaminated soil (burn layer soils) did not meet Preliminary Remediation Goals for explosives or PCBs. Phosphate treatment was effective at stabilizing the lead in the soil, reducing lead toxicity characteristic leaching procedure concentrations below 5 mg/L.

Final rept.

ERDC/EL-TR-
116 07-19

The Army is encountering trends that may impede its ability to maintain its technological edge. Its science and technology (S&T) budget is decreasing, and commercial firms now hold the technological lead in many areas important to the Army. Furthermore, growth in international technological capabilities, increased competition from European and Japanese firms, and an emerging U.S. ideological shift away from government involvement in research and development (R&D) all point to a need for the Army to investigate new methods to accomplish its R&D goals. Collaboration with industry to achieve Army R&D goals is one promising new approach that offers a number of benefits, and the Army can use recently introduced instruments to execute such agreements. Army collaboration, for the purposes of this study, means that the Army forms a partnership with a commercial entity to jointly conduct research and development. This study uses a unique approach to evaluate Army technologies with respect to their potential as collaboration candidates; it also determines whether there are sufficient opportunities available to justify pursuing a collaboration policy.

null

RAND-MR-
48 675-A

The objective of this proposed study is to systematically define the clinical and logistical issues surrounding traditional open vascular surgery and catheter-based hemorrhage control. The hypothesis is that minimally invasive, device-driven and expert-led NCTH control techniques improve survival compared to traditional open vascular surgery. This project will achieve the following aims: 1) Determine current practice patterns for the treatment of patients with NCTH among 4 clinical sites using a retrospective study design (Phase 1a); 2) Conduct a 2-day Delphi Panel meeting of military and civilian experts to gain consensus regarding anatomic, technology, credentialing, competency, and training issues for catheter-based hemorrhage control (Phase 1b); 3) Conduct a prospective 4-site observational study to test the hypothesis that less-invasive device-driven and expert-led hemorrhage control techniques are associated with improved survival in NCTH patients and strengthen the evidence base to inform future development of catheters, devices, and training required for surgeons for catheter-based hemorrhage control (Phase 2). At the end of Y2, the retrospective study has been completed, the Delphi Meeting has been held and a manuscript describing the results has been drafted. In addition, the prospective study will be initiated in Y3Q1 and regulatory approvals are in place or pending at all sites.

Technical
Report, 15 Sep
2015, 14 Sep
2016

153 null

These are the extended abstracts for the keynote lectures, special symposia and technical sessions of the 5th International Conference on the Biogeochemistry of Trace Elements held at the Technical University Vienna, July 11-15, 1999. The conference is dedicated to explore and discuss contemporary and emerging issues in biogeochemistry research of trace elements. Conference topics cover important aspects of fundamental research such as kinetics and mechanisms of the fate of trace elements, including radionuclides, in soils and related ecosystems and methods for their assessment.

Conference
proceedings,
11-15 Jul 1999

650 null

The 1995 International Conference on Cold Weather Military Operations brought together more than 150 scientists, engineers and soldiers from ten countries. There was consensus on the fact that the soldier is the most important ingredient in winter operations. Leadership and training were the two most important things that the soldier needs for success. Equipment must be highly competent and integral to training. New equipment is emerging to address some of the priority issues previously identified, but many issues remain unresolved. The soldiers and the civilians who support the soldier who must be prepared to operate in cold weather must be proactive in identifying issues and creating a greater awareness of the impact of cold weather on military operations. Without a realistic perspective of the impact of cold, equipment, doctrine and training will be lacking and our readiness to operate effectively in winter and cold weather will be compromised. Without awareness the proponency and resources to address even the most important winter issues will go unfulfilled. Simulation offers a new avenue to create the awareness, given that realism can be injected to the developing codes. Cooperation with international allies is an excellent means to gain expertise and leverage resources, especially from those allies who live in the northern most latitudes and mountainous regions of the earth.

Special rept.,

CRREL-SR-95-
288 9

As a commander at all levels...I will tell you that a commander without the proper command and control assets commands nothing except his desk. You must have the ability to communicate with the forces under your command. You must have the ability to exchange information with them freely, frequently and on a global basis. General Ronald R. Fogleman Chief of Staff; United States Air Force. The Air Force mission is

null

55 null

As we enter the 21st Century, the United States faces a dynamic security environment marked by dramatic geopolitical, military, economic and technological change. The United States and its coalition partners must successfully navigate this transformation to ensure that the new century is more peaceful and stable than the one we have left behind. To successfully meet our responsibilities in this environment, the Department of Defense (DoD) must rely upon a competitive and robust defense industry that can produce the innovative, high quality and affordable products needed to meet U.S. national security goals. Within the emerging global security environment, this report discusses DoD's industrial capabilities-related policies, objectives and analyses. It also discusses cooperative actions between U.S. allies and industrial partners to establish an appropriate framework for industrial linkages that can facilitate interoperability among weapons systems, improve coalition warfighting capabilities, and leverage efficiencies and continued competition for defense goods and services.

null

67 null

A key page in this document states that 'DoD Research and Development Investment is Critical to Maintaining Technological Superiority for the Warfighter. IR&D is a Critical Component of the DoD's Research and Development Infrastructure. Working to Develop an IR&D Program Which is a Win-Win for Industry and the DoD. This Conference Designed to Enhance the Partnership between Industry and the DoD for IR&D'.

null

150 null

The Joint Strike Fighter (JSF) anthropometric Cases 1 through 8 were not intended to represent a statistical description for the variation important in the design of personal clothing and equipment for the JSF pilot. Instead, the anthropometric measures associated with the JSF Cases define the minimum level of physical accommodation for men and women in the Joint Strike Fighter cockpit. The statistical process of constructing representative cases used in the design of clothing and gear require an entirely different multivariate approach. CAESAR, a 3-D whole body database, was sampled to produce 1374 subjects (651 men and 723 women) that represent a modern equivalent to the WATS population, but using projected demographics of JSF flyers in the Joint Services in the year 2010. After analysis, and overlay of the JSF Cases, 646 men and 695 women were identified as falling within weight allowances and the reconstructed ellipses of accommodation defined by the original JSF Cases. The forty traditional measures and the associated 3-D scans of these individuals represent the statistical base from which JSF flight clothing and equipment can be designed and/or sized.

Interim rept.
Feb-Sep 2003

LOCKHEED PO-
7073412,AFR
L-HE-WP-TR-
184 2003-0142

The mission of TARDEC Robotics is to Integrate, Explore, and Develop Robotics, Network and Control Components with a Focus on Customer Driven Requirements to Provide Full System Solutions to the War Fighter.

Briefing charts

TARDEC-
25 20290

This scoring record documents the efforts of GEO-CENTERS, Inc., to detect and discriminate inert unexploded ordnance (UXO) utilizing the YPG Standardized UXO Technology Demonstration Site Open Field. Scoring Records have been coordinated by Larry Overbay and the standardized UXO Technology Demonstration Site Scoring Committee. Organizations on the committee include, the U.S. Army Corps of Engineers, the Environmental Security Technology Certification Program, the Strategic Environmental Research and Development Program, the Institute for Defense Analysis, the U.S. Army Environmental Center, and the U.S. Army Aberdeen Test Center.

Final rept. 18-
20 Oct 2004

52 ATC-9111

The Pathfinder is the National Geospatial-Intelligence Agency publication that promotes public awareness and understanding of geospatial intelligence. The Pathfinder is an authorized Department of Defense publication for members of the Department of Defense. Contents of this publication are not necessarily the official view of, or endorsed by, the U.S. government, Department of Defense or NGA.

Journal 25 null

This is a DTIC-Compiled Publication of CALCE Newsletters from the University of Maryland.

null 70 null

Briefing charts for presentations given at the 45th Annual Fuze Conference, held in Long Beach, California, on 16-18 April 2001.

Conference Proceedings 643 null

This is one of thirteen archival reports from a series of research and development contracts dealing with aircrew coordination.

Final contractor rept. Sep 1993-Mar 1994 ARI-CR-2002-93 14

This publication, Military Strategies for Sustainment of Nutrition and Immune Function in the Field, is the latest in a series of reports based on workshops sponsored by the Committee on Military Nutrition Research (CMNR) of the Food and Nutrition Board (FNB), Institute of Medicine, National Academy of Sciences. Other workshops or symposia have included such topics as food components to enhance performance; nutritional needs in hot, cold, and high-altitude environments; body composition and physical performance; nutrition and physical performance; cognitive testing methodology; and fluid replacement and heat stress. These workshops form part of the response that the CMNR provides to the Commander, U.S. Army Medical Research and Materiel Command (USAMRMC), regarding issues brought to the committee through the Military Nutrition Division (currently the Military Nutrition and Biochemical Division) of the U.S. Army Research Institute of Environmental Medicine (USARIEM) at Natick, Massachusetts. vii

Final rept. 1 Sep 94-31 May 99 710 null

To control and exploit air and space requires that the Air Force have properly trained people, superior equipment and the right information - at the right place and at the right time - concerning its own forces and those of any adversary. For this reason, C31 is more important than ever, and a critical element to ensuring the Air Force can fulfill its mission. Our military forces, although reduced in size must be highly flexible, globally responsive, and at times deadly precise. They must operate successfully in high threat, high technology environments. and in new missions such as humanitarian assistance. With revolutionary C31 technologies, we can respond accurately and effectively to the rapidly changing international scene. With innovative technologies, we can control the increasing instability of the battlefield and overwhelm the increasing sophistication of our adversaries. Our vision is simple. We want to ensure that our warfighters have total control and a comprehensive view of the battlefield. We will give our warfighters access to whatever data they need and will ensure that It's up to date and accurate.

Planning rept. 48 null

This report contains summaries of research projects in the Department of Mechanical Engineering. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts. Research at the Naval Postgraduate School is carried out by faculty in the School's eleven academic departments, seven interdisciplinary groups, and the School of Aviation Safety. This volume contains research summaries for the projects undertaken by faculty in the Department of Mechanical Engineering during 1998. Also included is an overview of the department, faculty listing, a compilation of publications/presentations, and abstracts from theses directed by the department faculty.

Summary rept. 1 Jan-31 Dec 98, NPS-09-99-77 009

This paper examines the gas-phase chemical reduction of NOx. It is shown that under the best conditions, the plasma can chemically reduce 1.6 grams of NOx per brake-horsepower-hour when 5% of the engine output energy is delivered to the plasma. This NOx reduction efficiency is a fundamental limit that cannot be exceeded in the absence of heterogeneous reactions or chemical additives. Higher NOx removal efficiencies would suggest reactions of plasma oxidation products (such as NO2 or nitric acid) on surfaces or particulates.

null 7 null

The Annual Report, Calendar Year 1988, summarizes development projects monitored by the U.S. Army Medical Materiel Development Activity in projects authorized by the Surgeon General, the Army, and the Commander, U.S. Army Medical Research and Development Command, and supported by RDTE funds from the U.S. Army Medical Research and Development Command. Keywords: Logistics; Medical materiel; Acquisition; Vaccines; Hemorrhagic fevers; Hepatitis; Antimalarials; Monoclonal antibodies; Prophylaxis; Chemotherapeutic agents; Schistosomiasis; Leishmaniasis.

Annual rept. 1
Jan-31 Dec
1988

58 null

evaluating potential technologies/products for resuscitation fluid for use by first-responders in combat. LSRO was also tasked with prioritizing pre-proposals and full proposals most warranting an investment in Sponsor resources. SCOPE The Phase I review of pre-proposals included those received in response to a public call for information on the topic of resuscitation fluids or components of fluids or adjuvant therapies and excluded equipment such as infusion and monitoring devices. Reviews were to include consideration of the military relevance of the product, the stage of product development, and the scientific merits of the investigation. In Phase 2, processes and forms currently in use by the military and other federal programs for the review of scientific research were examined with an eye towards improvements that would yield the type of data and information necessary for future expert reviews. The Phase 3 review of full proposals was limited to 12 received in response to 16 invitations (i.e., the highest ranking pre-proposals). MAJOR FINDINGS Phases I and 2: Of the 10 clinical pre-proposals reviewed, the expert panel identified 2 leading candidates. Of the 49 preclinical pre-proposals reviewed, the expert panel identified 5 top-tier pre-proposals and 9 second-tier pre-proposals. Phase 3: The review of 12 full proposals yielded 5 high ranking experimental products, most of which are likely to be ready for clinical testing by 2008. SIGNIFICANCE Development of one or more of the highest ranking novel strategies to treat hemorrhagic shock may improve effectiveness of resuscitation fluids, reducing the number of military casualties who are killed- The Air Force is pursuing a Reusable Booster System (RBS) to meet future responsive launch needs. These needs include 'within days' reconstitution, flexibility, adaptability, and assuredness. This report discusses how the aeromechanic technologies from a suborbital space tourist vehicle are being studied to further develop the aeromechanic technologies of the RBS concept.

Final rept. 1
Jun 2004-30
Nov 2005

170 null

Interim rept.
30 Apr 2009-30
Apr 2010

AFRL-RB-WP-
TM-2011-
14 3115

Research grant was designed to investigate radiation effects particularly as they pertain to single event effects arising from strikes from galactic cosmic rays, protons, or neutrons. Our investigations considered both individually packaged microcircuits and stacks of microcircuits included within the same package.

Technical
Report,27 May
2016,18 Feb
2019

AFRL-RV-PS-
20 TR-2019-0006

This is the final report for study of laser beam position control using an Acousto-Optic cell. The effort was performed under a Cooperative Research and Development Agreement (CRDA) between the State of New York University in Binghamton and the Air Force Research Laboratory. The study consisted of five parts: Theoretical analysis, experimental analysis of the system components, cell design considerations, comparison with the behavior of a system based on Piezo-Electric technology, and finally the design and performance of a model reference adaptive control system for using the cell in a jitter rejection mode.

Final technical
rept. May 2000-
May 2001

AFRL-IF-RS-TR-
119 2002-158

Interest in upgrading the technological competence of American business and industry has no formal historical beginning, though government intervention in the marketplace for just such a purpose has been a front and center item since at least 1963. As we have gleaned, financial mechanisms generally take the form of: Direct financial instruments, e.g., payments, contracts, Financial incentives, e.g., tax breaks, increased fees, Indirect financial assistance, e.g., guaranteed buys, import tariffs, Risk-sharing arrangements, e.g., cooperative ventures. Over the years, an accumulation of statutes, laws, customs and traditions have been built up that represent the collection of constraints on permissible financially-based cooperative mechanisms.

Keywords: Government procurement, Economics.

null

56 null

There are currently several competing efforts to define and measure sustainability. To date, no single concept of facility sustainability is widely accepted as being definitive because the term is often loosely used to define the particular environmental and social goals of any given sustainability proponent. This work looks beyond an abstract definition of facility sustainability and proposes a set of product properties that can be measured to represent the natural resources consumed to produce and operate facility assets. Development of this set of sustainability properties included a review of prominent tools and systems for assessing facility sustainability, including contributions by industry experts. The project also included analysis of how sustainability product properties may be integrated with Building Information Modeling (BIM) technology to improve US Army facilities. The report includes sustainability properties for 56 building elements, which have been incorporated into building property templates for use in BIM models.

Final rept.

ERDC/CERL-
267 CR-12-6

This report contains nearly seventy papers presented at the 1989 Acquisition Research Symposium held in Washington, D.C. in October, 1989. Keywords: Project management; Pricing and cost estimating; Cost issues; Financial management and budgeting; Systems acquisition; Competition; Research and development; Automation; Human resources; Warranties; Total quality management; Contracting; Acquisition process/methodology; Productivity; Commercial practices; Incentives.

Conference
proceedings

476 null

... federal government expense approximately, one-third of the annual research and development (R&D) budget for intramural work to meet mission requirements in over 700 government laboratories (including Federally Funded Research and Development Centers). The technology and expertise generated by this endeavor may have application beyond the immediate goals or intent of federally funded R&D. These applications can result from technology transfer, a process by which technology developed in one organization, in one area, or for one purpose is applied in another organization, in another area, or for another purpose. It is a way for the results of the federal R&D enterprise to be used to meet other national needs, including the economic growth that flows from new commercialization in the private sector; the government's requirements for products and processes to operate effectively and efficiently; and the demand for increased goods and services at the state and local level. Congress has established a system to facilitate the transfer of technology to the private sector and to state and local governments. Despite this, use of federal R&D results has remained restrained, although there has been a significant increase in private sector interest and activities over the past several years. Critics argue that working with the agencies and laboratories continues to be difficult and time-consuming. Proponents of the current effort assert that while the laboratories are open to interested parties, the industrial community is making little effort to use them. At the same time, State governments are increasingly involved in the process. At issue is whether incentives for technology transfer remain

Congressional
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16 CRS-RL33527

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Briefing charts

12 null

assessment was undertaken by the U.S. Department of Commerce Bureau of Industry and Security (BIS) in conjunction with Trotta Associates to review attitudes of private companies toward sharing new or promising technologies developed for commercial use with the Department of Defense (DoD). The primary goals of the study were: 1. To examine private industry experiences when communicating, interacting, and collaborating with DoD as well as non-defense federal agencies and the private sector, specifically related to research and development (R&D) programs; 2. Based on these experiences, to identify actions DoD agencies can take to encourage more R&D ties between private industry and government, in order to draw on new commercial technologies, thus improving defense technology, eliminating duplicate development programs, and saving materials and resources. BIS designed and conducted the industry survey instrument and collected and entered the responses into the database which was utilized for analysis by Trotta Associates. Surveys were mailed to companies in the following technology areas: Advanced Composites, Power Electronics, Batteries, and Wireless Broadband. The selection of these particular technologies was essentially based on three criteria: 1) areas important to DoD; 2) technologies driven by commercial markets; and 3) areas with different industry structures and market forces. Surveys were sent to 1,022 companies representing the four technologies. After the initial surveys were distributed, the Air Force requested that additional surveys be sent to a special category of defense-supplier companies

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Conference
proceedings

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(CRDA), a prototype environmental Heat Stress Monitor (HSM) originally developed for military use, was evaluated for potential applications as a heat stress management tool in the Australian mining industry. The hand-held electronic HSM combines a thermal strain prediction model with an integrated environmental sensor suite that measures air temperature, humidity, wind speed, and solar radiation, to provide tailored guidance on hourly drinking water needs, optimal work/rest cycle limits, and maximum safe work time. Overall system performance of three prototype HSMs was evaluated at a commercial oil production facility at Barrow Island, Australia, and a single prototype was evaluated for potential use in deep copper mine environments in Queensland, Australia. Results at Barrow Island indicated that although conceptually suitable for use in those outdoor environments, additional engineering work on the HSM wind speed sensor is needed to bring that sensor within required accuracy tolerances. The deep mine evaluations identified additional system requirements that would be essential for acceptance in that production environment. These included a back-lighted liquid crystal display, autonomous data logging capability, additional program space, and computer interface support for calibration services and data download. Based on the magnitude of these system enhancements and our need to satisfy stated military requirements for a smaller/lighter device, we have concluded that a major redesign of HSM is appropriate. We recommend that a new prototype HSM with strong dual-use applicability be developed and tested in

Final technical
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19 null

This technical note describes the results of a laboratory investigation conducted to evaluate the effectiveness of the herbicide diquat (6,7-dihydrodipyrido[1,2-a:2',1'-c]pyrazinediium), and the fungal pathogen *Mycoleptodiscus terrestris* (Gerd.) Ostazeski, applied alone and in combination with one another, as an integrated weed management strategy against the nuisance aquatic plant, hydrilla (*Hydrilla verticillata* (L.f.) Royle).

Technical note

ERDC/TN-
7 APCRP-CC-09

Our military forces are now facing new and often unanticipated challenges. Many of the tasks they are now being asked to perform are not those which typically occupy the military mandate. That they do this so well argues for their professionalism and their adaptability but it brings in to play sources of stress and demand for which traditional military training provides little experience or protection. The better the theories and principles that we generate and validate, the better we will be able to help these individuals in their new and evolving missions. It is evident that current and future military operations will be cognitive wars (Scales, 2006). The future battleground will largely be the minds of other individuals and those individuals like our own forces, will certainly be under stress. It is crucial that we know about these effects if we are to understand them fully and exploit them effectively. Our Multidisciplinary University Research Initiative (MURI) program on Operator Performance Under Stress (OPUS) has contributed substantially to the scientific and operational understanding of stress and performance. This MURI reached completion in December 2006. Here we summarize the outcome of this program and the numerous successes achieved by researchers funded under this MURI.

Final rept. 1
Jun 2001-31
Dec 2006

ARO-
42244.44-LS-
2949 MUR

potential strategy/alternative for long-term confined disposal. The development of a manufactured topsoil product will allow the U.S. Army Corps of Engineers to remove dredged material from confined disposal facilities (CDFs). This will increase the capacity of the CDFs and eliminate the shortage of CDFs for dredged material storage. In addition, manufactured topsoil from dredged material will potentially result in a product that can be reused in ways that are beneficial to the environment. Manufactured soil can be used for topsoil, bagged soil, landscaping, superfluid site cover, mining site cover, and landfill cover. The U.S. Army Engineer Research and Development Center, Vicksburg, MS, has established Cooperative Research and Development Agreements to develop technology for the manufacture of topsoil using sediment/dredged material (decontaminated and contaminated), cellulose waste materials, and nutrient-rich organic waste materials. The recycled soil manufacturing technology (RSMT) allowed the development of fertile topsoil that could be used in a beneficial, productive, and environmentally sound manner. In addition, the RSMT will provide an alternative to conventional disposal of the nation's waste/resource material from the Metcalf and Eddy process (decontaminated New York/New Jersey Harbor dredged material via solvent extraction) and untreated dredged material collected directly from the New York/New Jersey Harbor Newton Creek Site. Screening tests included proprietary blends with a range of dredged material content, a range of cellulose, and animal derived biosolids.

Final rept.

ERDC/EL-TR-
48 01-35

The purpose of this project is to develop and test a model that can be used to compare different types of simulation learning for military and civilian nursing trauma skills. The model will enable measurement and comparison of changes in knowledge, skills and attitudes of the learner, as well as overall cost effectiveness for each type of simulation (PC screen based vs. high fidelity simulation). The final model will be useful for evaluation of simulation learning for many other military and civilian nursing (and other types of healthcare providers) clinical skills. This is completion of the second year of the project; all three of the PC screen based and high fidelity simulation scenarios, lesson plans, detailed training tasks, evaluation model (including the pre and post assessments), and cost assessment model have been developed. The Phase II IRB has been approved, but the Clinical Investigations Regulatory Office (CIRO) must still approve the Cooperative Research and Development Agreement (CRADA) before testing of the model that was developed can begin on human subjects. There are no research findings to report at this time as we have not yet tested the model that was developed, however one poster presentation about the project was made.

Annual rept. 26
Jul 2011-25 Jul
2012

57 null

Recycling of waste materials within the environment must be a serious national goal in order for the United States to manage its resources wisely. The U.S. Army Engineer Research and Development Center, Vicksburg, MS, has established Cooperative Research and Development Agreements to develop technology for the manufacture of topsoil using contaminated and uncontaminated sediment/dredged material, cellulose waste materials, and biosolids. The recycled soil manufacturing technology (RSMT) allowed the development of fertile topsoil that could be used in a beneficial, productive, and environmentally sound manner. In addition, the RSMT will provide an alternative to conventional disposal of the nation's waste/resource materials (e.g., in landfills or confined disposal facilities). Bench-scale screening tests (seed germination and plant growth) were used to evaluate the feasibility of using dredged material from Mobile, AL, confined disposal facilities (CDFs) to develop a fertile manufactured topsoil. Bench-scale screening tests included proprietary blends with a range of dredged material content from three CDFs (North Blakeley, South Blakeley, and North into), a range of cellulose content, and animal derived biosolids.

Final rept.

ERDC/EL-TR-
58 02-12

The global war on terror emphasizes the need for a weapon system that can improve the self-defense capability of the U.S. Navy ship against small surface craft threats. This MSSE Capstone Project investigated the feasibility of integrating the Non-Line of Sight Launching System (NLOS-LS) onto U.S. Navy ships. In particular, the focus of the project was on the DDG-51 class ships. The NLOS-LS was originally designed to provide support to Army ground forces against over-the-horizon threats. The U.S. Navy recognizes the prospect of this weapon in an at-sea environment. The capability of the system has been proven through its developmental testing to date and illustrates the potential to the U.S. Navy for ship defense. System integration involves incorporating a stand-alone, land-based system onto a ship with an existing shipboard combat system. This report addresses the top-level integration issues, such as the physical installation and combat system integration, and provides recommendations related to some important concerns that include interface analysis, functional analysis, system behavior, and physical installation. This analysis concludes with a notional implementation for many issues and provides a risk analysis for those issues. It also identifies many integration areas requiring further research.

Technical rept.

NPS-SE-07-
108 001

Today, at the beginning of a new millennium, networking and information technologies are transforming our world, generating unprecedented American prosperity, and building revolutionary new infrastructures for commerce, communication, human development, national security, and scientific research. In this remarkable period of transformation, the United States stands preeminent as the world's information technology pioneer, research leader, and foremost developer and deployer of cutting-edge computing, high-speed telecommunications, and information technology (IT) systems.

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Joint Vision 2010, the Chairman's of the Joint Chiefs of Staff vision of future joint warfighting concepts, will guide the services toward a more effective future joint force. America's Army is ready to move forward as the land component member of that joint warfighting force. The Army brings the ability to conduct prompt operations on land throughout the spectrum of crisis. The Army is modernizing its forces according to the concepts of Army Vision 2010 and the guidelines of the Army modernization objectives. Each modernization objective and each Army vision concept has a counterpart in the future operational concepts of Joint Vision 2010, ensuring that the Army remains synchronized with the Chairman's vision. This handbook outlines the major programs that the Army is pursuing to realize that vision. These systems will provide the tools for America's trained and ready soldiers to be the most powerful force in the world.

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270 null

This publication contains abstracts of unrestricted or unclassified theses submitted for the degrees doctor of philosophy, master of business administration, master of science, and master of arts for the September 2005 graduation. Classified and restricted distribution abstracts are listed on the NPS SIPRnet. This compilation of abstracts of theses is published in order that those interested in the fields represented may have an opportunity to become acquainted with the nature and substance of the student research that has been undertaken. Copies of theses are available for those wishing more detailed information. The procedure for obtaining copies is outlined on the last page of this volume.

Compilation
rept.

122 null

This study involved researching, investigating, and establishing the foundations required for the creation and operation of a Technology Transfer Innovation Center (Incubator) at ARDEC, Picatinny Arsenal, NJ. The incubator concept was studied as a tool to improve the quantity and quality of technology transfer activity at ARDEC. The Technology Transfer Innovation Center was modeled after business incubators used by state and local governments to promote economic development. However, because of ARDEC's requirement that users sign a CRADA with ARDEC and various other limitations, ARDEC's incubator is not a full-fledged business incubator. Instead, it innovatively adapts the incubator concept to expand on CRADA partnerships. Investigating the operational and legal issues raised by the creation and operation of such a Center, drafting a proposed business plan, and drafting the proposed agreements between the CRADA partner responsible for the operation of the Center and ARDEC, between the Center and its potential clients, and between ARDEC and Center clients consumed much of this effort.

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Partial contents: Chapter I: Army Science and Technology Strategy; Chapter II: Training and Doctrine Command's Role in Science and Technology; Chapter III: Advanced Technology Development (Technology Transition); Chapter IV: Applied Research (Technology Development); Chapter V: Basic Research (Discovery and Understanding); and Chapter VI: Technology Transfer.

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416 null

The ability to transition technology developments to operational systems is of great importance to the Department of the Navy (DoN). One way to achieve increased transitions is to operate more efficiently more like a business." Over the years significant programmatic and policy changes have been introduced in the DoN. One of these changes was the initiation of a new science and technology (S&T) transition process for delivering new capabilities in a more focused manner -- the Future Naval Capability (FNC) process. This thesis examines the FNC technology transition process from a business process perspective. A number of common business parameters are researched and used for comparison to the FNC Process. The goals and objectives of the FNC Process are documented and feedback is obtained from the stakeholder community. Although the FNC Process is new

Master's thesis

380 null

This report contains information of research projects in the four interdisciplinary groups, Command, Control & Communications Academic Group, Electronic Warfare Academic Group, Space Systems Academic Group and Undersea Warfare Academic Group, which were carried out under funding of the Naval Postgraduate School Research Program.

Summary rept.
1 Jan-31 Dec
95,

NPS-09-96-
40 014

To comply with the energy efficiency and build green initiatives contained in the Energy Policy Act of 2005 and Energy Independence Security Act of 2007, the Anti-Terrorism and Force Protection (ATFP) requirements for building construction, and the build-it faster and more economical" requirements of the Military Construction Transformation initiative

Final rept. 11
Aug 2008-20
Nov 2010

AFRL-RX-TY-
160 TR-2011-0021

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Briefing charts

TARDEC-
30 23294

The Institute for Manufacturing and Sustainment Technologies (iMAST) is a Department of the Navy Manufacturing Technology (ManTech) Center of Excellence located at The Pennsylvania State University's Applied Research Laboratory in State College, Pennsylvania. Formally established in 1995, the institute is comprised of six technical thrust areas: Mechanical Drive Transmission Technologies * Materials Processing Technologies * Laser Processing Technologies * Advanced Composites Technologies * Manufacturing Systems * Repair Technology. iMAST provides a focal point for the development and transfer of new manufacturing processes and equipment in a cooperative environment with industry, academia, other Navy acquisition, and in-service use. The Institute leverages the resources of The Pennsylvania State University to develop technology and business practices that enhance the industrial sector's ability to address advanced weapon systems issues and challenges for the Department of Defense. Sponsored under Navy contract N00039-97-D-0042, iMAST provides manufacturing technology support to the systems command of the U.S. Navy and Marine Corps.

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47 null

The Dental Liquid Ration (DLR) is designed for military personnel unable to eat solid food due to problems such as maxillofacial injuries, wired jaws, oral surgery, dental disease, or swallowing difficulties. The ration will be by the Army, Air Force and Navy at field and fixed hospital sites, as well as Department of Veteran's Affairs (VA) hospitals. The DLR consists of dehydrated powders that, when reconstituted with water, are sippable through a straw and taste like normal components of a meal. Thirty products supporting a three-day menu cycle consist of products such as chicken barbecue, lyonnaise potatoes, buttered corn, and chocolate mocha cake. There are also six flavors of a between-meal dairyshake. The DLR comes packaged in either individual serving pouches or in a Ten-Patient Meal Module. Two producibility tests have been successfully completed, as well as focus group tenting, Army Readiness Training Evaluation Program testing, small scale hospital testing, and five day user testing at tri-service and VA hospitals. A three year storage study at 80 deg F has also been completed. All components received acceptable ratings for sensory attributes. The DLR was transitioned to the Defense Personnel Support Center in October 1992 and will be available for procurement by the military services in the fall of 1993.

Final rept. Aug
1992-Aug 1993

NATICK/TR-
65 94/002

for the introduction of digital information technologies as the Army transforms itself via the Force XXI process into a 21st Century force. The ADMP addresses strategies, responsibilities, requirements, architectures, acquisition, experimentation methodology, management processes, and coordination of digital battlespace issues in the Army, with the other Services, and within future coalition forces. This annual update of the ADMP establishes the overall strategy for achieving battlespace digitization and defines the migration plans of individual battlespace systems to the Defense Information Infrastructure Common Operating Environment (DII COE). The Plan also describes how the Army is working toward achieving interoperability with joint and combined forces. The objective of the ADMP is to put forth a specific and measurable strategy for digitizing the battlespace. Individual objectives include: (1) Identifying the primary partners in the process and delineating their responsibilities; (2) Furnishing the framework for Army, joint, and multinational interoperability; (3) Defining the Army's implementation strategy; (4) Describing the digitization architectures; (5) Detailing a streamlined acquisition strategy consistent with sound business practices and conforming to policies outlined in Department of Defense (DoD) Directive 5000.1; (6) Laying out the process for evaluating and assessing system migrations to the DII COE; (7) Highlighting the key support strategies and digitization issues; (8) Depicting how the Army Digitization Office (ADO) will manage the integration of digital information and decision support systems within the joint

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Program Manager is intended to be a vehicle for the transmission of information on policies, trends, events and current thinking affecting program management and defense systems acquisition.

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Since 1985 the National Academy of Sciences and the National Academy of Engineering have engaged in a series of high-level discussions on advanced technology and the international environment with a counterpart group of Japanese scientists, engineers, and industrialists. One outcome of these discussions was a deepened understanding of the importance of promoting a more balanced two-way flow of people and information between the research and development systems in the two countries. Another result was a broader recognition of the need to address the science and technology policy issues increasingly central to a changing U.S.-Japan relationship. In 1987 the National Research Council, the operating arm of both the National Academy of Sciences and the National Academy of Engineering, authorized first-year funding for the Office of Japan Affairs (OJA). This program element of the Office of International Affairs was formally established in the spring of 1988. The primary objectives of OJA are to provide a resource to the Academy complex and the broader U.S. science and engineering communities for information on Japanese science and technology, to promote better working relationships between the technical communities in the two countries by developing a process of deepened dialogue on issues of mutual concern, and to address policy issues surrounding a changing U.S.-Japan science and technology relationship.

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148 null

In the fight against those who would destroy our freedom, the United States Armed Forces, the Federal law enforcement community, and national first responders require new and improved capabilities. Since 2001, numerous departments and agencies have instituted programs to fill these gaps, but the Combating Terrorism Technology Support Office (CTTSO) has maintained its position at the leading edge of innovation. As a program office under the Assistant Secretary of Defense (ASD) for Special Operations and Low-Intensity Conflict (SO/LIC), CTTSO is uniquely positioned to contribute to the success of the Global War on Terrorism. With overall supervision of the SO/LIC activities of DoD, including oversight of policy and resources, the ASD acts as the principal civilian advisor to the Secretary of Defense on SO/LIC matters. This allows CTTSO to take operational requirements from warfighters, incorporate policy objectives that flow down from the Department, and marshal technical expertise resident in its program managers, subject matter experts, and developers to provide capabilities that are fieldable and sustainable over the Long War." This fortuitous balance of political direction

Annual rept.

127 null

In 2006, the Federal Government spent \$13 billion -- 14 percent of its research and development (R&D) expenditures -- to enable 38 federally funded R&D centers (FFRDCs) to meet special research needs. FFRDCs -- including laboratories, studies and analyses centers, and systems engineering centers -- conduct research in military space programs, nanotechnology, microelectronics, nuclear warfare, and biodefense countermeasures, among other areas. GAO was asked to identify the following: (1) how federal agencies contract with organizations operating FFRDCs, and (2) agency oversight processes used to ensure that FFRDCs are well-managed. GAO's work is based on a review of documents and interviews with officials from eight FFRDCs sponsored by the departments of Defense (DoD), Energy (DOE), Health and Human Services (HHS), and Homeland Security (DHS). To improve the effectiveness of FFRDCs, GAO recommends the following: (1) that DHS and HHS revise their personal conflict-of-interest policies to specifically address FFRDC contractor employees in a position to influence research findings or agency decision making, and (2) that agencies create an ongoing forum to share best practices for FFRDC oversight. DHS, DoD, and DOE concurred with GAO's recommendations, while HHS concurred with the need to revise its policies and is considering a best practices forum for FFRDCs.

Congressional
rept.

53 GAO-09-15

Overall the project has made good progress despite multiple administrative hurdles. Delays occurred due to a temporary shortage of Veterinarians at Georgia Regents University. The research was to be completed at Fort Gordon which required going through a third party not for profit foundation. These delays have necessitated a no cost extension on the project. We have accomplished the administrative requirements and are now ready to begin the animal research protocols in the next 60 days. The wounding device (Blade Lever Apparatus) has been developed. The protocol has IAUCC and ACURO approval. We have established a CRADA and have drafted a subcontract with Geneva Foundation to allow us to complete the research at Eisenhower Army Medical Center.

Annual rept. 20
September
2012-19
September
2013

62 null

The Tri-Service Environmental Technology Workshop was held 1012 June 1997 at the Adam's Mark Hotel. St. Louis, Missouri. This workshop provides a training forum for technical exchange on environmental technology strategies, initiatives, and demonstrations. This document includes 37 papers presented at the workshop, as well as 6 contributed papers.

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464 null

The Industry Studies Program of the Industrial College of the Armed Forces analyzes selected industries to assess their ability to provide the weapons, products, and services that are required both now and in the future. Sixteen committees of students were formed to study industries that play major roles in defense production. Each committee investigated a vital industry and analyzed its composition, structure, operations, management techniques, economic health, business objectives and strategies, and its current trends and problems. From this survey, an assessment was made of the ability of the industry as a whole to meet the requirements of a national mobilization and its state of readiness to surge production for the armed forces. During the course of its study, each committee interviewed leaders of its industry, held seminars with supporters and critics, conducted individual research, traveled to domestic and foreign industry plants and facilities, and drew heavily upon the experience of the members. The written report of each committee follows this introduction. Taken together, these assessments give a topical look at the industrial mobilization base of the United States as it exists, a view of the world-wide industrial base and provide a summary view of the major problems faced by the industries we consider to be crucial to the defense of the nation

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443 null

The Annual Progress Report includes a description of the research conducted by the U.S. Army Aeromedical Research Laboratory (USAARL) during fiscal year 2012 (FY12) and an overview of FY12 activities. It also summarizes the FY12 personnel and funding strength of the USAARL.

Final rept. 1
Oct 2011-30
Sep 2012

31 null

This report provides the details of funds appropriated in Fiscal Years 1995 and 1996. The individual research projects were reviewed and selected by the Strategic Environmental Research and Development Program Council in response to specific defense mission-relevant environmental requirements for research and development. The Strategic Environmental Research And Development Program Five-Year (1996-2000) Strategic Investment Plan is based on an FY 1996 appropriation of \$58.155 million. It is submitted on behalf of the Strategic Environmental Research and Development Program Council.

Annual rept

579 null

As I have watched programs come through for Milestone Decisions and other reviews, I have gained the impression that our processes for risk management may have focused too much on the process and not enough on the substance of identifying and controlling risk. I think I may be seeing risk identification categorization in the risk matrix showing likelihood and consequence and with risk burn-down schedules tied to program events. From my perspective, this by itself isn't risk management; it is risk watching. We need to do what we can to manage and control risk, not just observe it.

Journal Article

56 null

The SERDP efforts in FY91/92 emphasize assessing the state of the global atmospheric and ocean environments; the effectiveness of clean-up technologies for hazardous waste materials; the approach to minimize, treat, and dispose of hazardous waste; and methods for assessing hazards in existing and restored areas.

Interim rept.,

381 null

This report contains detailed technical information on all currently funded Armed Forces Institute of Regenerative Medicine research projects. The report is also available in a highlights version that provides summary information.

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563 null

The prospect of using sensor technology for the detection and location of surface and subsurface Ordnance and Explosive Waste (OEW) is assessed to determine its suitability for operations on formerly used defense sites (FUDS). The U.S. Army Corps of Engineers, Huntsville Division, has identified over 900 potential OEW sites, of which as many as 300 may be classified as an imminent hazard. Cleanup of the OEW sites is estimated to cost several billion dollars. However, this cost will increase since the Army is still in the process of identifying contaminated OEW sites. In addition, Department of Defense (DoD) ordnance test ranges, such as the Yuma Proving Ground, contain many types of unexploded ordnance, making the cleanup task more complex. Today, several types of electromagnetic sensors have successfully been used for site characterization. In this report, we have assessed over 30 state-of-the-art and emerging technologies for their applicability to site characterization. This assessment will enable the U.S. Army Corps of Engineers and others to better address the ever-increasing site cleanup problem. Information required to select the appropriate sensors is provided within this document. Over one-hundred sensor technology products and services are surveyed, providing an in-depth summary of technology that can be brought to bear on the OEW problem. In the future, sensor suites and data processing utilizing data fusion should be utilized in less labor-intensive approaches to enhance productivity and increase quality of OEW detection and location.

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313 JPL-D-11367

To conduct a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems, and ocean, atmospheric, and space sciences and related technologies. The Naval Research Laboratory provides: (1) primary in-house research for the physical, engineering, space, and environmental sciences; (2) broadly based exploratory and advanced development programs in response to identified and anticipated Navy needs; (3) broad multidisciplinary support to the Naval Warfare Centers, and (4) space and space systems technology development and support.

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267 null

The mission is to conduct a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems, and ocean, atmospheric, and space sciences and related technologies.

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The cooperative research and development agreement (CRADA) between the U.S. Army Tank Automotive Research Development and Engineering Center(TARDEC) Blast Mitigation Program and the Michigan Chapter of the National Defense Industrial Association (NDIA) was created based on the desire of both parties to collaborate to develop a practical and useable set of Blast Mitigation Program (BMP) design guidelines and standards. The effort focused on the following topics: occupant-centric design philosophy and terms, test procedures, Military performance specifications, and Military standard. The objective of this report is to document the BMP NDIA-MI CRADA activities and accomplishments from October 2014 through July 2017. During the three year period, the working group held 11 information exchange meetings where 20 briefs were presented and discussed. The NDIA-MI provided industry feedback on meeting topics. This work enabled the publications of 6 Military performance specification and 1 Military Standard, MIL-STD-3058, Occupant-Centric Protection for Military Ground Vehicles.

	Technical Report,01 Jul 2014,31 Jul 2017	28 29521
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Energy efficient building design requires in-depth thermal analysis. Existing Computer Aided Design and Drafting (CADD) software packages already enhance the productivity and quality of design. Thermal analysis tools use much the same information as that contained in CADD drawings to determine the most energy efficient design configuration during the design process. To use these analysis tools, data already contained in the CADD system must be re-keyed into the analysis packages. This project created an interface to automate the migration of data from CADD to the Building Loads Analysis System and Thermodynamics (BLAST) analysis program, which is an Army-standard system for evaluating building energy performance. Two interfaces were developed, one batch-oriented (IN2BLAS7) and one interactive (the Drawing Navigator). Lessons learned from the development of IN2BLAST were carried into the development of the Drawing Navigator, and the Drawing Navigator was field tested. Feedback indicated that useful automation of the data migration is possible, and that proper application of such automation can increase productivity.

Final rept.

USACERL-TR-
102 FE-93/04

The Army considers Technology Transfer to be a very broadly defined term consistent with the Stevenson-Wydler Technology Innovation Act of 1980. A key element of the Army's Technology Transfer program is, and always been, based on developing cooperative R&D efforts. These collaborative efforts include Cooperative Research and Development Agreements. The report is structured into two sections as follows: Section I includes, for each of the twelve Army activities, summary sheets which detail the particular activity's areas of expertise and their unique facilities. The summary sheets are followed by data sheets which describe the activity's efforts in technology transfer. These sheets do not completely describe the activity's efforts but provide examples of certain types of efforts that they are performing and how they relate to technology transfer. Finally, there are each activity's plans for enhancing technology transfer for FY 1994. Section II describes a few success stories of Army technologies commercialized by the private sector.

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129 null

This thesis explores the various practices and programs available throughout DoD to leverage resources and technology with industry. The collaborative methods of dual use technology and technology transfer and the contractual instruments that enable these methods and programs are discussed and evaluated where sufficient evidence permits. The most important programs are the Dual Use Science and Technology (DUS&T), Commercial Operations and Support Savings Initiatives (COSSI), Small Business Innovation Research (SBIR), Cooperative Research and Development Agreement (CRADA), and Technology Transfer. Innovation and collaboration between public and private industries are explored throughout the thesis with a focus on research and development. There is a lack of data needed to assess the effectiveness of these practices and programs.

Master's thesis 105 null

The Annual Report, Calendar Year 1991, summarizes development projects monitored by the U.S. Army Medical Materiel Development Activity in projects authorized by The Surgeon General, the Army, and the Commander, U.S. Army Medical and Development Command, and supported by RDTE funds from the U.S. Army Medical Research and Development Command.

Annual rept. 1
Jan-31 Dec
1991 72 null

Clinical and non-clinical professional information designed to keep U.S. Army Department personnel informed of health care, research, and combat and doctrine development information.

Rept. for Jan-
Mar 2010 81 null

The rising number of pregnant military women created a need for research regarding the occupational limits imposed by changes in pregnant women's body size and shape. Previously, no significant data collections have provided 3-D anthropometric information on shape changes during pregnancy. To address these changes and their potential effects, this pilot study was undertaken to collect traditional anthropometric and whole body 3-D data on a sample population of pregnant military women. Data were collected on 25 pregnant women (15 completed all data collection sessions) throughout the pregnancy term. Six (6) data collection sessions were scheduled per subject over a period of 40 weeks in order to capture as much size and shape change information as possible. Traditional anthropometric data provide the size information with summary statistics in table format. A trend analysis was performed on each traditional measurement using Repeated Measures Generalized linear Model (GLM) analysis to determine which dimensions changed significantly during the course of pregnancy. The 3-D scan data contain shape, contour, curvature, surface area, and volume information; and for the first time, allows tracking of body shape changes. This tracking was done visually using Radial Difference Mapping; and statistically, through Euclidean Distance Matrix Analysis (EDMA).

Final rept. Sep
96-Oct 98

AFRL-HE-WP-
233 TR-1999-0019

This paper examines how hydrocarbons affect the non-thermal plasma treatment of NO_x in lean-burn engine exhausts. We have found that the NO is mainly oxidized to NO₂ by NO + HO₂ --> NO₂ + OH, NO + RO₂ --> NO₂ + RO where R is a hydrocarbon radical. The O and OH radicals produced by electron-impact dissociation are consumed mainly by reactions with the hydrocarbons rather than with NO. The hydrocarbons lower the energy cost for the oxidation of NO by converting O and OH to HO₂; the OH radical is then reproduced when NO is oxidized by HO₂. This cyclic process leads to a very efficient utilization of the plasma-produced radicals for the selective partial oxidation of NO to NO₂. This result suggests that gas-phase reactions in the plasma alone cannot lead to the chemical reduction of NO_x. Any reduction of NO_x to N₂ can only be accomplished through heterogeneous reactions of NO₂ with surfaces or particulates

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Our mission is to effectively and efficiently develop, acquire, field, and sustain materiel by leveraging domestic and international, organic, and commercial technologies and capabilities to meet the Army's current and future mission requirements. Our vision is clear: To equip and sustain the world's most capable, powerful, and respected Army. The Army's ability to achieve this vision rests on the Army Acquisition Workforce, fully employed and deployed worldwide in support of our Soldiers. The men and women who make up this workforce serve under the direction of 11 Program Executive Offices, two Joint Program Executive Offices, seven Deputy Assistant Secretaries, one Deputy for Acquisition and Systems Management, three Direct Reporting Units, and several major subordinate commands of the U.S. Army Materiel Common Soldiers Warfighters" are the heart of everything we do. They are over a million strong--men and women

null

54 null

Armor Transparent Purchase Description (ATPD) 2352 revision P was issued in July 2008 to create a new standard for transparent armor aimed at improving battlefield performance, maintenance costs, equipment survivability, and general durability based on data collected from performance of transparent armor in the battlefield. A transparent armor specifically focused on satisfying all of the ATPD 2352 requirements was invented, developed, and commercialized. A Cooperative Research and Development Agreement with TARDEC resulted in evaluating armor to all the metrics of ATPD 2352. This paper reports on this initial and subsequent work and a) explains the requirements of ATPD 2352 and the challenges they present from a materials properties, armor performance, lifetime testing, transparency, durability, and environmental perspective; b) presents data, analysis, and preliminary modeling showing the materials and performance properties of a variety of materials to highlight how and why a discontinuously nano-reinforced glass system was able to pass all the requirements; c) describes the tests and presents test data on the key tests performed for ATPD 2352, including ballistic, environmental, and optical, many never successfully mastered in transparent armor before.

Technical
document

TARDEC-
14 21439

Is the United States in danger of losing its competitive edge in science and technology S&T"? In response to this concern Conference proceedings 161 null

This report documents a laboratory research effort to determine the potential benefits of asphalt rubber binders when used in porous friction courses. The results of this research study are also used to recommend the asphalt cement grades and mix design procedure required to achieve optimum field performance. This study was conducted as part of a joint research project between the US Army Corps of Engineers and the Asphalt Rubber Producers Group (ARPG) under the Corps' Construction Productivity Advancement Research (CPAR) program. Other CPAR research studies relating to asphalt rubber pavement systems were conducted under ARPG contracts and are documented separately from this report. The laboratory tests conducted at the US Army Engineer Waterways Experiment Station included physical tests on various grades of asphalt rubber and asphalt cement binders. Accelerated aging tests were conducted on the binders to determine short- and long-term aging tendencies. A mix design analysis and several physical tests were conducted on open-graded mixtures containing the asphalt rubber binders. The results of this study indicated that porous friction courses made with asphalt rubber binders would be more durable, longer lasting, and better water draining pavement layers when compared with unmodified asphalt cement -porous friction courses. Asphalt cement grades between the AC-5 and AC-20 Asphalt modifiers, Open-graded pavement, Asphalt rubber, Pavement construction, Hydroplaning, Pavement design, Porous friction course, Recycling, Skid resistance.

Interim rept.

WES/TR/CPA
107 R-GL-92-1

This is a publication of opportunities for partnership between the Naval Aviation Systems Team and Industry. null 9 null

provides a technical summary of the budget request for the Networking and Information Technology Research and Development (NITRD) Program, as required by the High-Performance Computing Act of 1991 (P.L. 102-194), the Next Generation Internet Research Act of 1998 (P.L. 105-305), and the America COMPETES Act of 2007 (P.L. 110-69). The NITRD Program, now in its 19th year, provides a framework and mechanisms for coordination among Federal agencies that support R&D in advanced networking and information technology. The NITRD Supplement describes the FY 2011 networking and information technology R&D plans and current technical and coordination activities of the 13 Federal member agencies currently in the NITRD budget crosscut as well as other agencies that are not formal members of the Program but participate in NITRD activities. The Program expects to welcome the Department of Homeland Security (DHS), which has been a participant, as a NITRD member agency this year. In the NITRD Program, the term "agency" may refer to a department, a major departmental subdivision, or a research office or laboratory. NITRD activities and plans are coordinated in eight Program Component Areas (PCAs): high-end computing infrastructure and applications (HEC I&A); high-end computing research and development (HEC R&D); cyber security and information assurance (CSIA); human computer interaction and information management (HCI&IM); large-scale networking (LSN); software design and productivity (SDP); high-confidence software and systems (HCSS); and social, economic, and workforce

null

38 null

The Defense Science Board FFRDC & UARC Independent Advisory Task Force was established in November 1995 to provide advice on DoD's management of its 11 Federally Funded Research and Development Centers (FFRDC) and 6 University Affiliated Research Centers (UARC). The Task Force is charged with reviewing and advising the Department on: the objectives and guidelines for appropriate scope of work, organizational structure, and size of the FFRDCs and UARCs; compliance with the annual DoD Management Plan; the sponsor's management processes; the level and appropriateness of non-DoD work; and the thoroughness of the FFRDC five-year review process. The Task Force will also periodically review selected FFRDC and UARC programs and conduct an independent semi-annual review of progress against recommendations. This report is limited to FFRDCs. The UARC review will be conducted in the fall of 1996 and the report published in the first half of 1997. This is the initial report of the Task Force. The findings and recommendations in this report are the unanimous conclusions of the Members of the Task Force.

Final rept., 209 null

The objective of this MBA project is to examine the extent to which the Department of Defense has positioned itself to maximize the use of the global defense market. This report explores the recent history of commercialization and globalization initiatives and legislation; details several examples of foreign technology that have significantly improved the U.S. military's warfighting capability; and analyzes the significant benefits and challenges facing the DoD in moving towards a truly global defense industry. The report concludes with a summary of the findings and further establishes a path for the cultural change that is necessary for the DoD to operate in a global defense industry.

MBA professional rept. 77 null

This report covers in detail the research work of the Solid State Division at Lincoln Laboratory for the period 1 August-30 October 2000. The topics covered are Quantum Electronics, Electro-optical Materials and Devices, Submicrometer Technology, Biosensor and Molecular Technologies, Advanced Imaging Technology, Analog Device Technology, and Advanced Silicon Technology. Funding is provided by several DoD organizations including the Air Force, Army, BMDO, DARPA, Navy, NSA, and OSD-and also by the DOE, NASA, and NIST.

Quarterly technical rept. 1 Aug-31 Oct 2000 2000-4,ESC*-77 TR-200-067

To secure a nation, a border, or physical entity, a robust communications system is paramount. Fused, real-time voice, video, and sensor data are enablers in this effort. Building a system that can deliver all of these, with actionable merit, is perhaps the greatest challenge we face in this arena today. The Cooperative Operations & Applied Science and Technology Studies (COASTS) international field experimentation program at the Naval Postgraduate School (NPS) aims to meet this challenge head-on, building a system of systems with technologies available now. A large part of the enabling network for COASTS is an IEEE 802.11 wireless mesh, deployed on the ground, on the sea, and in the air. This thesis tests and evaluates various antenna configurations, using the latest equipment available, building on lessons learned from the COASTS 2005 field experiment. Data is then used to determine the optimum design which allows the greatest range and throughput for the COASTS 2006 topology. Input from NPS advisors, COASTS commercial partners, including Mesh Dynamics, Mercury Data Systems, and the Air Force Protection Battlelab, along with extensive testing of available antennas over multiple field experiments, culminates in the successful field testing of the 802.11 network topology. The final configuration provides an impressive and highly reliable aerial and ground based access point range and throughput for the network.

Technical and Scientific Support Services This report covers research efforts conducted in Government laboratories through a series of Task Order assignments. The research encompassed environmental quality, occupational health, and research methods development. Much of the effort was related to toxicological research using non- mammalian species, specifically medaka, bluegill, and Xenopus frogs. Assays were developed and tested to determine the potential hazards to human and ecological health that may result from complex mixtures of chemical contaminants in water, soil, sediment, and air. Most of the research took place on-site at the U.S. Army Biomedical Research and Development Laboratory at Fort Detrick, Maryland. This organization was renamed the U.S. Army Center for Environmental Health Research (USACEHR). Other sites where research took place included Edgewood Research, Development, and Engineering Center, National Institute of Environmental Health Sciences, Rocky Mountain Arsenal, Colorado State University, and Wright Patterson Air Force Base. During the period of this research the concept of Deployment Toxicology was developed and the Master Plan was completed. This effort uses the concepts developed in the laboratory research to help prepare soldiers for exposure to complex environmental contamination while deployed or to detect the potential hazards from exposure to mixtures of contaminants.

Final rept. 15
Jan 93-31 Aug
98

407 GC-2533

The U.S. Army Corps of Engineers (USACE) Topographic Engineer Center (TEC) and Caterpillar Inc. are cooperating in the joint research and development of a system to position, track, and maneuver construction and other equipment during their normal construction activities. The positioning system will be based on software developed by TEC that uses the Global Positioning System (GPS) . This software will be integrated with Caterpillar developed software tools that serve to automate the construction activities and increase productivity and safety.

Scientific paper

7 TEC-R-228

The Department of Energy (DOE) oversees a multibillion-dollar investment in civilian research and development programs at 15 laboratory facilities nationwide. The unclassified information systems that support these programs were designed to facilitate a broad exchange of data and information among scientists around the world. Although unclassified, some of the information in these systems is nevertheless sensitive and requires protection from inappropriate access. As a result of the growth of the Internet in recent years, these unclassified systems at the DOE laboratories have become increasingly vulnerable to security threats. If exploited, such vulnerabilities could lead to loss or corruption of valuable scientific data, damage to information systems, or disruption of the laboratories' science program operations. According to laboratory officials, such disruptions could cost millions of dollars per day in lost scientific research. Given the importance of these information systems, the General Accounting Office (GAO) was asked to review the security of information systems that support DOE's unclassified civilian research programs. GAO's specific objectives were to determine (1) whether DOE's unclassified systems for civilian research are vulnerable to unauthorized access, (2) whether DOE is effectively managing information systems security, and (3) what DOE is doing to address the risk of unauthorized access to unclassified systems for civilian research.

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GAO/AIMD-44 00-140

This report contains 15 summaries of research projects in the Department of Mathematics which were carried out under funding of the Naval Postgraduate School Research Program. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports.

Summary rept.

NPS-09-96-26 006

This annual 1999 Naval Research Laboratory Review introduces the reader to the Naval Research Laboratory and focuses on research highlights from fiscal year 1998. In addition it presents special honors presented to NRL employees. The mission of NRL is to conduct broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems atmospheric and space sciences and related technologies.

null

250 null

This study is comprised of three trials, referred to as the Assessment of Chiropractic Treatment (ACT). The most significant work during the last reporting period has occurred in the first study, referred to as ACT 1 which is a randomized controlled trial of chiropractic for low back pain with a nested smoking cessation component in active duty military personnel. During this reporting period ACT 1 met 46% of its recruiting target. For the second study, referred to as ACT 2 which is a randomized controlled trial of response and reaction times in Special Operations Forces, the pilot feasibility testing in civilian population has been completed and a study redesign has passed through IRB approvals after redesign to include a waitlist control group. For the third study, referred to as ACT 3 which is a randomized controlled trial of strength, balance, and re-injury comparing standard care with standard care plus chiropractic treatment, final IRB approvals have been received and this study is going into pilot testing phase after a redesign which removed the sham treatment.

Annual rept. 15
 Feb 2013-14
 Feb 2014

27 null

The Armstrong Laboratory's Acquisition Logistics Research and Development Activity at Wright Patterson Air Force Base, Ohio, is actively investigating both human centered technology and group support technology. In order to ensure the development of these technologies with a focus on customer needs and the use of relevant technological developments, the laboratory has been involved in a strategic planning process for future R and D activities. This paper reports the results of research performed by an Institute for Defense Analyses study team whose immediate goal was to help refine and sharpen the focus of the Acquisition Logistics R and D Activity's strategy for human centered technology and group support technology by providing information about, and analysis of, potential customers, relevant technological developments, and probable alternative strategies.

IDA-P-
 2630,IDA/HQ-
 92-41177,SBI-
 219 AD-E501 558

NRL's mission is to conduct a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems, and ocean, atmospheric, and space sciences and related technologies. The Naval Research Laboratory provides primary in-house research for the physical, engineering, space, and environmental sciences; broadly based applied research and advanced technology development programs in response to identified and anticipated Navy and Marine Corps needs; broad multidisciplinary support to the Naval Warfare Centers; and space and space systems technology, development, and support.

null

286 null

What led to the development of this study?2AF/CC desire to reduce alcohol related incidents (ARIs) in Technical TrainingARIs result in administrative action and possible discharge80+% of sexual assaults are alcohol related in Technical TrainingHow does project leverage existing efforts for the military?UVA staff designed and delivers a universal Brief Alcohol Intervention (Jan 2010)Administered in Week one of Technical Training40 minutes intervention/50 Airmen per groupAF conducts random breathalyzers for underage AirmenTrack ARIs throughout Technical TrainingCurrent study adds another intervention designed to decrease ARIsAdministered at the end of Technical Training

Conference Paper

16

18095

(endothall) and two systemic auxin-type herbicides (2,4-D and triclopyr) to exploit the strengths of each herbicide class, with an objective of providing both rapid and complete control of the invasive, submersed plant, Eurasian watermilfoil. Eurasian watermilfoil (*Myriophyllum spicatum* L.) is a widespread submersed aquatic plant that causes nuisance problems across the continental United States. Eurasian watermilfoil is an herbaceous perennial submersed aquatic plant that typically grows in water depths of 1 to 3 m (Aiken et al. 1979). Vegetative propagation is either by direct stem fragments or by autofragmentation through the development of an abscission layer in stem segments (Madsen et al. 1988). The production of these stem fragments, either by external forces or by autofragmentation, allows for widespread plant dispersal. Eurasian watermilfoil can form a dense surface canopy, which is the cause of both ecological harm and nuisance impacts. Eurasian watermilfoil is often responsible for reductions in oxygen exchange, depletions in dissolved oxygen, increases in water temperatures, and internal nutrient loading (Madsen 1998). Eurasian watermilfoil has been directly associated with declines in native plant species richness and diversity (Madsen et al. 1991a, 1991b); and indirectly with reductions in habitat complexity resulting in declines in macroinvertebrate abundance (Krull 1970, Keast 1984), reductions in fish growth (Lillie and Budd 1992), and an overall reduction in habitat value for invertebrates and fish (Dibble and Harrel 1997). Eurasian watermilfoil also poses nuisance problems to humans in the form null

The Institute for Manufacturing and Sustainment Technologies (iMAST) is a Department of the Navy Manufacturing Technology (ManTech) Center of Excellence located at The Pennsylvania State University's Applied Research Laboratory in State College, Pennsylvania. Formally established in 1995, the institute is comprised of six technical thrust areas: Mechanical Drive Transmission Technologies * Materials Processing Technologies * Laser Processing Technologies * Advanced Composites Technologies * Manufacturing Systems * Repair Technology. iMAST provides a focal point for the development and transfer of new manufacturing processes and equipment in a cooperative environment with industry, academia, other Navy acquisition, and in-service use. The Institute leverages the resources of The Pennsylvania State University to develop technology and business practices that enhance the industrial sector's ability to address advanced weapon systems issues and challenges for the Department of Defense. Sponsored under Navy contract N00039-97-D-0042, iMAST provides manufacturing technology support to the systems command of the U.S. Navy and Marine Corps.

null 49 null

On 10 February 1998, there was an explosive mishap at the Indian Head Division of the Naval Surface Warfare Center. There were no fatalities or injuries, but significant property damage did occur. The incident occurred in a 150-gallon horizontal mixer during the processing of a new propellant. This paper will describe the event and the damage that was produced. It will also describe possible causes for the event and some of the testing that has been conducted as part of the investigation.

Conference paper 12 null

The Annual Progress Report documents all research protocols, both new and continuing, reviewed during FY 02 by the Clinical Investigation Committee (CIC) and the Human Use Committee/ Institutional Review Board (HUC/IRB) of Walter Reed Army Medical Center (WRAMC) Continuing research review is administered by the Research Review Service (RRS), Department of Clinical Investigation (DCI), WRAMC. A detail summary sheet of each protocol giving the objective, technical approach, and progress is presented. Personnel rosters, DCI accomplishments, funding information, and known publications and presentations by the WRAMC professional staff are listed for FY 02.

Annual rept. 1
Oct 2001-30
Sep 2002 WRAMC-RCS-
813 MED-300(R)

Accelerating the flow of technology to the warfighter is one of the top priorities of the Under Secretary of Defense (Acquisition, Technology and Logistics), as well as the services, defense agencies, and other key defense organizations that help transition technology. This document, the Manager's Guide to Technology Transition In an Evolutionary Acquisition Environment" (the guide) is intended to be a source of information to promote collaboration among team members. It provides an overview of the processes

Monograph

205 null

The Naval Research Laboratory Review includes the following topics: Solid-State Supercomputing, New Frontiers in Electronics, Global Weather Observations, Parallel Algorithms for Real-Time Tracking, Behavior and Properties of Materials, Chemical Research and Biotechnology, Electromagnetic Systems, Electronics Research, Energetic Particles and Beams, Information Technology and Communications, Numerical Simulating, Computing, and Modeling, Ocean Acoustic and Surfaces, Optical Systems, Space Research and Technology, Excellence in Research for Tomorrow's Navy.

null

290 NRL-158-4831

Congress increasingly views technology transfer between federal laboratories and industry as a major factor contributing to the economic strength of the United States. In 1986, Congress sought to enhance this transfer by authorizing 'Cooperative Research and Development Agreements (CRADA).' This paper reviews the history of CRADA and some different projects funded through this process to determine if it adds value to America. Is the CRADA process just a social welfare program for the federal laboratories and the industrial base?

Research rept.,

40 null

The SERDP efforts to date have emphasized the transfer of technology and data for the assessment of the state of the global atmospheric and ocean environments; the effectiveness of clean-up technologies for hazardous waste materials; the approaches to minimize, treat, and dispose of hazardous waste; methods for assessing hazards in existing and restored sites; and identifying and demonstrating clean energy and energy conservation projects.

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36 null

Contents: Helpful Sources; DoD/DoN Software Policies; The Maturity Framework; Cost Estimation Studies; Example of Metric Wording for Use in a Contractual Document; Software Tool Descriptions; Application Portability Profile (APP) Services; Ada Binding Products; Lessons Learned; FY91 Ada Technology Insertion Program Projects; Navy and Marine Corps Ada Projects; Ada Language Features That Support Software Engineering. null 246 null

that approximately 20 million acres of land are contaminated with unexploded ordnance (UXO) or ordnance explosive waste (OEW) within the continental United States. This is the result of operations that include training, testing, manufacture, storage, disposal, and intentional burials. Now, through either congressional mandates such as the formerly used defense sites (FUDS), base realignment and closure (BRAC), or state litigation, these sites are being evaluated, remediated (as required), and certified as safe for the intended ultimate public use. This is a very slow and costly process, and in some cases, impossible to do with existing technologies and resources. Within the Environmental Security Technology Certification Program (ESTCP), the goal of the UXO Cleanup Thrust is to develop automated, economical, and efficient methods to accomplish UXO site cleanups through the demonstration and fielding of new technologies. One of these funded programs was the Multi-Sensor Towed Array Detection System (MTADS) developed by the Naval Research Laboratory (NRL) [1]. This system consists of a tow vehicle and two low self-signature tow platforms, one for an eight-sensor magnetometer array and the other for a three-sensor time domain electromagnetic (EM) pulsed induction array. MTADS uses the global positioning system (GPS) for navigation, sensor position location, and survey guidance and has a sophisticated data analysis system for interpreting field data. Target analyses include target position, depth, orientation, predicted target size, and a goodness-of- fit value [2]. Based on the success of extensive field demonstrations, NRL signed a Cost and performance rept. 86 null

NPS Research is published by the Office of the Dean of Research in accordance with NAVSO P-35. Topics include: student research, featured projects, research and education, technology transfer, conferences, faculty recognition, conference calendar and articles on seaborne expeditionary assets for littoral access, free electron lasers for warships, estimating near-surface atmosphere properties, small satellite design program, web-based markets for improving naval personnel detailing, and other items of interest. null 61 null

AFRL assessed the effects of an after-market" coating that could possibly be applied to FAA air traffic control tower (ATCT) windows intended to improve visibility out of the towers. Based on the results of the study

Final rept. Jun
2012-Jun 2013

AFRL-RH-WP-
60 TR-2013-0123

This report contains information concerning the mission, organization, key staff, overall funding and significant research accomplishments of the US Army Research Institute of Environmental medicine, a subordinate element of the US Army Medical Research and Development Command, for calendar year 1990. Also included are listings of published reports, abstracts, presentations and key briefings for each Research Division of the Institutes and significant accomplishments and appointments of the professional staff.

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139 null

As the information age continues to evolve and technological expansion persists in creating a marked footprint across the four corners of the world, the need arises to protect our prized assets from potential adversarial motives. The extant threat to cyberspace necessitates the need to aptly man, train, and equip our forces to ably combat any untoward incidents. The Naval Postgraduate School with its very diverse population presents an exact medium to develop this next generation of warriors skilled in the field of Cyber Warfare to project both offensively and defensively against any contingent threat. As its mission statement professes: NPS strives to provide relevant and unique advanced education and research to increase the combat effectiveness and enhance the security of the United States. This thesis will leverage current instructions to bridge the gap and focus on providing a Concept of Operations for the Center for Cyber Warfare that aligns with the Chief of Naval Operations' (CNO) Strategic Focus Areas. This thesis will additionally recommend an architectural framework that addresses the current issues within the cyber domain and/or will allow for future expansion of the NPS mission datasets deemed of importance to the U.S. Military service and its allies.

Master's thesis

102 null

The U.S. Navy has developed and implemented new design and quality assurance procedures, including service life modeling of the concrete materials that improve the quality and durability of new marine concrete construction. The approach is delineated in the Uniform Facilities Guide Specification (UFGS) for Marine Concrete and is referred to as the Navy's methodology. This approach allows Naval Facilities Engineering Command (NAVFAC) and others to specify a defined service life for concrete structures in combination with prescriptive criteria. The goal is to allow all parties involved in the design and construction process to have greater confidence that the completed structure will meet service life expectations. The cornerstone of this approach is a validated computer software program that can predict the time for chloride and other ions to contaminate the concrete to a degree that will result in initiation of corrosion when all other necessary conditions are met for a specific environmental condition. The purpose of this paper is to broaden exposure and to provide guidance on how to implement the methodology correctly and effectively for all users.

Technical rept.

NFESC-TR-
NAVFAC ESC-
27 CI-1215

Charles E. Pete" Adolph retired as Director of Test and Evaluation in the Office of the Under Secretary of Defense (Acquisition and Technology) on 31 January 1994. This completed more than 30 years of federal service almost all of it within the challenging field of test and evaluation (T&E). Pete-as he was widely known throughout the Department of Defense testing community-enjoyed a remarkable career. It began in the late 1950s

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215 null

You asked us to consider how the national laboratories of the U.S. Department of Energy (DOE) can best be focused to help solve the problems our nation faces during the current decade. As a beginning, we have developed an inventory of the human and capital resources housed in the national laboratories that will provide baseline data for future reports on a number of DOE laboratory policy issues. This report addresses the Committee's interest in the current balance of the research effort in the 10 laboratories' research programs. It examines the extent to which the national laboratories are engaged now in basic and applied research or in research related to commercial product development.

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GAO/PEMD-
98 95-2

The U.S. Army Research Laboratory's (ARL's) Human Research and Engineering Directorate conducts a broad-based program of scientific research and technology development directed into two focus areas: (1) enhancing the effectiveness of Soldier performance and Soldier-machine interactions in mission contexts and (2) providing the U.S. Army and ARL with human factors integration leadership to ensure that Soldier performance requirements are adequately considered in technology development and system design. This document provides an overview of the following thrust areas: human robot interaction, human system integration, neuroscience, and Soldier performance.

Final rept. Oct
2009-Sep 2010

312 ARL-SR-213

This book reviews approximately 65 of the significant reports issued on Department of Defense (DoD) and Department of the Navy (DoN) management of research, development, test and evaluation (RDT&E) from the end of the Cold War through the late 1900s. It is designed for two primary audiences: (1) DOD, congressional, and other governmental staff who need an accessible overview and quick reference and bibliographic guide to issues during that period; and (2) researchers and historians, especially those interested in available sources. These sources include not only major reports, but also a wealth of other, unpublished, often unique material housed in both the post)Cold War management archive at the Naval Research Laboratory (NRL) and the Navy laboratories collection at the Operational Archives of the Naval Historical Center (NHC), Washington Navy Yard.

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203 null

This document summarizes accomplishments for the project, as a whole, including data analysis.

Final rept. 1
Apr 2009-30
Jun 2011

113 null

neutralization capability into hydrogels with proven efficacy in the physical decontamination of radiological, TICs, TIMs and other contaminants, to achieve efficient decontamination of CWAs that have absorbed into sorptive substrates, via physical removal, neutralization or both. A further objective is to develop strategies to impart bactericidal and sporicidal capability into the systems developed with the ultimate objective being the development of a single CBRN system that will be effective against CWAs and BWAs as well as radiological contaminants, TICs and TIMs. The development of several formulations (both one-component and two-component systems) that demonstrate significant neutralization efficacy against VX, G-agents, and mustard gas simulants in solution and in substrate testing has been achieved. Screening evaluations of a variety of catalyst systems against CWA simulants performed during the initial quarters (Quarters 1 and 2) of this initiative demonstrated that the lanthanide catalyst systems had superior performance as compared to the other catalysts under evaluation. These lanthanide catalyst systems were further modified via adjustment of the type/concentration of lanthanide ion salts and/or the incorporation of a variety of components such as co-solvents, emulsifiers, and other additives to improve their neutralization efficacy on a variety of contaminant/substrate combinations. These modifications have resulted in the development of lanthanide catalyst systems that show enhanced neutralization rates against CWA simulants, approaching a 2-log reduction (99%+ decontamination efficacy) of initial challenge,

Annual rept. 2,
Jun 2011-19
Jun 2012

58 null

This document has been prepared to provide information on the United States Air Force (USAF) Research, Development, Test and Evaluation (RDT&E) program to Congressional committees during the Fiscal Year 1994 hearings. This information is in addition to the testimony given by DoD witnesses.

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796 null

AFRL Technology Milestones highlight significant scientific and technical accomplishments for visually-coupled acquisition and targeting systems for our warfighter to automatic spoken language translators for our international warriors. AFRL, headquartered at Wright-Patterson AFB, Ohio is the Air Force's largest employer of scientist and engineers, with partnerships in industry and academia, working to develop and transition affordable integrated technologies to support a broad range of future capabilities. This Technology Milestones book includes stories from the following categories: Support to the Warfighter; Sustainment; Emerging Technologies; Technology Transfer; and Awards Recognition.

Technical rept.
1 Oct 2004-30
Sep 2005

172 null

The ARL Summer Student Research Symposium is an ARL Director's Award Program for all the students participating in various summer scholarship and contract activities across ARL. The goal of the program is to recognize and publicize exceptional achievements made by the students and their mentors in the support of Army science. All college undergraduate and graduate students receiving research appointments and conducting summer studies at ARL are automatically enrolled in the symposium program. As an integral part of their summer study, all students are required to write a paper on their work which summarizes their major activity and its end product. The program is conducted on two separate competitive levels: undergraduate and graduate. The format of the paper in both levels is the same. However, the evaluation will take into consideration the difference in the academic level of the students. All students submitted their research paper for directorate review. Directorate judging panels selected two papers from each competition category for the laboratory-wide competition at the Summer Student Symposium on 9 August 2012. Students selected by their directorate for competition participated in the one-day Summer Student Symposium on 9 August 2012. At the symposium the students presented their papers to the ARL Director and an ARL Fellows panel. This volume of the Summer Student Symposium Proceedings contains the abstracts for all papers prepared for the Summer Student Symposium Program.

Final rept.

ARL-TM-
190 2012A

null

Technical
Report

77 null

This report presents a RAND analysis of public-private partnerships focused on data sharing. Many different practical case studies, models of data sharing partnering, were analyzed to understand differences and similarities in the practical approaches to data sharing, especially geospatial data sharing. This report can provide useful information to federal policy makers about how to more effectively partner with non-federal partners. It should also be of interest to state and local governments, non-governmental organizations, researchers, and others who are interested in data sharing partnerships, especially those with interests in geospatial data. This research was originally sponsored by the White House Office of Science and Technology Policy (OSTP) through RAND's Science and Technology Policy Institute. Originally created by Congress in 1991 as the Critical Technologies Institute and renamed in 1998, the Science and Technology Policy Institute is a federally funded research and development center sponsored by the National Science Foundation and managed by RAND. The Institute's mission is to help improve public policy by conducting objective, independent research and analysis on policy issues that involve science and technology.

null

RAND/DRU-
2259-
155 NASA/OSTP

In today's world, both private and public sectors depend upon information technology systems to perform essential and mission-critical functions. In the current environment of increasingly open and interconnected systems and networks, network and data security are essential for the optimum use of this information technology. For example, systems that carry out electronic financial transactions and electronic commerce must protect against unauthorized access to confidential records and unauthorized modification of data. The purpose of this document is to provide guidance to Federal agencies on how to select cryptographic controls for protecting Sensitive Unclassified¹ information. This document focuses on Federal standards documented in Federal Information Processing Standards Publications (FIPS PUBs) and the cryptographic modules and algorithms that are validated against these standards. However, to provide additional information, other standards organizations, (e.g., American National Standards Institute (ANSI) and International Organization for Standardization (ISO)) are briefly discussed.

null

NIST-SP-800-
138 21

An ever shrinking Research and Development (R&D) budget, coupled with a widespread perception that the nation is not realizing an adequate return from its substantial investment in the federal laboratory system, has paved the way for an increase in the transfer of technology from the federal laboratories to the private sector. The objective of this research is to determine the indirect cost of performing technology transfer by identifying the resources consumed by several key Office of Research and Technology Applications (ORTA) organizations and the activities performed within these organizations. It was hypothesized that the ORTA organizations, which are considered indirect labor by most costing methods, would expend considerable portions of their resources on activities identified as not being performed by direct labor. This hypothesis was proven true, as all but two of the identified steps consumed a significant portion of the ORTA resources.

Master's thesis

AFIT/GCA/LAS
140 /97S-9

The objective of this thesis is to review and analyze the current Command and Control communications used by the New Jersey Department of Health and Senior Services and provide best business practices of Emergency Preparedness and Response Systems capable of responding to all public health emergencies, act of terrorism and mass casualty incidents. Natural and man-made disasters, such as earthquakes, floods, plane crashes, high-rise building collapses, or major nuclear facility malfunctions, pose an ever-present danger challenge to public emergency services. In order to manage such disasters in a rapid and highly efficient and coordinated manner, the optimal provisions of information concerning any crisis situation is an essential prerequisite. Local Police, Fire departments, Public Health Department, Civil Defense, Military and other emergency response organizations must react efficiently yet individually but most importantly, in a coordinated manner. These results in the necessity for both intra and inter organization coordination at several hierarchy levels. Since coordination requires current information, such information must be communicated within and between organizations in real-time, the need arises for an integrated communication and information system solely designated or disaster management that provides processing of relevant efficient, reliable and secure exchange of information.

Master's thesis

173 null

This annual edition of the Army Science and Technology Master Plan serves as top down guidance from Headquarters Department of the Army to all Army Science and Technology organizations and provides a vital link between the technology planning by the Department of Defense and the master plans of individual Army major commands, major subordinate commands, and laboratories. Topics in this volume include: (1) Army vision, (2) Army science and technology strategy, (3) technology transition, (4) Army modernization strategy, (5) defense science and technology strategy, (6) other S&T initiatives, and (7) infrastructure.

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509 null

This report contains summaries of research projects in the Department of Aeronautics and Astronautics. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts.

Summary rept.
1 Jan-31 Dec
98

NPS-AA-09-99-
66 016

In response to the CNO's tasking to examine Sea Supremacy within the context of SEA POWER 21, SSG XXII proposed the concept of FORCEnet Engagement Packs (FnEPs). The FnEPs concept represents the operational construct for FORCEnet and demonstrates the power of FORCEnet by integrating a specific set of joint sensors, platforms, weapons, warriors, networks and command and control systems, for the purpose of performing mission-specific engagements. Initial pack asset allocation and constitution will be based on a specific threat or mission; however, the capability to dynamically re-configure and re-allocate assets on the fly

Master's thesis

435 null

This paper assesses the need to create a new research organization with the mission to identify and address vulnerabilities in the nation's information systems and networks. Despite the many recent initiatives in this area, a broad cross-section of experts agrees that such an organization-if properly structured-could substantially strengthen a range of needed functions. The paper describes these functions and the kind of organization the experts believe can best perform them.

Final rept

179 IDA-P-3511

The report is structured as follows: In Section I, the mission and facilities of each activity is presented, followed by a description of the Office of Research and Technology Application (ORTA). There are many related programs, such as publishing of technical reports and R&D contracting, that enhance technology transfer. Section I describes each activity's participation in these programs. The data presented are not intended to completely describe the activities' efforts: rather, they are only examples of the types of things that they are doing and how they relate to technology transfer: Section II presents each activity's plans for enhancing technology transfer for FY 1994. Section III describes selected success in commercializing Air Force technologies with the private sector.

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68 null

Compact hand-held satellite communications (SATCOM) systems are important for instant, secure data, and voice links in remote global regions. Small efficient electronic components are needed for these, often battery powered, communications systems, particularly the power amplifier (PA) circuit in the transmitter. Gallium nitride (GaN) integrated circuits enable improvements in power efficiencies, transmit powers, and higher bandwidths for state-of-the-art radio frequency (RF) electronics and devices. The U.S. Army Research Laboratory (ARL) has been working with TriQuint Semiconductor, Inc. (TQS) for fabrication under a recent cooperative research and development agreement (CRADA) between ARL and TQS to develop efficient high-power amplifiers for SATCOM applications. Several Q-band amplifier designs were submitted for fabrication in a TQS pre-released 0.15- m GaN on the 2-mil silicon carbide (SiC) process. This technical note gives a brief overview of the designs submitted for fabrication which that will be followed by a more thorough technical report on the design details of those PAs.

Final rept.

14 ARL-TN-0574

The document provides a complete transcript of the Defense Conversion Commission Regional Hearings that took place in St. Louis, Missouri on August 20, 1992.

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275 null

Substantial progress was made in the development of a diagnostic system capable of assessing the extent of burn injury and a laser-based debridement system that rapidly, precisely and bloodlessly removes burn eschar under automatic feedback control. An ICG fluorescence imager was constructed and shown to be successful in assessing burn depths in small and large animals. The distribution of ICG into burns and normal tissue was also studied supporting steps in deriving segmentation algorithms. The technique was also safely used in a pilot clinical trial. Laser speckle was evaluated successfully in a Teflon phantom mimicking burns and more recently in porcine skin burns. A laser burn debridement system was constructed and tested on porcine skin burns. Burns were tangentially excised bloodlessly and equivalent percent engraftment rates and Vancouver scar scores were obtained from laser debrided sites and sharply excised controls. Progress has been made in developing a feedback control mechanism for controlling the laser debridement system. Identifying the transition zone between burn eschar and underlying healthy tissue appears possible using reflectance spectroscopy. Finally, a more elegant laser debridement burn diagnostic robotic system has been designed via a cooperative research agreement with Sandia National laboratories.

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This project developed and tested a model to compare different types of simulation supported training for trauma nursing skills among military and civilian nurses. Evaluation outcomes included measurement and comparison of changes in learning, knowledge, skills & critical thinking, and attitudes (KSA), and cost effectiveness for PC screen based (PCSB) vs. high fidelity (HF) simulation. HF and PCSB training sessions (cervical spine immobilization, CAT tourniquet application, nasopharyngeal airway insertion) and a model for assessing learning and cost benefit outcomes were developed and pilot tested. We found that both military and civilian nurses had an equal improvement in learning regardless of assigned simulation training group (HF or PCSB), and HF simulation is more expensive (\$410) per session, compared to PCSB training (\$55). Based on these findings, we conclude that for simple trauma nursing skill training, PCSB simulation supported training is cost effective and achieves the same learning outcomes when compared to HF simulation supported training. We recommend that HF simulation should be reserved for more complex training needs that require significant teamwork and human interaction. Limitations include a small sample; we recommend that this model be validated with a larger sample.

Final rept. 26
Jul 2010-25 Jul
2013

85 null

The purpose of this thesis is to document my activities related to managing the design, analysis, construction, testing, and integration of a qualification and, possibly, a flight article in support of the NPS CubeSat Launcher (NPSCuL) project. This thesis will describe the process, experience, and results of managing the NPSCuL program, including the program budget and schedule in support of a flight opportunity as early as August 2010. NPSCuL is designed to utilize excess capacity on U.S. launch vehicles to place a significant volume of CubeSats into orbit in a single launch. The NPSCuL will be a secondary payload attached to the launch vehicle via the EELV Secondary Payload Adapter (ESPA) or other compatible launch vehicle structures. The NPSCuL-Lite, a modified version of the NPSCuL, integrates eight Poly-Picosatellite Orbital Deployers (P-PODs) with a deployment sequencer in a simple structure. NPSCuL-Lite will be able to accommodate up to twenty-four units of CubeSat volume. The goal of the NPSCuL project is to improve CubeSat access to space, advance U.S. space technology, and ensure that the next generation of U.S. space professionals will remain on the cutting edge of very small satellite development.

Master's thesis

90 null

The Software Process Program focuses on improving the process of software development. Projects within the program are appraising and teaching others to appraise the actual practice of software engineering in the software community, training organizations to gain management control over their software development processes, supporting the use of quantitative methods and measures as a basis for process improvement, and developing improved methods for software process management.

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55 null

Major changes in the geopolitical environment and the social and economic needs of the United States have resulted in resources being shifted away from national defense. Although the expected decrease in defense spending should not be harmful in macroeconomic terms, it can be devastating locally. To mitigate the effects of the drawdown, individual states and local communities must search for ways to bolster their local economies. One avenue that can be pursued to enhance future economic growth is the transferring of technologies to the commercial sector. Intermediary organizations have emerged to facilitate the process of technology transfer by serving as the bridge between technology providers and industrial users. This research investigates and describes how intermediary organizations are assisting and facilitating the technology transfer defense conversion efforts. A case study examines how four Miami Valley organizations in Ohio are helping to promote economic growth and development in their local area via technology transfer. (MM)

Master's thesis,

AFIT/GSM/LA
84 L/95S-6

Program (SERDP) is the Department of Defense's (DoD) corporate environmental science and technology program. To fulfill its mission to address environmental problems through innovative research and share that information across federal and private organizations, SERDP executes the program in partnership with the Department of Energy and the Environmental Protection Agency. Further, SERDP fully leverages complementary programs within the DoD and solicits interest from other public and private research organizations. The organization and management of SERDP is described in Section I. SERDP conducts basic research through advanced technology development in the following four Technology Thrust Areas: Cleanup (including unexploded ordnance), Compliance, Conservation, and Pollution Prevention. Section II describes significant accomplishments achieved during FY 2000 within each of the Thrust Areas. Highlights of these accomplishments include: (1) new technologies capable of detecting unexploded ordnance (UXO) with high detection rates to significantly reduce the cost of DoD site characterization and cleanup; (2) new technologies to remediate and/or contain groundwater contaminated with explosives and ammonium perchlorate; (3) advances to achieve the long-term sustainability of DoD testing and training ranges, including adaptive management of ecosystems and techniques to assess the potential release of energetics pollutants; and (4) the development of less toxic energetic compounds and munitions and a nonhazardous chemical agent resistant coating (CARC) for military hardware. Section III provides an overview of

Annual rept.

370 null

This report discusses exemplar practices recommended by Department of Defense (DoD) laboratory staff, Offices of Research and Technology Applications (ORTAs), DoD legal staff, and other stakeholders to transfer technology from the laboratory to the marketplace. The purpose is to inform staff at DoD laboratories and technology transfer offices about these practices and encourage their adoption across the DoD. Using themes identified in a review of academic literature, government reports, and legal documents on technology transfer, the research team interviewed DoD laboratory ORTA and legal staff and other stakeholders. From the data collected from these interviews, the research team selected 24 practices as exemplar and organized them into the following categories: ensuring effective ORTA organization and staffing; empowering, training, and rewarding scientists and engineers; capturing and managing intellectual property; using technology transfer mechanisms to full potential; managing and monitoring technology transfer processes; marketing laboratory technologies and capabilities to industry; and building partnerships. Many DoD technology transfer organizations have implemented creative approaches within the boundaries of existing regulations, directives, and instructions. The adoption of these exemplar practices is likely to accelerate the transfer of innovations to the marketplace.

Final rept. Apr
2012-Jan 2013

IDA-P-
4957,IDA/HQ-
92 13-000068

This document reviews work that supported the Cooperative Research Agreement CRDA 96-10I-WL-0I between AdTech Systems Research, Inc. and the Air Force Research Laboratory (AFRL). Prior to the formation of AFRL, the agreement was with Wright Laboratory. The objective of the CRDA was to utilize Adlech's Nonlinear Optical (NLO) polymers in an electro-optical waveguide switch. The report reviews electro-optic (E-O) modulators, especially the zero-gap directional coupler. A nonlinear material with a reliable coefficient of 10 pm/V was needed. That was never achieved, therefore, after four years the CRDA was cancelled.

Final rept. 2
Apr 1996-1
May 2000

AFRL-SN-WP-
95 TR-2000-1062

The Technical Operations Support (TOPS) program was established to assess existing and future Air Force systems requirements and identify materials and processes needs to meet these requirements. TOPS was implemented to develop draft research and development plans to meet these requirements, to develop and implement strategies to promote adoption of Materials and Manufacturing Technology Directorate technology on Air Force systems, and to transfer this knowledge to the public sector. To facilitate the TOPS program and management process, all efforts were categorized into one of six categories: analysis, assessments, technical consultations, technology transition and transfer, strategic studies, and workshops.

Final rept. 16
Aug 1994-23
Aug 1999

AFRL-ML-WP-
64 TR-2001-4065

The Environmental Medicine Genome Bank (EMGB) project is an ongoing effort to identify and characterize genes relevant to environmental illnesses and to human physical performance. To accomplish this, the EMGB banks DNA samples from human volunteers who have participated in environmental and human performance studies or material obtained under approved Brigham and Women's Hospital protocols that would otherwise have been discarded. The EMGB maintains a registry of this phenotypic information. The EMGB can be used to identify polymorphisms in genes that are potentially of interest to environmental medicine and to obtain an estimate of the frequency of these polymorphisms in young, healthy U.S. adults because of the ethnically diverse and geographically dispersed backgrounds of the donors. Additionally, this resource also serves as a valuable source of control material for genetic studies of human diseases, such as asthma. The project is performed as art of a cooperative research and development agreement (CRDA) with the Division of Pulmonary and Critical Care Medicine at Brigham and Women's Hospital. This report provides updated information about the samples currently stored in the EMGB. It is intended as a reference document for researchers who wish to make use of this resource, and fulfills the annual reporting requirement of CRDA number DAMD 17-00-0017.

Technical note

USARIEM-TN-
18 T-02-19

The Space and Naval Warfare Systems Center San Diego (SSC San Diego) Command History for calendar year (CY) 1997 is submitted in conformance with OPNAVINST 5750.12E. The history provides a permanent record of CY 1997 activities at the Naval Command, Control and Ocean Surveillance Center, RDT&E Division (NRaD) and SSC San Diego. (NRaD became SSC San Diego on 1 October 1997. See discussion of reorganization in main text.) Although the history covers 1 calendar year, much of the information was only available on a fiscal year (FY) basis and is so noted in the text. The history is divided into two main sections. The first section introduces SSC San Diego and describes developments in organization, personnel, and funding. The second section documents technical programs underway during 1997. Because the results of scientific work often develop out of many years' effort, programs are not always documented annually. Previous command histories provide extensive background articles on many major programs. When possible, background articles are prepared for new or previously untreated programs. By consulting command histories written over a period of several years, a reader can follow the broad thrusts of Center research and development. In this year's history, background articles appear as featured programs in Calendar Year 1997 Highlights. These articles were originally printed in the SSC San Diego Outlook (JoAnne Newton, Editor) and have been revised for use in this history.

Technical document.

SPAWAR-TD-112 2985

To win in battle we must concentrate combat power in time and space. Strategy and tactics are concerned with the questions of what time and what place; these are the ends, not the means. The means of victory is concentration, and that process is our focus here. There are only four key factors to think about if we seek success in concentration. This is not a simple task. Although few in number, their impact, dynamics and interdependencies are hard to grasp. This is a problem as much of perspective as of substance. It concerns the way we think, as much as what we are looking at. The factors are not functions, objects or even processes. They are best regarded as conditions representing the nature of what we are dealing with in seeking concentration. They are: Variability Uncertainty - Synchronicity - Complexity

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43 null

The Headquarters Air Force Civil Engineer Support Agency (HQ AFCESA) is finalizing the specifications for the next generation aircraft rescue and fire fighting vehicle for deployed locations. AFRL has proven that ultra high pressure (UHP) technology improves fire fighting efficiency more than 300 percent than conventional low pressure systems. Five P-19 fire trucks were modified with a new pumping system capable of producing UHP, compressed air foam (CAF) and CAF with dry chemical. Five bases with hydrocarbon training pits were chosen to participate including Dyess, Ellsworth, Mountain Home, Davis-Monthan and Tyndall. Each base was provided with training for maintaining the new UHP pump and effective use of each fire fighting system. Two firefighters were chosen to operate the vehicle and evaluations were completed including foam quality, throw distance, pump cycle testing, limited cold weather operation and live fire testing. Several design issues were identified during testing, which were resolved during testing. Field evaluations showed that UHP technology provided improved efficiency similar to that observed under laboratory conditions. AFCESA is currently implementing this technology in new vehicle purchases.

Final technical
rept. 1 Jun
2007-31 Jan
2009

AFRL-RX-TY-
98 TR-2010-0033

Our objective for this review was to determine the extent to which the Army has addressed the intended purposes set forth in the ASPI authorizing legislation. Additionally, in response to congressional interest, we have provided information in enclosure 2 of this report that discusses other available authorities that the Army uses or could use to improve the viability of its manufacturing arsenals. In response to direction by the conferees to conduct a business case analysis that examines the cost, return on investment, and economic impact of the ASPI program, the Congressional Budget Office expects to submit its report later this year. Accordingly, our review did not address those aspects of the ASPI program.

Congressional
rept.

31 GAO-10-167R

This project focuses on examination of the impact of service member deployment to a war zone on the service member's family, and is being conducted in collaboration with the Millennium Cohort Study (MilCo) team. As part of MilCo Panel 4, which will enroll about 62,000 new participants in 2011, a probability sample of married MilCo enrollees will be asked for contact information for their spouse, who will then be contacted and invited to participate in the MilCo Family Cohort (FamCo). Spouses who consent will complete a ~45-minute, internet-based assessment focused on spouse's perception of: deployment stressors; health and mental health status of family members; and quality of family interpersonal relationships. During FamCo Year 1: the FamCo team worked with the MilCo team to develop the FamCo study design, spouse assessment, and data analysis and report plans; the MilCo team received IRB approval of the FamCo assessment and data collection protocol; and the MilCo team submitted an OMB Supporting Statement, which as of 29 October 2010 has not yet been approved.

Annual rept. 28
 Sep 2009-27
 Sep 2010

65 null

The intent of this article was to acquaint the reader with some of the basic capabilities of microtube technology and was not intended to be application specific. We are currently working with industrial and academic partners to develop application specific microtube technology through cooperative research and development agreements (GRDA). We welcome the opportunity to develop additional technology with future partners.

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17 null

Much has changed since the Technical Support Working Group (TSWG) was formed in the aftermath of the 1983 Beirut bombing, which killed 241 service members. In a world where the greatest threat to liberty was a ground war in Eastern Europe, terrorism was an afterthought. In 1999, the Combating Terrorism Technical Support Office (CTTSO) was assigned program management functions for the Technical Support Working Group (TSWG). As a program office under the Assistant Secretary of Defense (ASD) for Special Operations and Low-Intensity Conflict and Interdependent Capabilities (SO/LIC & IC), CTTSO is uniquely positioned to contribute to the success of the Global War on Terrorism (GWOT). With overall supervision of the SO/LIC & IC activities of DoD, including oversight of policy and resources, the ASD acts as the principal civilian advisor to the Secretary of Defense on SO/LIC & IC matters. This allows CTTSO to take operational requirements from warfighters, incorporate policy objectives that flow down from the Department, and marshal technical expertise resident in its program managers, subject matter experts, and developers to provide capabilities that are fieldable and sustainable over the Long War." Fighting the scourge of terrorism is a multi-pronged effort

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118 null

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is the Army's primary manpower, personnel, and training research and development agency. This document focuses on recent products of ARI's applied research (6.2) and advanced technology development (6.3) efforts, and includes some products from ARI's research-based studies and analysis (6.6) program. In addition to summaries of 45 different products, it provides a subject index and a point of contact for each product.

Final rept. Oct
94-Sep 96.

69 null

Transferring technology from federal R&D laboratories to the private sector is important in balancing national objectives in military security, economic vitality, and scientific and technological advances. This thesis investigates the factors affecting technology transfer from the Air Force's Wright Aeronautical Laboratories (AFWAL) to the private sector and recommends ways to enhance AFWAL's domestic technology transfer process. The study has three research objectives: 1) determine potential facilitators and barriers to technology transfer 2) investigate the facilitators and barriers to domestic technology transfer at AFWAL and 3) recommend techniques or methods AFWAL managers and scientists/engineers can use to enhance the domestic technology transfer process. Since data for this study is obtained from only one federal R&D center, findings are limited to this environment. However, the research findings suggest conceptual areas worthy of follow-on research for improving technology transfer.

AFIT/GSM/LS
Master's thesis 107 M/88S-16

This is an annual report published by DDR&E which includes facilities, personnel, program, and funding information on RDT&E Activities. It provides insight into the technical and organizational environment of the DoD Laboratories and the financial, manpower, and facility investments made in them.

null 474 null

The thrust of this effort was to examine the software quality methodology and determine what improvements were necessary to improve utility of this technology. Rome Laboratory has been working in the area of software quality since the earlier 70's. The goal of the framework was to provide program managers a quantitative method for gaining insight into the quality of their software products (i.e. software requirements specification, preliminary design, detailed design, coding). This effort identified short falls in the methodology due to technology advances and the need to make enhancements. Safety is one area the software quality framework does not support or address. This effort identified new quality factors that would be needed to address safety and software quality issues. Factors, criteria definitions, and metric element questions from the software quality model were reviewed within the context of defining safety. Object oriented technology (OOT) was also examined to determine what should be added to the framework. New software developments are using object oriented design and to take advantage of this technology the framework needs to be updated. Seven software quality factors and ten software criteria were identified as being impacted by the use of object oriented technology.

Final rept. Sep
87-Jul 90,

111 RL*-TR-92-79

The Institute for Manufacturing and Sustainment Technologies (iMAST) is a Department of the Navy Manufacturing Technology (ManTech) Center of Excellence located at The Pennsylvania State University's Applied Research Laboratory in State College, Pennsylvania. Formally established in 1995, the institute is comprised of seven technical thrust areas: Mechanical Drive Transmission Technologies * Materials Processing Technologies * Laser Processing Technologies * Advanced Composites Technologies * Manufacturing Systems * Systems Operations and Automation * Repair Technology. iMAST provides a focal point for the development and transfer of new manufacturing processes and equipment in a cooperative environment with industry, academia, other Navy acquisition, and in-service use. The Institute leverages the resources of The Pennsylvania State University to develop technology and business practices that enhance the industrial sector's ability to address advanced weapon systems issues and challenges for the Department of Defense. Sponsored under Navy contract N00039-97-D-0042, iMAST provides manufacturing technology support to the systems command of the U.S. Navy and Marine Corps.

null 45 null

This study is comprised of three trials, referred to as the Assessment of Chiropractic Treatment (or ACT). the most significant work during the last reporting period was the finalization of the protocol for ACT1 (RCT for low back pain and nested smoking cessation study) its movement into the military IRB process and the CRADA process, Further, protocols for Assessment of Chiropractic Trials study 2 (Pre/post differences in reflexes and reaction times in Special Operation Forces) and study 3 (RCT of strength, balance and likelihood of re-injury with combat ready troops, chiropractic manipulation therapy as compared to sham manipulation) have been finalized.

Annual rept. 15
Feb 2011-14
Feb 2012 10 null

This report is a presentation concerning the JAMI (Joint Advanced Missile Instrumentation) Flight Termination System being developed cooperatively by NAWC/CL (Naval Air Warfare Center/China Lake) and KAMAN Aerospace Corporation. Topics covered included the JAMI roles and system and the FTSA requirements, features, block diagram, design/implementation, test results, status, and plans.

Conference proceedings 26 null

The purpose of this project is to use a case-study approach to analyze the effectiveness and efficiency of other transaction (OT) agreements and the OT Consortium Model to acquire innovative renewable energy solutions. OTs are typically used for prototypes; however, the fiscal year (FY) 2016 National Defense Authorization Act (NDAA) expands the use of OT authority per statute 10 U.S.C. 2371. Our research includes interviews with Defense Innovative Unit Experimental personnel to highlight their experience with innovative businesses previously reluctant to pursue federal contracts. Additionally, our research leverages best practices from the Army Contracting Command New Jersey, as well as industry partners, such as the Consortium for Energy, Environment, and Demilitarization and the National Security Technology Accelerator consortium, to compile recommendations for the Department of the Navys acquisition strategy for renewable energy. The results of this case study include recommendations on the best use of OT agreements to drive innovation into the procurement of renewable energy solutions in accordance with Better Buying Power 3.0 initiatives.

Technical
Report

95 null

This report describes a multi-faceted effort to support PL/GPD in the development and application of state-of-the-art analysis techniques for remotely sensed data. The resulting tools, techniques, and data sets support the improved analysis of archived data as well as current and future geophysical parameter acquisition and analysis. The following tasks are addressed: (1) development of cloud data sets to support cloud forecast model development; (2) further enhancements to cloud analysis algorithms and development of data sets to support several DoD infrared sensing missions; and (3) upgrades to the Air Force Meteorological System (AIMS) to add GOES-8 reception capability and an improved relational database.

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SCIENTIFIC-
1,PL*-TR-96-
233 2074

This newsletter contains the following articles: State-Federal Partnerships Encouraged; Who's Who; Commercialization of 3-Defender; NAWCADPAX Computer Donation; Point Mugu Incubator; Partnerships through CRADA's; TEAM Patents in '95; Yearly T2 Prioritization; TEAM T2 Patent Licensing; Implementation of Knowledge-Based, Intelligent, Next-Generation Test; and Generator.

Newsletter,

10 null

The Department of Defense (DOD) has struggled with the systems development, integration and interoperability for more than 30 years. Despite the Department of Defense Architecture Framework (DODAF) compliance requirement initiated 20 years ago to address these concerns, DOD agencies continue to struggle to deliver interoperable systems required for operations. The Monterey Phoenix (MP) approach shifts the paradigm underlying these DODAF views to focus on system behaviors and interactions rather than component functionality and the data flows between them. Although robust DODAF tools are available for model documentation, the MP Analyzer tool enables the system architect to reduce design complexity while quickly and easily exposing architectural flaws prior to implementation. This research defines DODAF models that can be generated using the MP approach to realize MP benefits such as automatic scenario generation and comply with DOD guidance. Using criteria established in this research, 16 of the 51 total DODAF models from five of the eight viewpoints are produced using data available in the MP approach. The value proposition to DOD programs is the ability to intercept design errors before they become costly system failures or rework requirements. Future research can validate the DODAF model generation from MP as it matures.

Master's thesis 131 null

This report, on Phase II of the Strategic Environmental Research and Development Program, is submitted in compliance with Senate Report 102-395, accompanying H.R. 5620, Supplemental Appropriations, Transfers, and Rescissions Bill, 1992. It includes project descriptions and funding and is divided into three subject areas; (1) Remote Sensing; (2) Installation Restoration and Waste Management; (3) and Energy. The individual research projects were reviewed and selected by the SERDP Council to fit an overall funding target of \$24.6 million. (MM)

null 91 null

The Vehicular Simultaneous EM! and Magnetometer System (VSEMS) was deployed at the former Kirtland Bombing and Gunnery Range during the fall of 2006 as part of the ESTCP Wide Area Assessment Pilot Program. Magnetometer and EM61 Mk2 data were concurrently acquired on pre-planned transects (generated by Visual Sampling Plan on the basis of existing data from a Conceptual Site Model) to bound the extent of known bombing targets and assist in discovery of new ones. Data were analyzed overnight to provide inversion results (location and depth estimates) for objects of interest in the data. These data were used by another contractor, and by the ESTCP program office, to refine the CSM and to specify new transects. High-resolution 100% geophysical survey data were also acquired in areas located radially outward from bombing targets to determine anomaly fall-off. and in areas that were flagged as being of interest after interrogation of data from the airborne sensing layers. 193 acres of transects and 159 acres of 100% geophysical survey areas were acquired, for a total of 352 acres. 9969 anomalies were extracted from the data.

Final rept. 21
 Sep 2005-1
 Mar 2007
 100 null

This publication contains the abstracts of theses submitted during the period of 1 October 1993 to 30 September 1994 by candidates for Doctoral, Master's and Engineer's degrees at the Naval Postgraduate School, Monterey, CA 93943-5000.

Summary rept.
 1 Oct 93-30
 Sep 94.
 NPS-09-94-
 317 002

TARDEC provides full life-cycle engineering support and is provider-of-first-choice for all DOD ground combat and combat support vehicle systems. TARDEC is interested in innovative ground vehicle technologies and provides business opportunities. Briefing charts

TARDEC-
 17 22401

As a part of its Survivability and Protective Structures research area, the U.S. Army Engineer Research and Development Center (ERDC) is conducting several parallel research initiatives focused on the development of new protective capabilities which meet warfighter operational constraints and provide protection from emerging and increasingly severe threats. Utilizing a combination of micro and macroscale material research, advanced computational methods, and physical experimentation to validate protective structural systems, ERDC is providing advanced solutions to warfighter needs. This paper presents ERDC's research efforts in multiscale material development and characterization, advanced computational methods for high deformation/ high-strain rate events, and lightweight, low logistics protective structural systems.

Conference
paper

9 null

The DoD and Air Force use large volumes of JP-8 annually. Due to the irritation produced by JP-8, the objective of this study was to obtain, formulate and experimentally select the most effective augmentation cream or lotion to inhibit skin exposure to liquid JP-8 during handling or after spills. Creams were tested first in vitro using cell diffusion chambers and then using the New Zealand White Rabbit model. Over-the-counter creams were first tested to evaluate the proof of concept of preventing dermal irritation with a barrier cream. Finally, formulated barrier creams were developed by two different companies and tested in-house. An effective barrier cream was not found using the rabbit model. The most effective protection against JP-8 remains personal protective equipment including gloves, and etc.

Final rept. Nov
2003-Mar 2009

AFRL-RH-WP-
47 TR-2009-0086

Currently, there is a paucity of patient reported outcomes (PRO) measures of secondary health effects and complications that result from neuromusculoskeletal injuries, which greatly limits the clinical care and successful rehabilitation, reintegration, and return to duty/work of injured individuals. This study will create valid, standardized, psychometrically robust, and clinically useful PRO measures for traits and symptoms relevant to understanding quality of life and the health and rehabilitation outcomes of Wounded Warriors and civilians with neuromusculoskeletal trauma. Furthermore, this study will develop clinical score reports in an actionable format to improve the clinical workflow and standard of care for individuals with traumatic limb injuries. During the first year, major accomplishments were achieved on three essential initial components of this project: (1) finalizing item pools in preparation for all data collection activities, (2) developing a research infrastructure to carry out data collection activities, and (3) regulatory and administrative approvals. Human subjects regulatory approvals have been obtained at UD and at 4 collaborating sites. A total of 838 items were developed, 582 newly written and 256 curated from other well-validated measures. These underwent internal scientific review and expert content review and were winnowed to 579 items across 12 topic areas/item pools. The data collection platforms have been developed and data collection can now commence.

Technical
Report,01 Aug
2017,31 Jul
2018

22 null

into a Cooperative Research and Development Agreement for the development of seismic design criteria for waterfront construction. Both organizations face similar problems in the safe design of facilities and the need for a design guide. The California State Lands Commission (CSLC) has oversight of over sixty marine oil terminals, some of which are over eighty years old and built to unknown standards. Typically, they were built to resist minor earthquake intensity. New earthquake hazard information from recent events such as Loma Prieta (1989) and Northridge (1994) indicates that much higher intensities are possible. It is prudent that these facilities be evaluated and unsafe deficiencies corrected. This document develops and expands on work that was begun by the Naval Facilities Engineering Service Center to provide seismic design criteria for waterfront construction. This report presents criteria that are intended to define a minimum level of acceptable performance for marine oil terminals and seven chapters and three appendices of technical supporting material. The development of the criteria recognized the need to protect the environment from oil spills, the need to provide for the transfer of required natural resources into the State, and the economics of operating a commercial facility in a competitive structure. The development of this guide has taken the approach of providing reasonable and prudent levels of design consistent with the state-of-the-art of engineering practice. The document is intended to be dynamic in nature; it is expected that it will be revised and updated by the experience gained through usage.

Final rept. Sep
98-May 99

NFESC-TR-
378 2103-SHR

This paper explores the recent Clinton administration technology policy and makes observations and recommendations regarding areas of apparent success and failure. The authors apply their collective knowledge of the administration's ongoing efforts to draw conclusions about the appropriate role of government in stimulating economic benefits through technology investments. The NRL Fact Book is a reference source for information about the Naval Research Laboratory (NRL). It is updated and placed on NRL's Web site annually. It is printed every other year. To provide additional information to the reader, a point of contact is listed for each activity.

Final rept.,

IDA-D-
1777,IDA/HQ-
33 95-47308

null

132 null

This report describes the thermal stability testing and evaluation of four additives that were down-selected from several candidates from several additive manufactures - each of which give thermal stability improvements at least as good as the currently approved and qualified additive, Spec-Aid 8Q462. The report also describes the testing of an additional 5th additive received late in the program. In summary, the four new additives were determined to have the same or better thermal stability performance in JP-8 fuel as the currently approved additive, Spec-Aid 8Q462. These additives along with Spec-Aid 8Q462 are recommended for further evaluation in the Phase II Fit-For-Purpose and Specification Compliance Testing.

Interim rept. 1
Jan 2005-7 Jan
2011

AFRL-RQ-WP-
67 TR-2013-0069

This Annual Report, Calendar Year 1989, summarizes development projects monitored by the U.S. Army Medical Materiel Development Activity in projects authorized by The Surgeon General, the Army, and the Commander, U.S. Army Medical Research and Development Command, and supported by RDTE funds from the U.S. Army Medical Research and Development Command. Keywords: X-ray equipment; Computer aided tomography; Dental equipment; Chemical warfare protective masks; Laser irradiation protective spectacles; Sterilizing equipment; Vaccines; Antiviral agents; Drugs.

Annual
progress rept.
1 Jan-31 Dec
1989

66 null

This report discusses the 2001 work at Indian Head Division, Naval Surface Warfare Center. Included are the organization's mission, information on the tenant commands, demographic profiles, human resources distribution, bankcard and contract details, program highlights, awards, patents, cooperative research and development agreements, community outreach initiatives, locally based business partnerships, environmental programs, and a feature on honorary employee awards.

Report for 1
Oct 2000-30
Sep 2001

26 null

AFRL Technology Milestones highlight significant scientific and technical accomplishments for visually-coupled acquisition and targeting systems for our warfighter to automatic spoken language translators for our international warriors. AFRL, headquartered at Wright-Patterson AFB, Ohio, is the Air Force's largest employer of scientist and engineers with partnerships in industry and academia working to develop and transition affordable integrated technologies to support a broad range of future capabilities. This Technology Milestones book includes stories from the following categories: Support to the Warfighter; Sustainment; Emerging Technologies; Technology Transfer; and Awards Recognition.

Technical
accomplishmen
ts, 1 Oct 2004-
30 Sep 2005

136 null

The HSC Products and Progress brochure was published to present a cross section of HSC's human centered technologies. These technologies will help keep america militarily and economically strong as we restructure our armed forces to meet unparalleled rapid changes in world military and economic environments. I encourage you to inquire about any HSC technologies which might have the potential to enhance unit's mission performance.

Brochure,

HSC/XR-1994-
147 0001

(DARPA), Ballistic Missile Defense Organization (BMDO), Special Operations Command (SOCOM), and Defense Special Weapons Agency (DSWA), hereafter referred to as DoD Components, invite small business firms to submit proposals under this solicitation for the Small Business Innovation Research (SBIR) program. Firms with strong research and development capabilities in science or engineering in any of the topic areas described in Section 8.0 are encouraged to participate. Subject to availability of funds, DoD Components will support high quality research or research and development proposals of innovative concepts to solve the listed defense-related scientific or engineering problems, especially those concepts that also have high potential for commercialization in the private sector. Objectives of the DoD SBIR Program include stimulating technological innovation, strengthening the role of small business in meeting DoD research and development needs, fostering and encouraging participation by minority and disadvantaged persons in technological innovation, and increasing the commercial application of DoD-supported research or research and development results. The Federal SBIR Program is mandated by Public Laws PL 97-219, PL 99-443, and PL 102-564. The basic design of the DoD SBIR Program is in accordance with the Small Business Administration (SBA) SBIR Policy Directive, January 1993. The DoD Program presented in this solicitation strives to encourage scientific and technical innovation in areas specifically identified by DoD Components. The guidelines presented in this solicitation incorporate and exploit the flexibility of the SBA Policy Directive

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401 null

The Glossary: Defense Acquisition Acronyms and Terms, contains most acronyms, abbreviations, and terms commonly used in the systems acquisition process within the Department of Defense (DoD) and defense industries. It focuses on terms with generic DoD application but also includes some Service unique terms. It has been extensively revised to reflect current acquisition initiatives and policies, and changes in the Joint Capabilities Integration and Development System (JCIDS). Appendix A contains a listing of common abbreviations and acronyms. Appendix B contains definitions of terms used throughout the DoD acquisition community, including terms that have commonality between U.S. and allied acquisition programs. While the Glossary identifies and highlights many terms, it is not all-inclusive, particularly regarding the military services, defense agencies and other organizationally unique terms. For those, the reader must turn to publications issued by those organizations. The Glossary is published for use by students of the Defense Acquisition University (DAU), and others working on defense acquisition matters, including congressional staffs, Pentagon and other headquarters (HQ) staffs, program managers and requirements managers of the Department of Defense, and defense contractors. Acronyms and abbreviations are generally capitalized for ease of reference. That does not imply they are capitalized in general usage. Readers should follow the style used by their own organizations. Readers feedback and input is invited.

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298 null

The maximum tolerable jaw protrusive setting on a mandibular advancement device (MAD) for an obstructive sleep apnea (OSA) patient is believed to optimally open the airway and reduce apnea-hypopnea index (AHI) as measured by polysomnography (PSG). However, the objective data to support this contention are inconclusive. There may be a range of sub-maximal jaw protrusion settings that achieve the desired improvement in OSA symptoms. Analysis of nightly pulse oximetry (pulseox) data during home titration of a MAD may indicate when optimal protrusion is achieved.

Technical
Report

164 null

The purpose of this proposal is to provide insight into gene environment interactions. It leverages the simplified genetics and detailed records of the military working dog population. There are several critical aspects to meeting the aims of this proposal. 1) development of data driven selection criteria, 2) biological sampling of representative dogs, and 3) generation of mathematical methodologies capable of handling heterogeneous data and statistical tests in consistent manner and providing clear and understandable results that are biologically valid. Here we provide a breakdown of the previous years work and document our progress towards achieving the specific aims we proposed.

Technical
Report,25 Sep
2011,24 Sep
2015

308 null

This research paper examines the supercomputer industry from the perspective of U.S. Government involvement. The last ten years of Legislative and Executive branch action relative to the supercomputer industry are discussed. In addition, the current state of the industry is analyzed, as well as how Government involvement has influenced its evolution. Finally, recommendations regarding the future role which should be played by the Federal Government in the supercomputer industry are made. The specific areas requiring future, action in this industry which are presented in this paper are as follows: establishing a coherent supercomputer policy; dealing effectively with foreign competition; technology transfer issues; and acquisition issues.

Research rept.

NDU-ICAF-93-
55 S28

changing environment of hitherto unparalleled complexity. U.S. Army leadership has long recognized the need to invest in science and technology (S and T) to empower the discovery and innovation necessary to win future battles. In response, the U.S. Army Research Laboratory (ARL) has implemented a new business model, the Open Campus (OC), to pursue leading-edge basic and applied research in truly collaborative fashion by enabling the continuous flow of people and ideas between government, academia, and the private sector. This model creates a 21st Century research culture that is agile and effective and could serve as a model to transform the entire U.S. Defense Laboratory Enterprise into an agile, efficient, and effective laboratory system viewed as a critical element of national security. ARLs Open Campus was launched in 2014. The overall Open Campus goal is to expand ARLs S and T ecosystem by bringing together government laboratories, academic institutions, and the private sector to form a global collaborative network. Open Campus focuses on three major initiatives to create the S and T ecosystem necessary to meet future national security challenges: 1) Modern government workforce management and policies for the 21st Century, 2) Shared facilities between government, academia, and the private sector, and 3) A collaborative S and T ecosystem that encourages an entrepreneurial/innovative culture/environment. ARLs Open Campus will develop a diversified national hub-and-spoke infrastructure to more effectively partner across the national and international S and T ecosystem. ARLs OC leverages the

Technical Report

16 null

This report contains project summaries of the research projects in the Interdisciplinary Academic Groups: Command, Control, Communications, Computers and Intelligence; Information Systems; Information Warfare; Modeling, Virtual Environments and Simulation; Space Systems; Special Operations; and Undersea Warfare. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised of an interdisciplinary nature are also included.

Summary rept.
1 Oct 1999-30
Sep 2000

NPS-09-02-
152 013

The federal government will invest \$80 billion in fiscal year 1999 on research and development (R&D) performed by government scientists and through grants, contracts, or other agreements with universities, corporations, small businesses, and other members of the research community. The results of this research can become the impetus for change in federal policies, regulations, and programs. For example, research in medicine, aviation, and agriculture affect policy or regulatory decisions for drug and airline safety and pesticide use. Thus, the Congress and the public rely on federal agencies to fund and conduct research that produces high-quality results. To help ensure the quality and integrity of the research, U.S. science has traditionally relied on independent reviews by peers. This report responds to your request that we study the peer review and other quality assurance processes that federal agencies use in conducting scientific research and development. Specifically, as agreed with your offices, we (1) determine what is meant by peer review, (2) describe the federal government's peer review policy, (3) describe the peer review practices of 12 federal agencies that conduct scientific research, (4) describe other agency quality assurance reviews; and (5) identify which research is not subjected to review.

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GAO/RCED-99-73 99

Partial ContentsThe U.S. Army Medical Researchh And Materiel Command, Using The Web' To Manage The Military Infectious Diseases Research Program, Congressionally Directed Medical Research Programs, Military Medical Research: Assistance Agreements And Acquisition Reform, Military Innovations In Biomedical Research Management, Maintaining The Health And Well-Being Of Senior Leaders In The Army Through Medical Research, Re-engineering Medical Assemblage Management, Adapting The DOD Acquisition Process To The Dynamic Environment Of Biological Defense Vaccine Acquisition, The Army Science Board: A Great Asset To The Army And The Nation, Acquisition CENTRALL: Getting The Word Out On Acquisition Lessons Learned.

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64 PB-70-00-3

This document is meant to ensure acquisition integrity for the SSC San Diego Work for Industry Agreements established with Industry pursuant to the authority in Title 10 U.S. Code, Section 2553 (Sale of Articles of Services to Industry), 2539b (Availability of Government Testing Facilities and Sale of Information to Industry), 2371 (Research Projects: Transactions Other Than Contracts and Grants), and Title 15 U.S. Code, Section 3710a (Cooperative Research and Development Agreements).

Final rept.

SSC/SD-TD-
31 3099

The future of national security rests on more than nuclear weapons, heavy equipment, and conventional forces. Increasingly, security depends on technological advantage, innovation, and asymmetric technology exploitation. Future conflicts will share limited semblance to historical conflicts due to the technology exploitation that characterizes modern warfare. As the U.S. governments share of research and development (R and D) funding shrinks and defense budgets continue to decline, the Department of Defense (DOD) will increasingly depend on new innovative firms to maintain a technological advantage. Such firms inherently differ from traditional defense acquisition in process and culture. They also enjoy demand from broader domestic and international markets. R and D funding sources affect rights to intellectual property a major concern for technology firms. The DOD has authority for applying non-traditional contracting methods to better adapt to this competitive marketplace. This project studied non-traditional contracting tools at the DODs disposal and their merits, with an analysis of how the DOD can effectively leverage its existing and potential authorities to be a competitive buyer in the emerging technology market. Practitioners in the field provided first-hand accounts of their awareness and experience with non-traditional contracting. Findings include the benefits and limitations of non-traditional methods with recommendations for their selective application.

Technical
Report

81 null

With the DoD moving towards evolutionary acquisition and incremental development of weapons systems and soldier applications, it is important that the maturity of new technologies be properly assessed so that the probability of success, once inserted into a program, can be maximized. The purpose of this report is to examine the Photovoltaic Power Converter (PVPC) technology, developed by Atira Technologies, as a potential Department of Defense Acquisition program/project. Specifically, the report focuses on a Technology Readiness Assessment (TRA). The report validates the PVPC technology and estimates, with 95% confidence, that the PVPC enables a solar power system to convert between 30.39% and 48.60% more solar energy into power than an identical system without the PVPC. The report also identifies and documents the required supporting information to justify a Technology Readiness Level (TRL) 5 for the PVPC. Finally, the report recommends inserting the PVPC into the DoD Acquisition System as a commercial item via horizontal technology insertion or the Advanced Concept Technology Demonstration Program.

Master's thesis

147 null

This paper describes test equipment and methods used to characterize short-wave infrared (SWIR) digital imaging systems. The test equipment was originally developed under the Air Force Research Laboratory (AFRL) contract Advanced Night Vision Imaging System - Cockpit Integration (ANVS-CI) and refined under CRADA NUMBER 13-168-RH-01CRD between 711 HPW/RHC and Esterline-Korry Electronics. The test equipment measures relative spectral responsivity, noise equivalent irradiance, dynamic range, linearity, dark noise, image uniformity, and captures image artifacts.

Interim
technical paper
16 Jun 2013-7
May 2014

AFRL-RH-WP-
19 TP-2014-0028

Technological superiority has been, and continues to be, a cornerstone of our national military strategy. Technologies such as radar, jet engines, nuclear weapons, night vision, smart weapons, stealth, the Global Positioning System, and vastly more capable information management systems have changed warfare dramatically. Today's technological edge allows us to prevail across the broad spectrum of conflict decisively and with relatively low casualties. Maintaining this technological edge has become even more important as the size of U.S. forces decreases and high-technology weapons are now readily available on the world market. In this new environment, it is imperative that U.S. forces possess technological superiority to achieve and maintain the dominance displayed in Operation Desert Storm. The technological advantage we enjoy today is a legacy of decades of investment in science and technology (S&T). Likewise, our future warfighting capabilities will be substantially determined by today's investment in S&T.

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Briefing charts 24 null

The Medical Technology Base Master Plan describes the overall U.S. Army Medical Research and Development Command (USAMRDC) investment strategy and program approach including: 1) the operating principles and mechanisms of the medical R&D program; 2) the current status of the medical technology base program; and 3) an assessment of issues and future challenges that may impact the planning, programming, execution, viability and responsiveness of the biomedical technology base effort and overall medical R&D program. Keywords: Technology base; Medical R&D; Army Long-Range Planning Guidance(ALRPG); Concept- Based Requirements System(CBRS); Planning, Programming, Budgeting and Executive System(PPBES); Technology Base Investment Strategy(TBIS); Technical Barriers; Capability Issues; Science and technology objectives; Medical research.

Final rept. 217 null

This research was conducted to characterize the flexural and tensile characteristics of thin, very high-strength, discontinuously reinforced concrete panels jointly developed by the U.S. Army Engineer Research and Development Center and U.S. Gypsum Corporation. Panels were produced from a unique blend of cementitious material and fiberglass reinforcing fibers, achieving compressive strength and fracture toughness levels that far exceeded those of typical concrete. The research program included third-point flexural experiments, novel direct tension experiments, implementation of micromechanically based analytical models, and development of finite element numerical models. The experimental, analytical, and numerical efforts were used conjunctively to determine parameters such as elastic modulus, first-crack strength, post-crack modulus, and fiber/matrix interfacial bond strength. Furthermore, analytical and numerical models implemented in the work showed potential for use as design tools in future engineered material improvements.

Final rept.

ERDC/GSL-TR-
191 08-24

MAJOR TOPICS OF THIS CONFERENCE INCLUDE: (1) COMPOSITE MATERIALS; (2) NEC AND COMPUTER CODES FOR COMPUTATIONAL ELECTROMAGNETICS; (3) PML: THEORETICAL AND NUMERICAL IMPLEMENTATION ISSUES; (4) FAST SOLVERS FOR ELECTROMAGNETIC SCATTERING PROBLEMS; (5) WAVE PROPAGATION; (6) EMI/EMC; (7) CEM ANALYSIS: THE APPROACH OF THE FUTURE; (8) FDTD APPLICATIONS; (9) PLANAR ANTENNAS AND CIRCUITS; (10) SCATTERING; (11) OPTIMIZATION TECHNIQUES FOR ELECTROMAGNETICS; (12) ADVANCES IN TRANSMISSION LINE MATRIX (TLM) MODELING; AND (13) PLANAR AND CONFORMAL ANTENNAS AND CIRCUITS.

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780 null

Industrial applications of modified sulfur concrete (MSC) have been extremely successful in areas of high corrosive activity such as load-bearing floors, walls, and sumps of chemical plants. However, there have been no research and development efforts involving the use of this high-strength, corrosion-resistant material in the very demanding structural component field. Designers require extensive structural test results to establish the confidence necessary to specify MSC as a structural material in any major structure. The objective of this study was to determine the applicability of MSC to the construction and repair of structural components and load bearing surfaces. A series of tests were conducted on MSC to determine mechanical properties important to structural design, freezing-and-thawing performance data, bonding of MSC to portland-cement concrete (PCC), and a series of limited reinforced MSC beam tests to compare with PCC structural design criteria. In general, MSC behaves similarly to a PCC with a comparable compressive strength. The modulus of elasticity and Poisson's ratio of MSC are comparable in magnitude to that of a PCC of comparable strength. Beam tests indicate that MSC appears to conform to the basic assumptions of reinforced concrete beam design including the formation of an effective moment-resisting couple. The ductility of MSC in the postyield regime, however, has not been determined in these tests. Bond strength, Modified sulfur concrete, Strength design, Compressive strength, Modulus of elasticity, Structural design, Freezing-and-thawing durability, Tensile strength.

Final rept.

WES/TR/SL-
93-1,CPAR-SL-
64 93-1

The DoD In House Research, Development, Test & Evaluation (RDT&E) Activities Report was started in the mid 1960s by the Office of Laboratory Management within the Office of the Secretary of Defense, at the request of the Director of Defense Research and Engineering (DDR&E). The annual report has been produced in official form since 1966. The DoD In House RDT&E Activities Report and database project is the DDR&E's central source of information on laboratory status, and serves four essential purposes: (1) since inception, it has been the only compilation of statistics organized by location on DoD RDT&E Activities; (2) it provides the basis for prompt responses to many general queries about DoD RDT&E Activities, without recourse to special surveys, etc.; (3) it provides a historical database which can be utilized for tracing consolidations and organizational changes, and for special analyses and trend studies; and (4) it provides insight into the technical and organizational environment of the DoD Laboratories and the financial manpower and facility investments made in them.

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299 null

The Institute for Manufacturing and Sustainment Technologies (iMAST) is a nonprofit Department of the Navy Manufacturing Technology (ManTech) Center of Excellence located at The Pennsylvania State University's Applied Research Laboratory in State College, Pennsylvania. Formally established in 1995, the institute is comprised of four technical thrust areas: Mechanical Drive Transmission Technologies * Materials Science Technologies * High Energy Processing Technologies * Repair Technology. iMAST provides a focal point for the development and transfer of new manufacturing processes and equipment in a cooperative environment with industry, academia, other Navy acquisition, and in-service use. The Institute leverages the resources of The Pennsylvania State University to develop technology and business practices that enhance the industrial sector's ability to address advanced weapon systems issues and challenges for the Department of Defense. Sponsored under Navy contract N00039-97-D-0042, iMAST provides manufacturing technology support to the systems command of the U.S. Navy and Marine Corps.

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35 null

The Army Aviation Research, Development, Test, and Evaluation (RDT&E) Plan is a presentation of the 20-year plan of the Army aviation community to develop and integrate new technology, equipment, and subsystems that will respond to the needs of the soldier on the modern battlefield. The Aviation RDT&E Plan is prepared in conjunction with the Army Modernization Plan (AMP), the Army Aviation Modernization Plan (AAMP), the Army Science and Technology Master Plan (ASTMP), and the Research, Development and Acquisition Plan (RDAP) processes. The intent of this Plan is provide Congress, Department of Defense (DoD), Army and our defense industry partners with a complete picture of RDT&E efforts on-going and planned in support of the aviation modernization strategy. One of the major objectives of the Aviation RDT&E Plan is to provide industry with a tool for planning their long range technology investment goals in synergy with Army requirements. The Plan is structured to provide an overview of Army aviation's user and customer requirements, mission and performance improvements, the flow of technology, and its transition into aviation programs. The Plan is based on funded projects; however a few unfunded projects which have high priority and are critical to the aviation modernization strategy are included. (KAR) p. 11

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102 null

The Interagency Coordinating Committee on Structural Ceramics (ICCSC) held its annual meeting May 13, 1992. The primary function of the ICCSC is communication and coordination among managers of federally funded research and development programs in structural ceramics. The focus of the Committee is on structural ceramic materials, including both monolithic ceramics and ceramic matrix composites. Twenty-three government program offices sponsored \$120 million of unclassified research and development in fiscal year 1992 on these materials for applications in high performance transportation engine and turbine systems, cutting tools, heat exchanges, armor, bearings and aerospace engine and airframe components. These applications are critical to international commercial competitiveness since they represent large potential markets and also underpin the national defense posture. This Committee regularly brings together federal program managers that have management responsibilities for such diverse research and development programs with a common denominator of interest and needs in structural ceramics. It provides a mechanism for maximizing the total effectiveness and resource sharing of government supported research and development in structural ceramics and assures that there is not redundancy or undesirable overlap in this coordinated effort.

Conference
proceedings

404 null

This report contains presentations from the JAWS S3 98 Conference. Topics include: (1) avionics, (2) EPA issues, (3) atmospheric support for ground systems hit avoidance, (4) target to sensor vision, (5) sensor vision in degraded environments, (6) electronic warfare testing, (7) computerized simulation, (8) cost reduction methods for aircraft weapon acquisition, (9) software engineering, (10) electronic protection radio, and (11) preflight integration of munitions and electronic systems.

Conference 15-
18 Jun 98

427 null

This report presents brief summaries of Independent Research (IR) projects. Three projects are described in detail: Optical Fiber Devices Based on Index of Refraction Changes in Highly Overcoupled Fused-Fiber Couplers; Tidal Exchange at the Bay-Ocean Boundary; and Detection Algorithms Derived from Gaussian Mixture and Hidden Markov Noise Models with Applications to Radar and Sonar. This report is submitted in response to ONR INST 3900.37 of 3 June 1994. The work detailed in this report was carried out at the Naval Command, Control and Ocean Surveillance Center RDT&E Division during FY 96. Three selected Independent Research (IR) projects are described in detail. Lists of all active projects and those transitioned since the last report are provided. Lists of publications and patents stemming from the IR program are also provided.

Final rept. Oct
95-Sep 96.

NRAD-TD-
184 2933

The United States Department of Defense (DoD) has a specific legislative mandate to increase its conservation of water and energy. It also is interested in improving the effectiveness of open-loop, cooling water treatment processes at its installations worldwide, for purposes of extending the useful life of evaporative cooling equipment and reducing energy use/costs. A Cooperative Research and Development Agreement (CRADA) was approved to demonstrate that, without using chemical additives, a capacitor-based water treatment system is capable of (1) providing equivalent protection to a chemical treatment program in preventing scale, corrosion, and bio-fouling; (2) allowing cooling systems to be operated in an enhanced water conservation mode; (3) delivering measurable reductions in water usage over conventional methods; and (4) providing control, monitoring, and wireless data transfer via the Internet. Results documented in the subsequent demonstration and evaluation project showed the technology was able to meet every objective and also was able to deliver a 20% reduction in cooling water use over standard chemical treatment methods. Application of this technology would allow the DoD to (1) reduce chemical usage, exposure, and disposal expenses; (2) conserve water and energy; (3) facilitate water re-use; and (4) meet new goals for conservation of resources.

Final rept.

ERDC/CERL-
67 TR-09-20

The relative performance of the Mg-rich primer, as compared to control coatings, is highly variable depending on the pretreatment. In some instances, the Mg-rich primer outperforms both the non-chromate and the chromate controls. However, over military-qualified pretreatments, the Mg-rich is not as good as the control coatings. In addition, poor performance was observed when the Mg-rich was tested without a topcoat. Also, relatively poor performance was observed in acidic salt fog, similar to that seen in early Mg-rich primer testing in the early 1970's. The ultimate goal is to produce a commercial nonchromate product that exceeds the performance of the currently qualified non-chromate primers regardless of surface preparation. While improvements to the Mg-rich primer over the past several years have led to increased performance, the Mg-rich primers still fall short of this goal.

Final rept. Jun
2007-Jul 2011

134 null

The broad objective of the proposed study is to empirically evaluate the efficacy of a cognitive behavioral intervention, titled, Post Admission Cognitive Therapy (PACT), for military personnel psychiatrically hospitalized due to a suicide-related event with either a recent or a lifetime suicide attempt. The primary outcomes will be incidence of repeat suicide attempt(s) and number of days until a repeat suicide attempt. Secondary outcomes include psychiatric symptoms, repeat number of psychiatric hospitalization(s), hope for one's future, and acceptability of treatment. A multi-site, single-blind, randomized controlled trial will be the research design. A total of 218 individuals will be recruited from the inpatient psychiatric and traumatic brain injury (TBI) units at the Walter Reed National Military Medical Center and Fort Belvoir Community Hospital. Participants will be randomized into one of two conditions: (1) PACT + Enhanced Usual Care (EUC) or (2) EUC. The PACT+EUC condition will consist of six 60-90 minute individual cognitive behavioral therapy sessions administered over preferably three days during the inpatient stay and up to four telephone booster sessions. The EUC condition will consist of usual psychiatric care patients receive during their hospitalization, the assessment services provided by MA and/or PhD level clinicians, and case management services provided for one year by Bachelor's level research personnel. Follow-up assessments will be conducted at 1, 3, 6, and 12-month post discharge by blind PhD level clinicians.

Annual rept. 1
Feb 2012-31
Jan 2013

35 null

The purpose of this NATIBO study was to assess the maturity, level of use, utility, and viability of ion beam processing (IBP) technologies for metal surface finishing applications. Over the past decade, ion implantation, the most visible IBP technology, has been able to find a technical and commercial niche improving the wear properties of medical devices such as titanium hip and knee joints. Ion implantation has also been widely used in the semiconductor industry sector for more than thirty years to provide precise control of semiconductor wafer manufacturing. However, IBP technologies have not been able to successfully penetrate other North American metal surface finishing markets despite successful demonstrations in many applications. The objectives of the study were: (1) Identify the status of IBP technology development, (2) Identify current and potential application areas, (3) Identify the benefits of IBP technologies, (4) Identify current defense and commercial activities related to IBP technology development and use, (5) Identify limitations and barriers to IBP technology use, and (6) Recommend actions for government and industry to fully capitalize on the potential of IBP technologies in the metal surface finishing industry sector. The IBP technologies investigated and analyzed in this study were: (1) Mass analyzed ion implantation, the technique used in semiconductor manufacturing; (2) Direct nitrogen ion implantation; (3) Direct metal ion implantation; (4) Plasma source ion implantation (PSII); and (5) Ion beam assisted deposition (IBAD).

Final rept.

137 null

Fiscal 2006, Research and Developments Efforts for purposes of Small Business Research, Congress adopted four wide-ranging reforms to the Department of Defense Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs in order to increase the effectiveness of SBIR and STTR for both the DoD and the defense industry. First, Section 252 directed closer alignment between R&D and acquisition goals of SBIR and STTR. Second, Section 252 authorized and funded creation by the Department of Defense (DoD) and the military services of the Commercialization Pilot Program (CPP) to facilitate transition of SBIR technologies into the acquisition process. Congress conditioned the use of CPP funds on detailed evaluative reporting to Congress. Third, Congress codified into statutory law President George W. Bush's Executive Order 13329, Encouraging Innovation in Manufacturing, which incentivized manufacturing technologies through the SBIR and STTR programs. Fourth, Congress clarified the authority to conduct testing and evaluation of SBIR and STTR technologies in SBIR and STTR Phases II and III. The implementation requirements were specified in the text of Section 252 and the Congressional Guidance Letter issued by the House and the Senate Small Business Committees. This study analyzes the implementation of Section 252 by the Secretaries of Defense, the Army, the Navy, and the Air Force. It reflects the results of literature review and a survey of SBIR and STTR. The study questions are based on Section 252 text and the Congressional Guidance letter, as well as best practices identified in relevant

Joint applied
project

112 null

We are developing new energetic structures expected to have superior insensitivity characteristics and superior performance characteristics relative to currently used insensitive high explosives. The chemical structures proposed herein are a series of zero- to low-hydrogen-content, polynitro, polycyclic heteroaromatic compounds based on novel nitrogenous heterocycles. By analogy to other nitrated nitrogenous heterocycles, which have been discovered to exhibit superior insensitivity properties, the proposed derivatives are predicted to have similarly attractive stability characteristics. The new compounds are expected to be high-density materials with explosive yields comparable to or better than hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) but with high melting points, comparable or better shock sensitivity, and significantly better thermal stabilities. This project is being conducted as a collaboration, via a Cooperative Research and Development Agreement (CRADA), with Pacific Scientific Energetic Materials Co., Chandler, AZ, which provides independent funding for its comparable contribution to this effort.

null 7 null

The Annual Progress Report gives the CY96 personnel and funding strength of the U.S. Army Aeromedical Research Laboratory. This report includes an overview of the Laboratory activities, current areas of research, and a brief description of the research being conducted.

Annual program rept. Jan 96-Dec 96, 53 null

Technology Transfer Mechanisms: Testing Services Agreements; Education Partnerships; Cooperative Research and Development Agreements (CRADA); Small Business Innovation Research (SBIR).

Briefing charts 15 null

The purpose of this report is to analyze how DOD implements a pollution prevention program through the three military services, the Army, Navy (including Marine Corps), and Air Force. The Department of Defense (DOD) Pollution Prevention Program has the objective of minimizing use of such materials and resulting hazardous wastes.

null 142 null

The Annual Report, Calendar Year 1997, summarizes development projects managed by the U.S. Army Medical Materiel Development Activity as authorized by The Surgeon General, the Commander, U.S. Army Medical Research and Materiel Command and supported by the RDTE funds from the Department of Defense.

Annual rept. 1
Jan-31 Dec 97,

74 null

During the Front Line Ejection Equipment Tests (FLEET) program, higher than anticipated radical values were recorded using the 103 lb Lightest Occupant In Service (LOIS) manikin ejecting in the SIIS-3 ejection seat with and F-15 forebody. The radical value is calculated using the seat acceleration in the x and y axes, and the Dynamic Response (DR) in the z axis. It was observed that the LOIS manikin was poorly restrained in the seat regardless of the tension applied to the harness strap. Three concepts have been identified that can be readily incorporated into the seat to improve occupant restraint. These concepts are: an improved seat cushion using a conforming material, inertia reel rollers that are fixed with respect to the headbox, and inflatable elements attached to the lap-belt as pace fillers. Tests with manikins were performed to evaluate the proposed improvements. The large ADAM (218 lb) manikin and the LOIS manikin were subjected to impacts along the +z, -x, and +y axes using the AFRL Vertical Deceleration Tower (VDT) and Horizontal Impulse Accelerator (HIA). Test were conducted with the original seat configuration and with the proposed improvements incorporated into the seat Manikin response characteristics were measured and results were compared to determine the improvements provided by the modifications to the SIIS ejection seat.

Interim rept.
Jun 98-Jan 99

AFRL-HE-WP-
21 SR-2000-0002

The work detailed in this report was carried out in FY 00 as part of the Office of Naval Research In-house Laboratory Independent Research (ILIR) program, which supports basic scientific research in several areas of interest to the Navy, including command and control; communications; intelligence, surveillance, and reconnaissance; and other research areas such as navigation. This document describes the accomplishments and funding of 28 ILIR projects during the period 1 October 1999 through 30 September 2000.

Final rept. Oct
1999-Sep 2000

SSC/SD-TD-
156 3115

This purpose of this thesis is to inform the acquisition community of the growing concern about the dependence upon foreign sources for both components and technologies used to produce Army missile systems. The extent of foreign-source use is unknown, due to the lack of data. In spite of America's recent economic gains, foreign-source dependencies may be increasing. Research suggests that the foreign-dependency issue receives lower-priority attention at both the national and the program management levels. The new threat environment and the rise of industrial globalization increase the risks associated with foreign-source dependencies. Failing to manage foreign-source dependencies can cause production stoppages in an emergency, and the loss of the technological superiority of U.S. weaponry. Program Managers are required to manage their systems' foreign-source dependencies, but they are often unaware of foreign-source use until problems occur, nor are they provided with adequate resources to manage this area. The foreign-dependency issue was examined from the points of view of economists, the Government and industry. Interviews of program management officials and a survey of lower-tier vendors were conducted to substantiate trends noted in the literature review. Proposed evaluation methodologies, foreign-dependency causes, and solutions were reviewed.

Master's thesis,

162 null

The purpose of this proposal is to provide insight into gene environment interactions. It leverages the simplified genetics and detailed records of the military working dog population. There are several critical aspects to meeting the aims of this proposal. 1) development of data driven selection criteria, 2) biological sampling of representative dogs, and 3) generation of mathematical methodologies capable of handling heterogenous data and statistical tests in consistent manner and providing clear and understandable results that are biologically valid. Here we provide a breakdown of the previous years work and document our progress towards achieving the specific aims we proposed.

Technical
Report, 25 Sep
2011, 24 Sep
2015

308 null

This paper presents a concept for laboratory utilization and networking in support of avionics systems development and integration for Naval Aviation. The Naval development centers for air systems have a number of separate laboratory facilities that deal with the many facets of avionics systems in Navy airborne platforms. The laboratories associated in developing and implementing this concept are those located at the Naval Air Warfare Centers (NAWCs) at Patuxent River MD, China Lake CA and Point Mugu CA. The purpose of exploring and then implementing this concept is to ensure that the Navy makes maximum use of the laboratory resources available, and through networking, provides a capability for multiple center participation in shared program developments. The effort underway is embodied in two elements: Modular Avionics Integration Laboratory (MAIL) and Modular Avionics Integration Network (MAIN). The MAIL element is concerned with the identification and networking together, laboratory resources within the confines of a single development center. The MAIN concept is a networking approach for linking the three centers so that intercenter participation can be achieved for broad scope systems development and integration programs. Taken together, the MAIN and MAIL represent a forward step towards implementing a consistent systems engineering based process for avionics systems evaluation, development and integration for the Navy.

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The Medical Vanguard Diabetes Management Project was designed to deploy an Internet based diabetes management system, MyCareTeam, into a number of existing diverse clinical environments and evaluate how such a stand-alone clinical information system can be integrated into diabetes management program. The diverse environments include the High-Risk Pregnancy Clinic at the National Naval Medical Center and 8 Native American Communities throughout the United States. The GAO Report Executive Guide: Measuring Performance and Demonstrating Results of Information Technology Investments (GAO/AIMD-98-89) will be used as the basis for the evaluation of the technology implementations. While the implementation of MyCareTeam has been shown to be clinically effective in some environments (KE Smith, et al, 2004, PR Conlin, et al, 2004) the processes required to implement this technology into diverse communities has not been studied. This project has two primary specific aims: clinical development and development evaluation.

Annual rept. 1
 Sep 2003-31
 Aug 2004

70 null

This report documents the design and construction of a Mobile Local-Rapid Evaluation of Atmospheric Conditions (L-REAC(registered))* System Proof of Concept, (PoC) as well as four feasibility studies, each representing starting thresholds for a wide variety of potential L-REAC(registered) Project growth. The L-REAC(registered) System concept was a product of the 2003 2007 White Sands Missile Range (WSMR) Urban Field Studies, which investigated the airflow and stability characterization around a single urban building and small building clusters. The primary goal for L-REAC(registered) is to improve Soldier/civilian situational awareness of environmental airborne hazards during potentially life-threatening events. L-REAC(registered) accomplishes this goal by mapping a near-real-time wind field and plume (when available) over an area of interest (AOI). From 2009 to 2012, the initial viewgraph technology has evolved into a PoC System (2009), a Prototype (2010), an Operational L-REAC(registered) System (2011) and now, a Mobile L-REAC(registered) System PoC (2012).

Final rept. 1
 Oct 2011-30
 Sep 2012

70 ARL-TR-6275

The Voice Activated Information System (VOIS), developed by USACERL, allows inspectors to verbally log on-site inspection reports on a hand held tape recorder. The tape is later processed by the VOIS, which enters the information into the system's database and produces a written report. The Voice Operated Information System (VOIS), developed by USACERL and Automated Sciences Group, through a ESACERL cooperative research and development agreement (CRDA), is an improved voice recognition system based on the concepts and function of the VOIS. To determine the applicability of the VOIS to Corps of Engineers construction projects, Technology Transfer Test Bed (T3B) funds were provided to the Corps of Engineers National Security Agency (NSA) Area Office (Fort Meade) to procure and implement the VOIS, and to train personnel in its use. This report summarizes the NSA application of the VOIS to quality assurance inspection of radio frequency shielding and to progress payment logs, and concludes that the VOIS is an easily implemented system that can offer improvements when applied to repetitive inspection procedures. Use of VOIS can save time during inspection, improve documentation storage, and provide flexible retrieval of stored information.

Final rept.

CERL-TR-M-42 91/12

This paper presents the results of an effort to quantify the response times for the dynamic modes of a winged reusable rocket plane. The vehicle used in this effort was XCOR Aerospace's Lynx, which is being developed for the suborbital space tourism and microgravity payload market. The effort utilized CART3D and Missile Datcom to estimate the static and dynamic aerodynamics of the Lynx. These inputs were then feed into the A" matrix of the state space version of the equations of motion."

Journal article

AFRL-RQ-WP-22 TP-2013-0269

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265 null

This thesis was an attempt to classify, analyze and summarize selected, finite bodies of contracting literature and purchasing literature. The primary objective of this thesis was to apply an existing taxonomy to recent libraries of two different publications, one representative of Government contracting and one representative of commercial purchasing. Analysis of the results of this classification effort provided conclusive information about taxonomical similarities and differences between contracting and purchasing literature in these two publications. A secondary objective of this thesis was to assess the differences in subject matter between the two journals and by extension, the differences between Government contracting literature and commercial purchasing literature. The final objective of this thesis was to compile an annotated bibliography of articles primed in the contracting journal that have not been previously annotated.

Master's thesis

176 null

This report documents the results of a 2-year research and development effort by the Consortium for Advanced Positioning System (CAPS). As a result of this program, integration of real-time site positioning with three-dimensional computer-aided design has been accomplished and commercialized. This technology achievement will greatly facilitate construction site layout and enable the capture of as-builts" as a routine part of the construction process. Integration was achieved with three different site positioning systems: SPSi's proprietary technology RtPM; total stations and global positioning."

Final rept.,

WES/CPAR/IT
159 L-95-1

This course on DoD distribution statements is in two volumes. The Facilitator Guide is the training resource for DoD personnel, such as Scientific and Technical Information (STINFO) Managers, who will be conducting this course on DoD distribution statements. It contains facilitator notes for each of the four modules, copies of transparencies, and reference materials including tips to help prepare for and conduct the training. The course is intended to offer DoD staff and contractors a basic understanding of the rationale and mechanics of properly assigning distribution statements to DoD technical documents. While other markings are applied to DoD technical documents, this course only covers distribution statements.

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DTIC*-
445 TR2000/6-V1

This project was a cooperative effort between the U.S. Army Engineer Waterways Experiment Station (WES) and the University of Illinois under a Cooperative Research and Development Agreement as part of the Construction Productivity Advancement Research Program. The purpose was to develop a portable radar system for nondestructive evaluation (NDE) of concrete. Two approaches, a time-domain pulse system and a frequency-domain system, were investigated. An ultra-wideband (UWB) time-domain pulse radar NDE system was developed at the University of Illinois and field tested at WES. The UWB time-domain impulse radar system successfully demonstrated the capability of detecting small reinforcement bars embedded in large concrete blocks. This report describes the development of the UWB time-domain NDE system in detail and illustrates several experimental results.

Final rept.

WES/CPAR-SL-
57 98-2

FT jet fuel is a synthetic organic mixture produced using the Fischer-Tropsch (FT) process that is being developed to replace or augment petroleum-derived JP-8 jet fuel for military use by the U.S. armed forces. The FT toxicity testing program results are reviewed. The final study, sensory irritation potential in male Swiss-Webster mice, is evaluated. Groups of four mice were exposed for 30 minutes to FT jet fuel vapor/aerosol atmospheres. Group mean exposure concentrations were 2225, 6844 and 9425 mg/m³. FT jet fuel evoked breathing patterns characteristic of upper airway sensory irritation. The RD50 (50 percent respiratory rate depression) value was calculated to be 10939 mg/m³. JP-8 has an RD50 of 2,876 mg/m³. FT jet fuel is less irritating than JP-8. A health hazard assessment was conducted for FT jet fuel utilizing all of the following studies: dermal irritation test (FT vs. JP-8 vs. 50/50 blend), in vitro genotoxicity tests, acute inhalation study, short-term inhalation rangefinder study, in vivo genotoxicity test in tandem with the short-term study, 90-day inhalation toxicity study and sensory irritation assay. The sensory irritation RD50 was found to be the most sensitive endpoint. Based on the proposed use of FT jet fuel as a 50/50 blend with JP-8, an occupational exposure limit (OEL) for FT jet fuel is recommended at 200 mg/m³, in concurrence with the current JP-8 OEL of 200 mg/m³.

Interim rept.
Oct 2008-Oct
2010

AFRL-RH-FS-
42 TR-2012-0013

The Land Management System (LMS) is an initiative of the U.S. Army Engineer Research and Development Center (ERDC) to address technology requirements related to land and water resource management in both military and Civil Works mission areas. The purpose of LMS is to provide relevant tools and information to land and water resource managers and decisionmakers to enhance their ability to understand and communicate past, current, and potential impacts of management decisions. This report provides details of plans to design, develop, and transition LMS as an integrated computer-based capability, and to test and evaluate this capability for solving specific land and water resource management problems at field sites.

Final rept.

TR-CERL-
77 99/60

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1674 null

The US. Army Corps of Engineers (USACE) has long recognized the benefits of computer-aided design (CAD) systems, and has encouraged its design architect/engineers (A/Es) to use this technology. However, traditional methods of training A/Es to use CAD have had only limited success, so USACE has investigated and developed various innovative, nontraditional methods. One such method, on-line embedded instruction, uses CAD software as the delivery medium for an on-line tutorial program. This report discusses an on-line tutorial program developed for the Corps' standard CAD system, Intergraph MicroStation. An innovative feature of the Corps' tutorial program is its adaptive on-line help function, which includes both procedural and conceptual help material, presented to the user on the basis of his or her degree of CAD experience. The effectiveness of this tutorial was investigated in a USACE Technology Transfer Test Bed (T3B) demonstration, with particular attention on the adaptive on-line help function. Findings indicate that the adaptive help function was effective for most test participants, but it could probably be modified to better address the needs of certain categories of learners.

Final rept.,

CERL-TR-
39 91/52

The papers appearing in this book comprise the proceedings of the Laser Tissue Interaction IX.

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526 null

The work described herein was performed in the Coastal and Hydraulics Laboratory of the U.S. Army Engineer Waterways Experiment Station(WES) as part of a Cooperative Research and Development Agreement(CRDA) with Dr. Luigi Natale, Pavia, Italy. The CRDA entailed collaborative research involving innovative techniques for design of navigation locks to be incorporated into a replacement lock at Cremona, Italy. This report presents findings and recommendations of the collaborative efforts.

Final rept

ERDC/CHL-SR-34 00-1

is a biennial publication and this second edition follows the inaugural 2009 edition. The 2011 edition incorporates the roadmap addendum published in July 2010. The RS JPO is a dual service organization reporting to the Program Executive Office for Ground Combat Systems (PEO GCS) and the Marine Corps Systems Command (MARCORSYSCOM) as the executive agencies for the acquisition of unmanned ground systems. As with the first Roadmap edition, this document will serve as a practical reference to assist in Warfighter requirements definition, identify relevant technology maturation and to focus Science and Technology (S&T) investment on Warfighter needs. The main goal of the 2011 Unmanned Ground Systems Roadmap (2011-2020) is to convey the RS JPO's short- and long-term strategies. The short-term period covers one to five years, with long-term covering beyond five years. The RS JPO is focusing heavily on the improvement and modernization of the current robot fleet, as well as assisting in the development and release of emerging requirement documents such as the Squad Multi-Purpose Equipment Transport (SMET). These efforts support the achievement of RS JPO's overarching goal of ensuring the Warfighter's needs are addressed both now and into the future. As the RS JPO/Army continues to transition systems and capabilities into the hands of the Warfighter, interoperability matures and will result in a standard scalable capability allowing manned and unmanned platforms to operate between tele-operation and semi-autonomous modes. Acquisition and life cycle costs are expected to decrease due to fewer platform types Handbook

80 null

<p>and total field magnetometers are the two primary sensors employed for detection of munitions and explosives of concern (MEC) on formerly used military properties. While these two sensors have a broadly overlapping performance envelope, each sensor has unique strengths. The EM61 is the better sensor for detection of small and/or nonferrous projectiles, while the magnetometer excels at detection of large, deep objects. Unfortunately, codeployment of the two sensors is normally impossible due to the active nature of pulsed electromagnetic (EM), which creates noise on any nearby magnetometer. A prior Environmental Security Technology Certification Program (ESTCP) project (MM-0208) developed the technology needed to codeploy these two sensors through the process of interleaving (sampling the magnetometer only between the EM61's pulses when the EM61 is quiet) and deployed that technology on a vehicular platform. Under this project, a Man- Portable Simultaneous Electromagnetic Induction (EMI) and Magnetometer System (MSEMS) was developed. The interleaving hardware was made smaller and lighter to enable man-portable deployment. A box with standard interfaces was developed that allows any geophysical contractor with EM61s, total field magnetometers, and Global Positioning System (GPS) equipment in inventory to connect them to our interleaving hardware and collect high-quality, concurrent mag/EM61 data. Two physical configurations were developed using this hardware: 1) a configuration with an unmodified EM61 and the magnetometer four feet in front of the EM61 coil and 2) a</p>	<p>null</p> <p>48 null</p>	<p>751 null</p> <p>48 null</p>
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This manual is intended to be used as an internal training guide for newly appointed Scientific and Technical Information (STINFO) Managers. It covers the principal elements of the DoD Scientific and Technical Program (STIP) , including the Work Unit Information System (WUIS), control and marking technical information documents, dissemination, and technology transfer. The manual is the basis for DTIC's DoD STINFO Manager training course. Attendance at the training course includes the training manual and the STINFO Documentation binder.... STINFO, STINFO Training, Instruction manuals, Handbooks, Training, Training devices, DoD STIP, Technology transfer.

Final rept.

DTIC/TR-93-
224 10

OSD's Cost Analysis Improvement Group (CAIG) is involved in an annual cycle of efforts aimed at improving DoD's ability to forecast future costs. During the DoD Cost Analysis Symposium, the CAIG reviews the status of DoD's capabilities to estimate the costs of forces and weapon systems. At the annual IDA Cost Research Symposium, CAIG representatives discuss ongoing and planned cost research projects with other offices and organizations involved in defense-related cost research. Following these annual events, the CAIG prepares a plan that encourages those who conduct cost research to focus on areas of highest payoff in view of pending acquisition decisions. This document reviews this annual process for the 1999 cycle. It describes the 32nd annual DoD Cost Analysis Symposium and the 1999 IDA Cost Research Symposium, explains OSD CAIG's analysis plan for future cost research, and presents the summaries of current and planned cost research projects at the offices and organizations that participated in this year's IDA Cost Research Symposium.

Final rept. Aug
98-Aug 99,

IDA-D-
2345,IDA/HQ-
160 99-001660

There has been one peer-reviewed publication during the current reporting period: 1) Reed, AM, Judson CJ, Orman JA, Hudak SJ. Genitourinary Injuries Among Female U.S. Service Members During Operation Iraqi Freedom and Operation Enduring Freedom: Findings from the Trauma Outcomes and Urogenital Health (TOUGH) Project. Mil Med. 2018; <https://doi.org/10.1093/milmed/usx079>. GU injuries among female Service Members (SMs) have comprised a small proportion of all GU injuries sustained by U.S. SMs during OIF/OEF. Renal injuries pre-dominated and genital/reproductive injuries were rare. With more females now serving in direct combat roles, the number of female SMs injured in future conflicts will likely increase. Thus, the unique anatomical and functional aspects of female GU injuries must be considered in future research, prevention, and long-term multidisciplinary care efforts.

Technical
Report,01 Jul
2017,30 Jun
2018

8 null

The Deputy Under Secretary of Defense for Acquisition Reform, under the direction of the Deputy Secretary of Defense, chartered a Process Action Team on Military Specifications and Standards. The team was tasked to develop a comprehensive strategy to change the way that the Defense Department defines its requirements and specifies its needs in order to permit greater reliance on the commercial market and manufacturing base. The PAT developed twenty-four recommendations addressing all; aspects of developing and applying Military Specifications and Standards; thirteen are considered to be principle recommendations. These recommendations are divided into chapters addressing: Performance Specifications, eliminating excessive contract requirements, overhauling the standards process, new management tools, the education imperative, institutional cultural change, and general acquisition reform. The recommendations in this report are the start point for reform of specifications and standards. Specifications and/or Standards.

Final rept. Aug
1993-Mar 1994

311 null

Data are presented on the cost and on the benefits of research performed by the graduate students and faculty of the resident schools of the Air Force Institute of Technology (AFIT) at Wright Patterson AFB, Ohio (WPAFB). Costs are calculated by allocating direct and indirect costs of operation to the research function. Research costs per student year for 1996 were found to be \$17,809. This is benchmarked against data from the American Society for Engineering Education's Annual Directory of Engineering Graduate Studies and Research where the average of 353 institutions' spending for research per student year was found to be an almost identical \$17,840. Benefits were measured from an analysis of seven years (1990-1996) of research customer responses to a research assessment form sent to all research sponsors. Both quantitative and qualitative measures of research benefits were extracted from the responses. Quantitative responses for the estimated contract cost of the research averaged \$99,182 per MS thesis and \$181,000 per Ph.D. dissertation. The qualitative measure of benefits consists of comments of research sponsors about the finished research. Over 100 of these comments are presented in the Appendices. These comments, taken as a whole, may be a better measure of benefit than the quantitative dollar numbers.

Rept. for 1990-
1997,

AFIT/EN/TR-
172 97-1

The National Geospatial-Intelligence Agency is predominantly known for using imagery from satellites to produce geospatial intelligence. While imagery-based products are a primary mission for the agency, GEOINT encompasses much more than imagery and maps. The image on the cover is a LiDAR shot of the Presidential Palace in Haiti, collected after the earthquake devastated the country in January 2010. LiDAR is not imagery, it is a method of using pulsed laser light to detect distant objects and determine their elevation, position, velocity and other characteristics. By adding different colors to varying elevations, it can produce graphic representations that are accurate and understandable. LiDAR is one of the many technologies and applications that make up the broader discipline of GEOINT.

Journal

25 null

In April 1999 the North American Technology and Industrial Base Organization's (NATIBO) Steering Group commissioned a study of the biological detection system technologies and industrial base. This report based on information received prior to December 1, 2000, addresses technical, business, and policy information related to biological detection technology research efforts and industrial capabilities in the U.S. and Canada. Based on this analysis the study team reached the following conclusions and provided the outlined recommendations.

Final rept.

201 null

Since the terrorist attacks on the United States in September 2001, the U.S. government has engaged in numerous efforts to build the capacity of foreign partners to address security-related threats an objective that has become increasingly prominent in U.S. national security strategy and foreign policy in recent years. Much of U.S. assistance intended for this purpose has been undertaken as security cooperation efforts by the Department of Defense (DOD) and as security assistance efforts by the Department of State (State), with the help of various implementing partners. (footnote 1) However, according to the RAND Corporation (RAND), the rapid growth of legal authorities and programs associated with security cooperation and assistance has led to redundancies, limitations, and gaps. (footnote 2) RAND also noted that this rapid growth of legal authorities and programs has led to expanding demands on DOD staff who must navigate through them as well as through unsynchronized processes, resources, programs, and organizations to execute individual initiatives with partner nations. Members of Congress have raised questions about the proliferation and duplication of efforts to build partner security capabilities and the supporting legal authorities. In addition, Members of Congress have raised questions about whether DOD security cooperation efforts lack strategic direction and may not act in concert with other efforts.

Technical
Report

63 null

Recent Studies suggest that the conversion of NO to NO₂ is an important intermediate step in the selective catalytic reduction (SCR) of NO_x to N₂. These studies have prompted the development of schemes that use an oxidation catalyst to convert NO to NO₂, followed by a reduction catalyst to convert NO₂ to N₂. Multi-stage SCR offers high NO_x reduction efficiency from catalysts that, separately, are not very active for reduction of NO, and alleviates the problem of selectivity between NO reduction and hydrocarbon oxidation. A plasma can also be used to oxidize NO to NO₂. This paper compares the multi-stage catalytic scheme with the plasma-assisted catalytic scheme for reduction of NO_x in lean-burn engine exhausts. The advantages of plasma oxidation over catalytic oxidation are presented.

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Authorization for Government-operated Federal laboratories to enter into Cooperative Research and Development Agreements (CRADAs) was initially provided by the Stevenson-Wydler Technology Innovation Act of 1980, which was amended by the Federal Technology Transfer Act of 1986. The Department of Defense (DoD) and the Department of the Navy (DoN) have each issued specific guidelines governing technology transfer. This guidebook was prepared for the Naval Surface Warfare Center, Dahlgren Division (NSWCDD), Dahlgren, Virginia, and provides guidelines concerning responsibilities, requirements, options, types, format, and contents of CRADAs.

Final rept. NSWCDD/MP-21 02/26

Defense conversion means finding productive civilian uses for the resources and people formerly devoted to the Nation's defense. Channeling the savings from reduced defense R and D to civilian R and D is, of course, only one option for using the peace dividend. There are many others, including deficit reduction. This Report examines opportunities to advance civilian technologies and improve U.S. industrial competitiveness internationally by redirecting research and development from defense to dual-use or civilian purposes.

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Historically, software developed under government contracts often does not stand up under real-world use, and defects frequently result in cost and schedule overruns. While proposed development activities from contractors commonly list measures to improve quality, these descriptions cannot be used to select a winning bidder if they are not part of the evaluation criteria. By making software quality requirements explicit at the proposal stage, contractor selection can be influenced by criteria based on best practices in software development.

Journal Article - Open Access 41 null

This report contains information concerning the mission, organization, key staff, overall funding and significant research accomplishments of the US Army Research Institute of Environmental Medicine, a subordinate element of the US Army Medical Research and Development Command, for calendar year 1991. Also included are listings of published reports, abstracts, presentations and key briefings for each Research Division of the Institute and significant accomplishments and appointments of the professional staff. Military Medical Research, Military Medical Technology, Environmental Stress, Exercise Physiology, Physical Training, Military Performance, Military Nutrition, Military Psychology.

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136 null

With a team of more than 5,200 scientists, engineers, and support personnel worldwide, the Air Force Research Laboratory is one of the most exciting organizations in the Air Force. AFRL team members are up close and personal with the discovery, development, and integration of cutting-edge technologies for today, tomorrow, and well into the future. AFRL is headquartered at Wright-Patterson Air Force Base, Ohio and is the Air Force's largest employer of scientist and engineers-about 3,000-of which more than 800 have doctorate degrees in science and engineering disciplines. These highly skilled and motivated people are critical in leading our government- industry-university team and in making technological and scientific breakthroughs. Our scientists and engineers push the limits of air and space, bringing critical technologies forward into the realm of application. This world-class laboratory harnesses the innovative ideas of the best minds in government, industry and academia to create the future of the Air Force. The men and women of AFRL defend America by unleashing the power of innovative science and technology. AFRL Success Stories highlight the cutting-edge research performed within the laboratory. The following pages feature some of our most noteworthy successes during 2002. These stories are just the tip of the iceberg" of AFRL technologies currently under development."

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169 null

This 1995 NRL Review introduces you to the Naval Research Laboratory and focuses on research highlights from fiscal year 1994. In addition, it presents the special honors awarded to NRL employees and describes the programs available to NRL and non-NRL employees. This publication offers an exchange of information among scientists, engineers, scholars, and managers, and it is used as a recruiting tool. (MM)

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NRL/PU/5230-
259 -95-274

techniques in Europe. Otherwise known as Solid Freeform Fabrication (SFF), this approach has resided largely in the prototyping realm, where the methods of producing complex freeform solid objects directly from a computer model without part-specific tooling or knowledge started. But these technologies are evolving steadily and are beginning now to encompass related systems of material addition, subtraction, assembly, and insertion of components made by other processes. Furthermore, these various additive/subtractive processes are starting to evolve into rapid manufacturing techniques for mass-customized products, away from narrowly defined rapid prototyping. Taking this idea far enough down the line, and several years hence, a radical restructuring of manufacturing as we know it could take place. Not only would the time to market be slashed, manufacturing itself would move from a resource base to a knowledge base and from mass production of single use products to mass customized, high value, life cycle products. At the time of the panel's visit, the majority of SFF research and development in Europe was focused on advanced development of existing SFF technologies by improving processing performance, materials, modeling and simulation tools, and design tools to enable the transition from prototyping to manufacturing of end use parts. Specific examples include: laser sintering of powders, direct metal deposition and laser fusion of powders, and ink jet printing techniques. Truly integrated layer-by-layer additive/subtractive processes under development are limited; European emphasis was on creating an Final rept.

155 null

This instruction implements Air Force Policy Directive (AFPD) 99-1, Test and Evaluation Process. It provides mandatory procedures for the management of developmental test and evaluation (DT&E) programs on systems, subsystems, and components. It describes planning, conducting, and reporting cost-effective DT&E to support acquisition and sustainment program decisions and actions throughout a system's life cycle. It implements Department of Defense (DoD) Directive 5000.1, Defense Acquisition, 15 March, 1996, and Department of Defense Regulation 5000.2-R, Mandatory Procedures for Major Defense Acquisition Programs (MDAP) and Major Automated Information System (MA IS) Acquisition Programs, 15 March, 1996. Additional non-mandatory material is contained in the DoD Acquisition Deskbook. Use this instruction with the referenced DoD procedures, and Air Force 10-6, 63-series, and 99-series publications. Implementing, operating, and supporting commands or agencies within the Air Force may supplement this instruction. Send draft proposed major command (MAICOM) DT&E instructions and supplements to HQ AFMC/DOP with an information copy to HQ USAF/TEP. Submit recommended changes to this instruction via AF Form 847, Recommendations for Change of Publication, to HQ USAF/TEP with an information copy to HQ AFMC/DOP.

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44 AFI-99-101

The Naval Research Laboratory is the Department of the Navy's corporate laboratory; it is under the command of the Chief of Naval Research (CNR). As the corporate laboratory of the Navy, NRL is an important component in the Office of Naval Research's effort to meet its science and technology responsibilities. For its basic research effort, the Laboratory receives guidance from the CNR that establishes the level of effort and trend direction. The Laboratory then develops a comprehensive research proposal package that is submitted to the CNR for consideration for Navy basic research support. The total Navy basic research program ultimately is evaluated by Congress. In addition to internal critical review and the evaluation by the CNR and others, the research at NRL is published in refereed journals and/or reported at national and international scientific conferences. There is an aggressive policy of scientific interaction whereby scientists from around the world visit NRL and are visited by NRL scientists. In this way, NRL research is subject not only to management review but also to peer evaluation. NRL has had a long and fruitful relationship with industry as a collaborator, contractor, and most recently in Cooperative Research and Development Agreements (CRADA). NRL values this linkage and intends for it to continue to develop. NRL is an important link in the Navy R&D chain. Through NRL, the Navy has direct ties with sources of fundamental ideas in industry and the academic community throughout the world and provides an effective coupling point to the R&D chain for the Office of Naval Research (ONR).

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The DoD In-House RDT&E Activities Annual Report and database project is the DDR&E's central source of information on laboratory status, and serves four essential purposes: (1) since inception, it has been the only compilation of statistics organized by location on DoD RDT&E Activities; (2) it provides the basis for prompt responses to many general queries about DoD RDT&E Activities, without recourse to special surveys, etc.; (3) it provides an historical database which can be utilized for tracing consolidations and organizational changes, and for special analyses and trend studies; and (4) it provides insight into the technical and organizational environment of the DoD laboratories and the financial manpower and facility investments made in them.

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290 null

The purpose of this RFI is to solicit maritime related technology demonstration candidates from private industry, Government Research and Development (R&D) organizations and academia for inclusion in future Capability Demonstration events conducted by the Stiletto Maritime Technology Demonstration Program. The application deadline is October 5, 2012.

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In Project 1, we are adapting and empirically evaluating a safety plan intervention targeted at suicidal military service members receiving care at the Walter Reed National Military Medical Center. Outcomes include suicide ideation, suicide-related coping, and attitudes toward help seeking at discharge, 1-month, and 6-months post discharge. As of 9/24/2011, we have enrolled 6 participants in the study, all of whom are still active in the study. In Project 2, we are examining the effectiveness of a comprehensive intervention including the safety plan intervention and follow-up care, for veterans at high suicide risk at VA Emergency Departments (ED). Outcomes include suicide attempts, suicide ideation, and suicide-related coping at 1, 3, and 6 months following the index ED visit, as well as attendance at an outpatient mental health or substance abuse treatment appointment within 30 days post index ED visit. As of 9/24/2011, we have enrolled 96 participants across sites and 53 of these participants are still active in the study.

Annual rept. 25
Sep 2010-24
Sep 2011

26 null

This research project provides an initial assessment as to whether the government should maintain decentralized management of its venture capital (VC) initiatives. Previous research focused on the viability of using VC to supplement government R&D spending. In contrast, this research project specifically addresses whether the DoD should centralize or decentralize execution of VC. The researchers investigated current Government VC initiatives, interviewed subject matter experts in the VC industry, and assessed how well the Government VC initiatives are poised to fill the DoD's capability gaps as defined by the QDR. The researchers provide rationale for why VC is a relevant source for Government R&D using data from the National Venture Capital Association (NVCA) and other literature. Ultimately, the research suggests that the Government should continue to foster decentralized VC execution with increased focus on technology transference.

MBA
professional
rept.

125 null

This report contains project summaries of the research projects in the Department of Aeronautics and Astronautics. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised by faculty in the Department are also included.

Summary rept.
1 Oct 1999-30
Sep 2000

NPS-09-02-
68 002

The Annual Progress Report includes a description of the research conducted by the U.S. Army Aeromedical Research Laboratory (USAARL) during fiscal year 2010 (FY10) and an overview of FY10 activities. It also summarizes the FY10 personnel and funding strength of the USAARL.

Final rept. 1
Oct 2009-30
Sep 2010

78 USAARL-FY10

The Naval Research Laboratory (NRL) is the principal in-house research laboratory under the command of the Chief of Naval Research (CNR). As the corporate research laboratory of the Navy, NRL is an important component in the Office of Naval Research's effort to meet its scientific research responsibilities. For its basic research effort, the Laboratory receives guidance from the CNR that establishes the level of effort and trend direction. The Laboratory then develops a comprehensive research proposal package that is submitted to the CNR for consideration for Navy basic research support. The total Navy basic research program ultimately is evaluated by Congress.

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130 null

underground storage tanks (USTs) containing petroleum products to be brought into compliance to prevent environmental contamination through leakage. Replacing all older USTs can, in some cases, be prohibitively expensive. One alternative to requiring that tanks pass a precision tightness test is to retrofit USTs with cathodic protection for continued use. To pursue this alternative, there is a need for more cost-effective and reliable tank condition assessment methods. The U.S. Army Construction Engineering Research Laboratories (USACERL) in conjunction with RedZone Robotics, Inc. of Pittsburgh, PA developed a remote, robotic UST condition inspection/assessment system named Fury to meet this need. Fury is a robotic crawler, which moves inside a UST by means of magnetic wheels. It includes 90-degree transition arms for robot positioning on tank end-caps and has a central pivot to allow for full motion of the steering head. The robot is designed to fit through an existing small diameter pipe, which mitigates invasive tank entry during assessment and allows for non-destructive evaluation. Control of the Fury is accomplished through a tether attached to the rear of the robot. Fury utilizes ultrasonic transducers on a sensor sled to obtain approximately 90,000 wall thickness measurements per hour at over 95% of cylindrical-wall or end-cap locations. Under this Environmental Security Technology Certification Program (ESTCP) project, Fury was (1) successfully validated on a subsequently excavated UST at Fort Lee, VA from 18-26 August, 1996, and (2) successfully demonstrated in three USTs at Hunter Army Air Field (a sub-unit

Cost and performance rept.

44 null

This Summary of Research presents a listing and description of the research activity and productivity of the faculty, civilian and military, and midshipmen at the United States Naval Academy for the 1996-1997 academic year. A total of 3.0 million dollars was devoted to research. The funding categories break down into approximately 80% Navy, 7% non-Navy DoD, and 13% non-DoD federal.

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277 USNA-3910-3

This research was performed in conjunction with funding by DURALCAN- USA through a Cooperative Research and Development Agreement (CRDA). The program seeks to improve the ductility of cast and extruded Al 6061-Al203 metal matrix composite (MMC) materials. Annealing stages were designed to be introduced into combined extrusion and drawing operations during the processing of the MMCs. This work has included a comprehensive analysis of a composite's microstructure as related to processing strains ranging from zero to 5.32 during extrusion/ drawing operations. As the strains were increased, particle clusters present in the as-cast material were dispersed and the particle distribution became more uniform. Strains of greater than 4.0 were required in order to disperse the clusters and substantially eliminate banding of the particle distribution. The recrystallized grain size in the Al matrix decreased as increased processing strain was applied to the material. The grain size appeared to be stable and resistant to coarsening during subsequent solution heat treatment. Quantitative image analysis revealed no change in apparent particle size or aspect ratio indicating no fracturing of the particles during processing. The image analysis revealed no readily measurable feature to be used to assess uniformity of the particle distribution.

Master's thesis

80 null

This document provides information on the Army's technical objectives for the Food and Flood Service areas to the external community, both Government and nongovernment, including academic, scientific and industrial organizations. Its purpose is to stimulate the participation of such organizations in Army research and development. Areas covered include: Management; Scientific and Technical Areas of Interest; Technology Base Investment Strategy; Technical Objectives; Progress and Accomplishments; Planned Programs (research, technology and development).

Final rept. Oct
1988-Apr 1989

NATICK/TR-
40 90/055

This report documents the findings of a study to help the Army understand how to better collaborate and partner with industry. It expands on a briefing, presented to the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(ALT)) in January 2000, describing nontraditional approaches for the Army to follow to collaborate and partner with industry using the concepts of public- private partnerships, venture capital funding, and government corporations. The research was sponsored by the Deputy ASA(ALT) for Plans, Programs, and Policy and was conducted within RAND Arroyo Center's Force Development and Technology Program. The Arroyo Center is a federally funded research and development center sponsored by the United States Army. The findings should be of interest to Army audiences concerned with collaborating and partnering with industry and interested in understanding the various means available to the Army to increase such collaborations and partnerships using nontraditional approaches.

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RAND/MR-
115 1401-A

TARDEC and its partners in the TACOM LCMC orchestrate the design, engineering, development, testing, validation and sustainment of the manned and unmanned vehicles that transport the Army to fulfill its global objectives. Our Soldiers, Marines, Airmen and Sailors take great risks and make profound sacrifices to accomplish their missions, and they rely on our expertise to develop the best ground vehicles and equipment in the world. TARDEC's 1,788 engineers, scientists, researchers and support staff must fulfill their duties with similar vigilance and resourcefulness to deliver solutions that give warfighters a decisive edge and dominant overmatch capabilities. Our mission has shifted toward broader issues that affect us collectively as a Nation, such as energy efficiency and renewable energy.

Whether pursuing solutions to protect Soldiers on the battlefield or applying technical skills to pressing challenges on the home front, our scientists and engineers approach each project with the same relentless commitment, passion and meticulous skill.

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63 null

Air vehicle technology spans multiple technical disciplines to provide the Air Force and our nation with innovative solutions to both near and far-term defense needs. Our scientists and researchers work in Integrated Product Teams (IPTs) that design, develop and provide optimum air combat capabilities. The IPTs, the TMP and the Mission Area Plans (MAPs), generated in coordination with the warfighter communities, ensure the emphasis of Research Development Test & Evaluation (RDT&E) is focused on the areas of greatest need. Affordability is paramount and is given utmost consideration in all phases of RDT&E within the Air Vehicles Technology Area. During a time of declining budgets and resources, we are challenged to maintain and provide critical technologies, ensuring the nation's superior defense capabilities. We developed a strategic plan for Air Vehicles RDT&E to ensure we can maintain our leadership role, and to build a foundation for continuing excellence into the future

Final rept. 1
Oct 96-30 Sep
97.

WL-TR-97-
42 3000

A CRADA is an agreement between one or more Federal laboratories and one or more non-Federal parties to perform cooperative and mutually beneficial research and development (R and D). Under a CRADA, the Naval Surface Warfare Center Dahlgren Division (NSWCDD) can provide personnel, services, facilities, equipment, or other resources with or without reimbursement. Non-Federal parties may provide funds, personnel, services, facilities, equipment, or other resources toward the conduct of specified research or development efforts.

Final rept.,

NSWCDD/MP-
15 92/641

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federal laboratories' use of the technology transfer authorities provided to them under federal law. This is a new edition of the annual report series for the President and Congress established under the Technology Transfer Commercialization Act of 2000 (P.L. 106-404, signed November 1, 2000). The report covers the technology transfer activities of the federal laboratories through FY2003. Under the new law, reporting responsibilities operate along two tracks. Each federal agency that operates or directs federal laboratories (or engages in patenting or licensing of federally owned inventions) is required to provide the Office of Management and Budget with an annual report on its technology transfer plans and recent achievements as part of its annual budget submission. The Secretary of Commerce then prepares an overall federal assessment for the President and Congress based on the program information in these agency reports. In its May 2003 report on the topic, the President's Council of Advisors on Science and Technology emphasized the critical role that transfer of federally funded research and development results has in moving ideas from the realm of research into commerce and the marketplace. The request for regular public reporting reflects national policy makers' interest in ensuring that the Nation's technology transfer policies perform as effectively as possible. Ten major federal agencies have significant federal laboratory operations. This Summary Report provides activity statistics and other performance information about each: Department of Agriculture (USDA), Department of Commerce (DOC), Department of Defense (DoD), Department of Energy (DOE),

Summary rept.

145 null

Some trends have been emerging over the last several years that significantly effect the way the Department of Defense (DoD) conducts R&D. One trend is the fact that budgets for R&D (in real dollars) will continue to decrease. Also, the development of commercial high tech industries will continue to be a source of innovation for military procurements in some industrial sectors. With the shrinking of the Federal R&D budget and the proliferation of technology, federal laboratories need to find alternative ways to leverage their R&D through alliances with industry. Industry also prefers to leverage their own R&D efforts by exchanging ideas, accessing unique facilities, and building on the work the labs have done. The purpose of technology transfer is to make federally generated scientific and technological developments accessible to private industry and the state and local governments. Legislation has focused on the transfer of technology from the Federal laboratories to the private sector, however, value also has been realized by the federal partners. The Cooperative Research and Development Agreement (CRADA) is one mechanism by which technology transfer can occur. The CRADA is a mechanism which allows flexibility in R&D and protects the intellectual property of both parties. The objective of this study was to evaluate a sampling of DoD CRADAs to assess the benefits that the DoD is reaping from participating in these agreements.

Final rept.

111 null

The topics will appear in the DoD Solicitation FY97.1 that opens on or about 1 October 1996. The purpose of this document is to provide small businesses with an advance copy of ASO's SBIR requirements. It also provides you with an opportunity to discuss the technical aspects of these requirements with the point of contact for the sponsoring organization. It is anticipated that the additional insight will assist your company in preparing more competitive technical proposal(s).

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197 null

NRL's Mission: To conduct a broadly based multidisciplinary program of scientific and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems, and ocean, atmospheric, and space sciences and related technologies. The Naval Research Laboratory provides primary in-house research for the physical, engineering, space, and environmental sciences; broadly based applied research and advanced technology development programs in response to identified and anticipated Navy and Marine Corps needs; broad multidisciplinary support to the Naval Warfare Centers; and space and space systems technology, development, and support.

Annual rept.

251 null

Symposium conducted as a useful means of technology exchange for the Army's Environmental R&D Program. This annual event involves key personnel from all pertinent Federal agencies and provides a forum where users and developers are kept abreast of latest state-of-the-art technologies. This report provides proceedings from the symposium.

Conference proceedings 23-25 Jun 1992

CETHA-TS-CR-717 92063

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Conference paper

22 null

The Mobile Detection Assessment and Response System (MDARS) program employs multiple robotic security platforms operating under the high level control of a remote host, with the direct supervision of a human operator. This document describes the major components of a distributed host architecture geared towards a single guard controlling up to thirty-two robots, and explores some of the key issues that were considered in the development phase. The objective is to field a supervised robotic security system that basically runs itself until an exceptional condition is encountered, which requires human intervention.

Technical rept.

SSC/SD-TD-110 3026,REV A

mission of providing advanced technology for our national security by anticipating the nation's challenges and evolving its mission areas and programs to meet those emerging challenges. This year, the Laboratory restructured three divisions to focus research and development in areas that are increasingly important to the nation: homeland protection; cyber security; and intelligence, surveillance, and reconnaissance (ISR) systems. The Laboratory's new Homeland Protection and Air Traffic Control Division will concentrate on developing and expanding the Laboratory's work on chemical and biological defense, border security, and the safety of the National Airspace System. The new ISR and Tactical Systems Division's emphasis will be on developing systems for surface and undersea ISR, counterterrorism, and tactical operations. The restructured Communication Systems and Cyber Security Division will continue to enhance the capabilities of the nation's defense communication systems and will strengthen programs to protect the nation's networks and critical infrastructure. This annual report will highlight some of the Laboratory's new work in these areas. The Laboratory is continuing work on its large-scale hardware and software programs, such as the Haystack Ultrawideband Satellite Imaging Radar, the Lunar Laser Communications Demonstration, and the Missile Alternative Range Target Instrument. To support the development and integration of such systems, the Engineering Division began investing in new equipment to improve hardware fabrication and integration, and to add new capabilities in printed circuit board

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This research effort furthers the Air Force's study of reusable launch vehicles and hypersonic airfoils by conducting a hypersonic flight test using the US Air Force Academy's Falcon LAUNCH VIII sounding rocket. In this study, two experimental fin tips were designed and attached to the sounding rocket in place of two stabilizer fins in order to collect data throughout the rocket's hypersonic flight profile. The desire to research, study, and test experimental fin tips was driven by the Air Force Research Laboratory's Future responsive Access to Space Technologies (FAST) program and their desire to include vertical stabilizers on the wing tips of reusable launch vehicles (RLVs). In this research study, finite element models of the experimental fin tips were developed and used to predict the flight data collected by the strain and temperature gages attached to the test specimen. The results of these flight prediction tests showed that the test specimen will undergo the greatest deflection and strain during the acceleration of the rocket. Maximum deflection and strain gage readings were obtained at a speed of Mach 2.5 at an altitude of 9k feet. Ultimately, the payload will undergo a maximum deflection of 0.6 inches at the fin tip and a maximum strain gage reading of 0.00122 on the main wing section of the payload.

Master's thesis

AFIT/GAE/EN
114 Y/10-M27

Surgical Research (USAISR) in reducing the morbidity associated with extremity combat wounds. These wounds are the most frequent and debilitating suffered in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). There have been over 40,000 total American combat casualties in OEF and OIF, and of those severely injured on the battlefield, 82% had at least 1 musculoskeletal extremity wound. USAISR is a subordinate command of the U.S. Army Medical Research and Materiel Command (USAMRMC), and since 1947 it has been located at Fort Sam Houston, San Antonio, TX. The Army Burn Unit has been an integral part of USAISR since 1949. Research on trauma and orthopedics has been a part of USAISR's mission since 1970. The USAISR buildings are contiguous with Brooke Army Medical Center (BAMC), which enables the research organization to have a unique in-depth understanding of the combat injuries and the medical challenges faced by the clinicians who treat them. Our mission is to optimize combat casualty care (CCC). In fulfilling this mission, USAISR provides requirements-driven CCC medical solutions and products for injured warriors from self-aid through definitive care. Research is currently organized in 9 Task Areas, i.e., Extremity Trauma and Regenerative Medicine, Damage Control Resuscitation, Pain Control, Advanced Capabilities for Emergency Medical Monitoring, Critical Care Engineering, Clinical Trials, Eye Trauma, Craniomaxillofacial, and Blood (Coagulopathy), to focus on the most critical aspects of combat wound care from the battlefield to upper echelon hospitals. Our core research program is funded and supported by the

Journal article

6 null

Science and Technology more than 50 years ago. As one of the newer committees on Capitol Hill, it has a long history of bipartisanship and tackling some of the most important challenges facing the nation. The Committee successfully oversaw the reorganization of the space program and ensured NASA met its goal of landing a man on the moon by the end of the 1960s. During the difficult times of the 1970s, the House gave the Committee new jurisdiction in the energy and emerging environmental fields. With a further expansion of responsibilities in the 1980s and 1990s, the Committee's legislative and oversight work included a wide assortment of technology issues as well as intellectual property rights, homeland security, and the development of super-computers and the Internet. In the 21st century the Committee had to confront natural and manmade disasters as well as maintain the nation's technological lead in the sciences and education. The first written history of the Committee covered the period from its inception through 1979. It was an all encompassing review prepared by subcommittee Chairman Ken Hechler of West Virginia. The work reflected firsthand knowledge of the major events, legislation passed, the Members who served on the Committee and the expert staff assembled to help them in their work. Through the use of its extensive table of contents and epilogue, the researcher can review the wide-ranging activities of the Committee and read extensive quotes by the principals. When preparing this updated history of the Committee, it was readily apparent that an entirely different approach had to be developed to recount the

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157 null

This report contains plans for research and development within the FAA for 1998. Partial contents include: Objectives, aviation community initiatives, long-term research, and program area descriptions of air traffic services, airports technology, aircraft safety, aviation security, human factors and aviation medicine, environment and energy, and R,E&D program management.

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183 null

The initial effort during Phase I of the Mobile Detection Assessment and Response System (MDARS) Program was aimed at demonstrating the feasibility of a single robotic security platform operating under the high-level control of a remote host with the direct supervision of a human operator. This document describes the concept of a distributed host architecture geared towards a single guard controlling up to eight robots and explores some of the key issues that were considered in the actual development. The objective is to field a supervised robotic security system that basically runs itself until an exceptional condition is encountered that requires human intervention. A globally shared world model is maintained to provide a real-time collision avoidance capability complementing the Cybermotion virtual path navigation scheme employed on their K2A robotic platform. A centralized database of high-value inventory is routinely compared with observed inventory as monitored by interactive RF tag-reading systems onboard the patrolling robots. Each robot is equipped with microwave and passive infrared motion detection sensors providing full 360-degree coverage, and an intelligent security assessment algorithm is employed to maximize the probability of detection while simultaneously filtering out nuisance alarms.

Final technical
rept.

SPAWAR-TD-
115 3026

The report is designed to provide a broad base of quantitative information about U.S. science, engineering, and technology for the use of public and private policymakers in their decisions about these activities. Investments in basic research, advanced technology, and science and engineering education are critical to the achievement of our national economic and social goals of improving health, welfare, economic competitiveness, and national security. The quantitative analyses in this report provide information on a variety of critical trends and issues as we prepare to enter the 21st century. The report presents information on science and mathematics education from the precollege level, through graduate school, and beyond; and also presents information on public attitudes and understanding of science and engineering. It analyzes science and engineering activities in the United States and provides valuable comparative information on science and technology in other countries. The entire report will be available on the World Wide Web.

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800 null

This report summarizes Naval Surface Warfare Center (NAVSWC) participation in the following five principal areas involving technology interactions with the public and private sectors: (1) Domestic Technology Transfer (DDT), (2) Navy Potential Contractor Program (NPCP), (3) Industry Independent Research & Development (IR&D), (4) Small Business Innovation Research (SBIR), and (5) Technology Base Contracting. Keywords: Domestic technology transfer (DDT); Navy Potential Contractor Program (NPCP); Small Business Innovation Research (SBIR) Contracting.

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NAVSWC/MP-24 90-445

2019 Special Operations Forces Industry Conference. TOCs: Intro to SOF AT and L (TILO, SBIR, OSB, TE); Disrupter Event: Technology Focus Area #1(AI/ML/Robotic Automation); CRADA Crash Course; Acquisition Agility/SOFWERX; USSOCOM: Sustaining the SOF Warrior in A DynamicOperational Environment; Disrupter Event: Technology Focus Area #3 (Next Generation ISR); Component Commanders Forum; PEO SOFSA Overview; Senior Industry Executive Forum (Large Business); Program Executive Officers; Disrupter Event: Technology Focus Area #2 (Hyper Enabled Operator).

Conference Proceedings

8 null

This study examined how key selected Department of Energy (DOE) laboratory capabilities align with Department of Defense (DoD) microelectronics requirements. DoD microelectronics, electronic materials, and electronic integration technology requirements were identified in the annual Defense Technology Area Plan (DTAP). An analysis of open information was used to select the key DOE laboratories with focused activities in the microelectronics area. The selected organizations were visited by the study team. The resulting analysis shows that the selected DOE laboratories and facilities have strong microelectronics capabilities in a wide range of areas relevant to the DTAP areas examined. A number of opportunities are identified for cooperative DoD-DOE microelectronics activities.

Recommendations are made on areas of further analysis particularly in better coordinating and managing the defense interests across agencies.

Final rept.

102 IDA-D-1950

This is the final report for research done under in-house Workunit 71841009 entitled the Culture & Cognition Laboratory (CCL) during the period 5 June 2005 through 7 April 2010. Although CCL is an Air Force Research Laboratory (AFRL) Human Effectiveness Directorate research facility, it is located off-site at Wright State University (WSU) per a Cooperative Agreement for laboratory space and a Cooperative Research and Development Agreement for general research support. The report includes descriptions of the physical aspects of CCL, its capabilities, the Situation Authorable Research Environment (SABRE) used to conduct experiments, descriptions of experiments using a computer role-play game which enables complex problem solving by actively engaged interacting players from different cultures, a review of behavior modeling efforts under the workunit, and a novel statistical techniques measuring maximal diversity in teams. The report concludes with an extensive set of lessons learned and recommendations.

Final rept. 5
Jun 2005-7 Apr
2010

AFRL-RH-WP-
42 TR-2011-0060

Commercial drivers and globalization have resulted in a weakening of the domestic telecommunications equipment industry which raises concerns about economic growth and national security. This study looked at three key telecommunications equipment sectors; optical core network, router/switch, and wireless and developed a framework for supporting government decision makers in evaluating policy options. A key hypothesis is that emerging trends may reveal opportunities for policy options to be effective. The study conducted interviews to establish goals that captured the concerns throughout the Federal Government. A framework was developed using a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis to identify opportunities and then select appropriate and effective policy options. This framework was applied to each of the three key sectors and a set of findings on potential policy actions was reported. This work highlights one strategic method that can be used to identify emerging trends where policy actions may have an increased effect.

Final rept. Apr-
Oct 2014

IDA-D-
5346,IDA/HQ-
79 14-001187

Although the United States is a world leader in scientific research, it lags behind some economic powers in the application of technologies. As quality and manufacturing excellence were critical to US competitiveness in the 1980s, so is commercializing technologies in the 1990s. With billion dollar budgets and exceptional scientific talent, the potential for fruitful technology transfer is abundant. By definition, federal-to-commercial technology transfer is the ability to leverage national investments in technology beyond their traditional customer base. The technology can be physical devices, processes, knowledge, or proprietary information. Unfortunately, and despite exhaustive legislative efforts, US industry has fallen behind its competitors in the application of federal technologies to commercial uses. However, research indicates that some organizations routinely experience successful technology transfer actions. In fact, studies identify a gap between the technology transfer rates of some universities and government laboratories. The objective of this thesis effort is to pinpoint techniques which may improve Air Force technology transfer. First, previous literature is utilized to identify attributes associated with successful technology transfers. Surveys, which define the presence of successful attributes, are personally administered to key individuals on acquiring and developing teams of Air Force laboratory sponsored technology transfer projects. Data from 19 technology transfer projects are analyzed. Results of the analysis pinpoint techniques which can be used to improve Air Force technology transfer strategies. (MM)

Master's thesis,

AFIT/GCM/LA
165 S/95S-7

Superior technology yields victory on the battlefield with the minimum cost in human life. How we can retain the nation's military technological preeminence in the face of massive cuts to the defense budget is the subject of this paper. Increased private sector participation is offered as a way to strengthen public and congressional support for military lab funding, enhance national competitiveness. and benefit the military through the transfer of technology from commercial to military. This paper proposes aggressive marketing of DoD lab capabilities to increase participation in commercial development activities.

Research rept.
Aug 1992-Apr
1993

NDU/ICAF-93-
35 RS5

Since its inception in 1991, SERDP has responded to the Department of Defense's (DoD) highest priority requirements by supporting just under 300 environmental science and technology projects. These projects have enabled DoD installations to meet their environmental responsibilities using cost-effective and innovative methods. During FY 1999, SERDP continued to play a critical role in the development of science and technology that supports the DoD's environmental security goals. While the projects represent only a small selection of the many innovative and groundbreaking projects supported by SERDP, they show the breadth and depth of the Program and highlight the most significant accomplishments of FY 1999. Moreover, these accomplishments demonstrate the potential cost savings while simultaneously maintaining mission readiness when new technologies become fully implemented.

Annual rept. 314 null

The FY 96 Geophysics Technology Area Plan describes Phillips Laboratory's exploratory and advanced technology development in the field of geophysics. The document addresses user needs, goals, major accomplishments, and changes from last year for each geophysics thrust. Thrust 1 describes geophysics for space operations and communications. Thrust 2 covers geophysics for air and combat operations. Finally, thrust 3 addresses geophysics with corporate applications. (AN)

null PL-TM-96-39 1001

This regulation provides policy for the management and execution Army security Assistance and International Logistics Support programs.

null 105 AR-12-1

This report is intended to be a single-source document describing the U.S. Army Research Office (ARO) research programs for FY04. It includes: A brief review of the strategy employed to guide ARO research investments and noteworthy issues affecting the implementation of that strategy; Statistical information on 6.1 funding and program proposal activity; and Research trends and accomplishments of the individual ARO scientific divisions.

null 321 null

The effect of water activity and pH on the anaerobic growth of *Staphylococcus aureus* in six mobility-enhancing ration components (MERC), including a beef stick (snack) and five meat sandwiches was determined. These are ready-to-eat rations that can be consumed on the move, eaten without utensils and require no preparation. The MERCs, adjusted to various target water activities and pH, were challenged with a three-strain *S. aureus* cocktail. Samples were packaged in a clear, permeable, Scotchpack material, overwrapped and sealed in a flexible, high-barrier Meal, Ready-to-Eat pouch containing an oxygen scavenging sachet. Only beef snacks were sealed under 20 mm Hg to simulate commercial practice. All samples were held at 35 degrees centigrade for six months and tested periodically for growth or inhibition of *S. aureus*, aerobic plate counts, and yeast and molds. *S. aureus* growth was inhibited in four of the six MERC products tested at a combination of 0.89 water activity and pH 4.8 to 5.4.

Final rept. Mar
98-May 99

NATICK/TR-
21 00/003

This document shows the agenda for the 9th Annual Science and Engineering Technology Conference/DoD Technology Expo Held 15 - 17 April 2008 in North Charleston, South Carolina and briefing charts presented at the conference.

Conference
Proceedings

777 null

This report documents the principal findings of a study on exploring innovative ways for acquiring advanced technologies to meet future Army needs—namely, using public-private partnerships (PPPs). This report is an updated and expanded version of a paper presented at the Army Materiel Command (AMC) Executive Steering Committee meeting in April 1997. At that time, the focus of the study was limited to generating revenue from research and development (R&D) opportunities and infrastructure assets. The research was broadened to examine other advantages of PPPs. This report examines the overall utility of PPPs from the Army's perspective.

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RAND/MR-
104 997-A

While ballistic missile defense does not engage in research aimed directly at medical problems the technologies involved are frequently similar to those needed by the medical community to identify, diagnose and attempt to defeat cancer.

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99 null

broader competitiveness challenges facing the United States. Set up at different times to accomplish different missions, they are geared more to the Cold War era that is behind us than to the era of intense international economic competition in which we now find ourselves. Like many of the policies and institutions that were developed during the post-war period, much of the work at the labs needs to be refocused to address contemporary problems. Refocusing the activities of the Federal labs, however, entails risk as well as opportunity. Risk, in that they constitute a major national resource which could be squandered if we fail to manage the transition appropriately. Opportunity, in that they represent important capabilities which can be harnessed to strengthen U.S. industry's technological performance. It is essential that U.S. policymakers, the business community and the labs themselves approach this transition with a strategy and realistic expectations, instead of just letting it happen. There is no doubt that the United States should make every effort to enhance laboratory-industry cooperation in the years ahead. The national investment that we have made in these facilities is simply too great to ignore. But we must not let the need to refocus the labs cloud our view of the contribution that they can realistically make to U.S. industrial performance. Many business executives doubt that U.S. industry will derive significant new technological benefits from the Federal labs and caution against holding up technology transfer from the labs to industry as the answer to our competitiveness problems. To do so would not only be unrealistic, but also could ultimately create deep

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NRL is the Department of the Navy's corporate laboratory; it is under the command of the Chief of Naval Research (CNR). As the corporate laboratory of the Navy, NRL is an important component in the Office of Naval Research's effort to meet its scientific research responsibilities. For its basic research effort, the Laboratory receives guidance from the CNR that establishes the level of effort and trend direction. The Laboratory then develops a comprehensive research proposal package that is submitted to the CNR for consideration for Navy basic research support. The total Navy basic research program ultimately is evaluated by Congress. In addition to internal critical review and the evaluation by the CNR and others, the research at NRL is published in refereed journals and/or reported at national and international scientific conferences. There is an aggressive policy of scientific interaction whereby scientists from around the world visit NRL and are visited by NRL scientists. In this way, NRL research is subject not only to management review but also to peer evaluation. NRL has had a long and fruitful relationship with industry as a collaborator, contractor, and most recently in Cooperative Research and Development Agreements (CRADA). NRL values this linkage and intends for it to continue to develop. NRL is an important link in the Navy R&D chain. Through NRL, the Navy has direct ties with sources of fundamental ideas in industry and the academic community throughout the world and provides an effective coupling point to the R&D chain for the Office of Naval Research (ONR).

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evolved from an August, 2007, meeting at the Morningside Inn, in Frederick, MD, sponsored by the Telemedicine and Advanced Technology Research Center (TATRC) of the US Army Medical Research Materiel Command. Participants were subject matter experts in clinical decision support (CDS) and included representatives from the Department of Defense, Veterans Health Administration Kaiser Permanente, Partners Healthcare System, Henry Ford Health System, Arizona State University, and the American Medical Informatics Association (AMIA). The Morningside Initiative was convened in response to the AMIA Roadmap for National Action on Clinical Decision Support and on the basis of other considerations and experiences of the participants. Its formation was the unanimous recommendation of participants at the 2007 meeting which called for creating a shared repository of executable knowledge for diverse health care organizations and practices, as well as health care system vendors. The rationale is based on the recognition that sharing of clinical knowledge needed for CDS across organizations is currently virtually non-existent, and that, given the considerable investment needed for creating maintaining and updating authoritative knowledge, which only larger organizations have been able to undertake, this is an impediment to widespread adoption and use of CDS. The Morningside Initiative intends to develop and refine (1) an organizational framework, (2) a technical approach, and (3) CDS content acquisition and management processes for sharing CDS knowledge content, tools, and experience that will scale with growing numbers of

Journal article

15 null

Academy. Known as a symbol of singlemindedness, prowess, and of readiness to serve, the falcon is synonymous with all of the critical values of this institution s fundamental mission to educate, train, and inspire men and women to become officers of character motivated to lead the United States Air Force in service to our nation. The symbolism of the falcon has not only led us to success on the athletic field, but it has led generations of officers through rigorous academic challenges, decorated careers of service, and guided heart-felt outreach to the communities served by Airmen around the globe. The skills the falcon represents farsightedness, aerodynamic execution, efficiency, and discipline are ingrained into cadets educational and military experiences. The result is a cadre of officers with character, critical thinking skills, and visionary leadership; which on today s complex battlefields, will help them to anticipate and respond to evolving missions in air, space, and cyberspace; to emerging, game-changing technologies; and to new forms of asymmetrical warfare. With more than a \$70 million annual budget, the U.S. Air Force Academy s sponsored research program is on the front-lines of this evolution. Representing 18 research centers and two Air Force institutes, cadets have a diverse choice of research opportunities. In addition to the centers and institutes within the Dean of Faculty, cadets also benefit from the research efforts within the USAFA Center for Character and Leadership Development, under the Commandant of Cadets, and the USAF Academy s Human Performance Lab in the Department of Athletics. The newly established K-12 STEM

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This report focuses on an efficient extension to traditional technology transfer practices using the World Wide Web's (WWW) interactive features to promote the transfer and commercialization of technology developed by Rome Laboratory (RL). Emphasis was on aligning the technology transfer portion of the RL Web site with the need of private sector technology transfer professionals and the business processes of the Technology Transfer Office (TTO) at Rome Laboratory. Concepts and principles guiding the organization, structure, and design of Web sites as a suitable medium for electronic technology transfer are from the literature on transaction costs, marketing, diffusion, information retrieval, and strategic networking.

Final technical
rept. Jul 95-Jul
96,

213 RL*-TR-97-15

The Security Assistance Management Manual (SAMM) provides, in a single volume, information and instructions needed at all levels within the Department of Defense to carry out responsibilities of the Secretary of Defense for administering U.S. Military Assistance and Foreign Military Sales Programs and related activities. Subjects unique to these programs are covered in detail; those affecting program administration, but which are of general application to other DoD programs, are referenced and summarized if appropriate. The SAMM has been structured to capitalize on the flow of security assistance functions and take advantage of the fact that many of the topics have a natural interrelationship and corresponding logical interaction.

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DOD-5105.38-
1263 M

The National Oceanographic Partnership Program [NOPP] was established in Fiscal Year 1997 through Public Law 104-201. Supplemental legislation for appointments to the NOPP oversight body, the National Ocean Research Leadership Council [NORLC] and the Ocean Research Advisory Panel [ORAP] is contained in Public Law 105-85, the FY 1998 Defense Authorization Act. The Secretary of the Navy is charged in Subtitle E of title II, Division A, Public Law 104-201 to establish a National Oceanographic Partnership Program to: 1) promote the national goals of assuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication through improved knowledge of the ocean; and 2) to coordinate and strengthen oceanographic efforts in support of those goals by - a) identifying and carrying out partnerships among Federal agencies, academia, industry, and other members of the oceanographic scientific community in the areas of data, resources, education, and communication, and b) reporting annually to Congress on the Program. This report of the Fiscal Year 1999 Partnership Program meets that statutory requirement.

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83 null

New and ever-changing threats are facing our nation today. The ability of the Navy to develop, identify, and transfer technology to the hands of Sailors and Marines is more crucial now than ever before. Like other government agencies, the Navy is facing an increasing number of budget restraints. This is causing the Navy to look for new ways to leverage and transfer technology from the commercial sector into existing and developing systems. This thesis looks at the venture capital community as a possible source of innovation and technology for the Navy. The venture capital community has proven to be efficient at discovering technology that has strong potential to succeed in commercial markets. This thesis looks at the feasibility of the Navy leveraging commercial sector investments to find dual-use technologies that have application in the Navy. By evaluating current government venture initiatives and matching them against the Navy's goals for venture capital, this research shows that the Navy could benefit by engaging the venture community. Based on the research, this thesis provides recommendations on how to engage the venture capital community and proposes the structure and organization for a Navy venture initiative.

Master's thesis

158 null

In February 2003, the Office of the Deputy Under Secretary of Defense for Industrial Policy, ODUSD(IP), produced Transforming the Defense Industrial Base: A Roadmap. This report identified the need for systematic evaluation of the ability of the defense industrial base to develop and provide functional, operational effects-based warfighting capabilities. The Defense Industrial Base Capabilities Study (DIBCS) series is a systematic assessment of critical technologies needed in the 21st century defense industrial base to meet warfighter capabilities, as framed by the Joint Staff's functional concepts. In addition, the DIBCS series provides the basis for strengthening the industrial base required for 21st century warfighting needs. This report addresses the third of those functional concepts, Force Application.

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229 null

The Office of Technology Transition (OTT) was established by the Secretary of Defense in response to 10 U.S.C. 2515 to serve as a focal point for the domestic technology transfer activities of the Department of Defense. This report, required by Section 2515 (See Appendix A), summarizes the accomplishments and highlights key technology transfer efforts throughout the Department for FY 2004 and FY 2005. This 11th report discusses our major efforts and successes in transferring technology. Appendix B displays specific data elements showing the trends in Cooperative Research and Development Agreements (CRADAs) and Patent License Agreements (PLAs), and the increase in royalty income as a result of licensing DoD developed technologies. Appendix C describes the DoD George F. Linsteadt Technology Transfer Achievement Award and provides information on the award winners. Appendix D highlights some of the technology transfers such as the Vein Viewer which is a system and method for enhancing visualization of veins, arteries, and other subcutaneous natural or foreign structure in the body. Appendices E and F provide the details of the Federal Laboratory Consortium (FLC) awards to DoD activities for FY 2004 and FY 2005, respectively.

null 116 null

Keynote Speaker, Session II Overview and Strategy (on DTRA, ARFEC, DOE, Navy and Air Force), Section III (Precision guidance, controller mortar, fuze system, ammunition), Section IV (cartridge, fuze, high mechanical shock, long-range howitzer, high power pulse), Session V (sensor, fuze, thermal batteries, MEMS, capacitors)

Conference Proceedings 718 null

As an element in the Coast Guard's compliance strategy for decreasing greenhouse gases (GHG), and increasing the use of alternative fuels, the USCG Research & Development Center (RDC) tested a blend consisting of 16.1 percent biobutanol by volume (BU16), with regular E0 gasoline. BU16 is a renewable alternative gasoline fuel. The RDC tested BU16 on a USCG 25 Response Boat - Small (RB-S) powered by twin Honda Marine 225 HP, BF 225 engines at Training Center Yorktown, VA. Biobutanol was obtained from Gevo, Inc., currently the sole United States supplier, working through a local distributor who blended and delivered it. Fuel quality was monitored throughout the test. Before the operational test, Honda conducted materials testing to examine engine compatibility with BU16, emissions testing, bench testing to determine the allowable mixing ratio for isobutanol, and on-water testing to assess engine performance. Operational testing was conducted from 29 July 2013 to 31 July 2014. The RB-S underwent typical training missions and ran periodic baseline tests using E10 gasoline and BU16 for comparison. The RDC collected and analyzed engine performance data and crew observations of boat performance and maintenance. Details of the testing, and the conclusions and recommendations are included in the report.

Final rept.

CG-D-10-
15,RDC-UDI-
84 1253

Examines the critical role of the defense industrial base in the implementation of the National Security Strategy. Defines the desired characteristics of the defense industrial base, as well as recent trends and actions to improve the responsiveness of the base. Concludes that an industrial base strategy is required to ensure a defense industrial base that supports Reconstitution.

Research rept.
Aug 1992-Apr
1993

NDU-ICAF-93-
50 S51

This is the final report for the Rapid Prototyping of Applications Specific Signal Processors (RASSP) Program - Study Phase. This study represents a five-month contract effort, DARPA contract number MDA972-92-C-0057, performed by Honeywell's Systems and Research Center for the Defense Advanced Research Projects Agency, DARPA. The Broad objective of this study was to produce information that would aid the Government program manager to manage the risks inherent in the implementation phase of the RASSP program. This meant (1) identifying the risks and problem areas that might be encountered during the implementation phase and (2) suggesting risk reducers or solutions that could be used to minimize or solve these problems. Ultimately this meant recommending an approach for the implementation phase and also identifying potential areas for further work. The RASSP program embraces two tightly coupled focuses; one related to process or methodology, and the other related to target prototype or product systems. These are discussed in detail in this final report.

Final rept. 12
May-12 Oct
1992

145 null

nonpublic use, in the United States are subjected to a variety of detrimental environmental conditions. Many of the decks are in northern regions and are subject to cold weather; some of these are subjected to further degradation from the applications of deicing salts. The current major distress noted is the occurrence of shallow delaminations resulting in horizontal voids below the surface of the decks. It appears the majority of the delaminations are caused by freezing and thawing action, by chloride attack that corrodes the reinforcement, and by alkali-silica reaction. All three attack mechanisms require the presence of moisture. Efforts to design and place a dense, impermeable concrete are hindered at times due to the porous nature of concrete. As the concrete ages, a micro system of tension cracks and other surface imperfections can develop, exposing the matrix to water and chloride infiltration. Water infiltration alone can lead to accelerated alkali-silica reaction and steel-reinforcement corrosion. Surface spalling not only reduces ride quality, but it leads to more serious problems including structural deterioration and failure. Many concrete sealers and penetrants on the market are designed to protect concrete by improving and enhancing its physical properties. Surface sealers such as silane, silicones, and siloxanes have been developed to prevent the infiltration of moisture and chlorides. Penetrants such as high molecular weight methacrylate (HMWM) and epoxies have been developed to penetrate and fill cracks and porous areas in the concrete, sealing it against the infiltration of air, water, and chloride. Once the concrete is effectively sealed, both the progression of alkali-

Final rept.

WES/CPAR/SL-
283 98-1

Cooperative Research and Development Agreements (CRADAs) are used by federal laboratories to participate in collaborative efforts and partnerships with industry. Although not technically a research laboratory, the Naval Postgraduate School (NPS) is a federally funded research university that has developed an extensive sponsored program of Technology Transfer (T2) with the private sector. Cooperative research and development is often a two-way instrument whereby knowledge-generated value can flow in both directions. This thesis assesses that value from the perspective of the federal partner, based on the NPS case as a specialized academic and research institution. The research and analysis performed within the context of this thesis contributes to goals established in the NPS's Technology Transfer Business Plan

Master's thesis

233 null

This document summarizes the Report of the Department of Defense Acquisition Law Advisory Panel which was transmitted on January 14, 1993, to the congressional defense committees, as directed by S800, Public Law 101-510. Entitled Streamlining Defense Acquisition Laws, the Report consisted of over 1, 800 pages, reflecting the results of more than 16 months of intense effort by the Panel to fulfill the requirements of its charter. This monumental study presented the Panel's recommendations over 600 statutes-each affecting the defense acquisition process in some way-that were selected for review. The Panel members, while proud of the effort which produced this Report, also recognized the need for an additional publication to highlight their principal findings and recommendations for the diverse and often divergent communities who are important stakeholders in defense and other government procurement matters.

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97 null

The Naval Command, Control and Ocean Surveillance Center RDT&E Division, or NRaD, Command History for calendar year (CY) 96 is submitted in conformance with OPNAVINST 5750.12E. The history provides a permanent record of CY 96 activities at NRaD. Although the history covers one calendar year, much of the information was only available on a fiscal year (FY) basis and is so noted in the text. The history is divided into two main sections. The first section gives an introduction to NRaD and describes developments in organization, personnel, and funding. The second section documents technical programs underway during 1996. Because the results of scientific work often develop out of many years' effort, programs are not always documented annually. Previous command histories provide extensive background articles on many major programs. When possible, background articles are prepared for new or previously untreated programs. By consulting command histories written over a period of several years, a reader can follow the broad thrusts of Division research and development. In this year's History, background articles appear as featured programs in Calendar Year 1996 Highlights. These articles were originally printed in the NRaD Outlook (JoAnne Newton, Editor). Appendices to this document provide supplementary Command information. Appendix A lists achievement awards given in CY 96. Appendix B lists patents awarded in CY 96. Appendices C and D provide lists of distinguished visitors hosted by NRaD and major conferences and meetings at NRaD, respectively.

Rept. from Jan-
Dec 96.

NRAD-TD-
160 2948

The U.S. Air Force (USAF) has a long history of working with allies and partners in a security cooperation context to build the defense capacity of those nations, maintain and acquire access to foreign territories for operational purposes, and strengthen relationships with partner air forces for the promotion of mutual security-related benefits. The USAF and other Department of Defense (DoD) entities conduct a host of activities with partner air forces, including training, equipping, and field exercising, as well as other less-tangible activities, such as holding bilateral staff talks, workshops and conferences, and table top exercises, and providing educational opportunities. The USAF, like the other U.S. Military Services, has its own niche capabilities for working with partner countries. Naturally, the USAF focuses mainly on aviation-related activities, including air, space, and cyberspace. Many programs (or tools) are available for use when working with partner countries in a variety of contexts.¹ Some of those programs are directly managed by the USAF meaning that the USAF determines the overall objectives and controls the resource allocations.

Monograph

198 null

Previous efforts by the US Army Engineer Research and Development Center, Construction Engineering Research Laboratory (ERDC-CERL) to develop a life-cycle building model have resulted in the definition of a core building information model that contains general information describing facility assets such as spaces and equipment. To describe how facility assets (i.e., components) function together, information about assemblies of assets and their connections must also be defined. The definitions of assets, assemblies, and connections for the various building-information domains are discipline-specific. Work documented in ERDC/CERL CR-13-2 identified the processes and tasks specifically associated with the design of building electrical systems and the information exchange requirements for every participant in the design. The findings were used to develop an information-exchange Model View Definition (MVD) for building electrical systems. The objective of the current work was to document the steps needed to identify the electrical MVD attributes in three experimental building information models representing typical low-rise Army facilities, and to update the models. This work also validated the International Foundation Class (IFC) export function from the experimental models against the electrical MVD, and studied the requirements for creating computable open building models that can be utilized for the automated information exchanges.

Final rept.

ERDC/CERL
73 CR-13-3

This document contains abstracts and bibliographic references for various Arroyo center reports.

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RAND-AR-
204 7034-A

As an element in the Coast Guard's compliance strategy for decreasing greenhouse gases (GHG), and increasing the use of alternative fuels, the USCG Research & Development Center tested 100 percent biodiesel (B100), a renewable alternative diesel fuel, on a USCG 49' Buoy Utility Stern Loading (BUSL). B100 derived from Waste Vegetable Oil (WVO) was obtained from a local supplier, and fuel quality was monitored throughout the test. Prior to operational testing, a materials audit for compatibility with B100 was performed on the fuel-wetted components on the three diesel engines (two main propulsion engines and one generator), and incompatible components were replaced with suitable substitutes. Break-in testing was conducted before the start of operational testing to ensure no B100 compatibility issues remained. Engine exhaust emissions were not measured, but were estimated through an analysis of previous studies on similar engines. Operational testing was conducted over a one-year period starting in March 2013. During this time, the BUSL carried out typical missions in its normal eastern Long Island Sound operating area. Engine performance data were collected and analyzed, along with crew observations of boat performance and maintenance. Details of the testing, and the conclusions and recommendations are included in the report.

Final rept. RDC-UDI-1252,USCG-D-72 07-14

The Annual Progress Report gives the calendar year 2001 personnel and funding strength of the U.S. Army Aeromedical Research Laboratory. This report includes an overview of the Laboratory activities, current areas of research, and a brief description of the research being conducted.

Annual progress rept. 50 null
Jan-Dec 2001

CRADAs * Are established between Federal Government Laboratories and commercial partners; * Facilitate technology transfer between the parties for mutual benefit; * Help to improve U.S. competitiveness; * Allow industry partner to contribute resources such as personnel, services, property and funding to the effort. The government can contribute all the above, except funding. TACOM technical opportunities include * Fuel efficiency * Vehicle modernization * Vehicle driver and crew safety * Maintenance and logistics * Innovative manufacturing * Simulation and virtual reality.

Briefing charts TARDEC-TR-9 16178

Since 1986, TSWG has developed and transitioned technologies for combating terrorism in the broad context of national security by providing a cohesive and inclusive forum to define and fulfill user-based technical requirements spanning the Federal interagency community. By harnessing the creative spirit of U.S. and foreign industry, academic institutions, and government and private laboratories, TSWG (through the activities of its functional subgroups) nurtures a robust community for defining, agreeing to, and cooperatively developing technical solutions to the most pressing counterterrorism needs. This cooperative, interagency focus fosters a consensus-based approach to the rapid prototyping and development of combating terrorism devices, training tools, reference materials, software, and other equipment that has wide utility in the counterterrorism community at large.

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96 null

Presents highlights of several unclassified research and development programs performed at the Naval Research Laboratory during fiscal year 1991. Also presents history of NRL, highlights of NRL research in 1991, and general information.

Annual rept.
for FY1991

NRL-PUB-202-
290 4830

The U.S. Army is pleased to inform Congress, the Defense community, and the general public of the accomplishments of Army contractors within the scope of the Small Business Innovation Research (SBIR) Program. Through the Army's SBIR Program, small businesses have begun tearing down the technological and scientific barriers that had impeded progress in areas of concern to our nation's defense. The Army, in funding research and development efforts by small businesses, has been able to seize and retain the technological initiatives that are so vital in this era of change and challenge. This Army Phase III Review focuses on twenty-one projects which the Army feels deserve special recognition. The contractors that performed this work have achieved significant innovations in fields such as membrane technology, artificial intelligence, radar, weather forecasting, and ultrasonic spectroscopy. Although these companies are small in size, they are characterized by the wide scope of their vision, capabilities, dedication, and talents that make outstanding achievements possible. Many of the contractors would have been unable to fund their research and development without benefit of the SBIR Program.

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59 null

The mission of the Naval Research Laboratory is to conduct a broadly based multidisciplinary program of scientific and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems, and ocean, atmospheric, and space sciences and related technologies. The Naval Research Laboratory provides primary in-house research for the physical, engineering, space, and environmental sciences; broadly based applied research and advanced technology development programs in response to identified and anticipated Navy and Marine Corps needs; broad multidisciplinary support to the Naval Warfare Centers; and space and space systems technology, development, and support.

null 242 null

Military needs must determine what aspects of science and technology the Department pursues, and with what priority. It is the warfighter who enunciates those needs in this post-Cold War environment of widespread local warfare, potential for major regional conflicts, proliferation of weapons of mass destruction, and peacemaking operations.

null 41 null

The seventeenth Annual Space Control Conference sponsored by ESC and co-hosted by MIT Lincoln Laboratory and the AF Research Laboratory was held on 13, 14, and 15 April 1999. The purpose of this series of conferences is to provide a forum for the presentation and discussion of space control issues. This proceedings documents those presentations from this conference that were received in time for pre-conference publication. The papers contained were reproduced directly from copies supplied by their authors (with minor mechanical changes where necessary). It is hoped that this publication will enhance the utility of the conference.

Project rept., 200 STK-254

This workshop focused on human factors engineering in air traffic control from the view point of both the air traffic controllers and the pilots. Topics include: Man machine systems; Automation, Commonality, Manpower/Workloads/Skills, and Aviation safety procedures.

null FAA-ASF-81-9, DOT-TSC-198 FAA-81-22

This report summarizes the research activities of the Air Force Institute of Technology's Graduate School of Engineering and Management. It describes research interests and faculty expertise; lists student theses/dissertations; identifies research sponsors and contributions. Included in the report are: faculty publications, conference presentations, consultations, and funded research projects. Research was conducted in the areas of Aeronautical and Astronautical Engineering, Electrical Engineering and Electro-Optics, Computer Engineering and Computer Science, Systems and Engineering Management, Operational Sciences, Mathematics, Statistics and Engineering Physics.

Technical rept.
1 Oct 2007-30
Sep 2008

AFIT/EN/TR-
216 09-02

With Arab Spring Revolutions struggling to gain democracy and political freedom, it is essential to understand the factors that allow a third-world country the ability to forge a democratic future. This case study comparing the political development of Tunisia and Algeria outlines the importance of education, women's rights, and nation-supporting militaries to the success, and even initiation, of a democratic revolution. Since these two Maghreb countries have similar people, history, and resources, but profoundly different outcomes, they make an excellent case to examine in order to determine why Tunisia excelled at their quest for true democracy and Algeria still struggles under militant rule. This examination gives further insight to Tunisia's current democratic status and provides the foundation necessary to predict the likelihood of a lasting Tunisian democracy. In summary, this relevant case study demonstrates how collective thought, women's societal status, and role of the military can determine the success or failure of a democratic revolution.

Conference
Paper

28 null

This report contains the proceedings of the 1995 USAF Structural Integrity Program Conference held at the Hilton Palacio del Rio Hotel in San Antonio, Texas, from 28-30 November 1995. The conference, which was sponsored by the Aeronautical Systems Center's Engineering Directorate and the Wright Laboratory's Flight Dynamics and Materials Directorates, was hosted by the San Antonio Air Logistics Center Aircraft Directorate, Aircraft Structural Integrity Branch (SA-ALC/LADD). This conference, as in previous years, was held to permit experts in the field of structural integrity to communicate with each other and to exchange views on how to improve the structural integrity of military weapon systems. Sessions were primarily focused on analysis and testing, engine structural integrity, structural materials and inspections, structural repair, and force management. This year, as in previous years, our friends from outside the U.S. borders provided the audience with outstanding presentations on activities within their countries. It is anticipated this conference will include their contributions in the agenda of future meetings. This year, 16 countries were represented in the audience.

Final rept. 28-
30 Nov 95,

WL-TR-96-
657 4093-VOL-1

control termites around base housing until it was banned in 1988. As bases are closed, contracted, or realigned, soil issues associated with this pesticide must be addressed. One issue that is not well understood is chlordane volatility. There are documented cases where chlordane applied to soil resulted in vapor intrusion into buildings; however, all these cases involved freshly applied pesticides. The effect of aging and weather for at least 20 years would likely change the potential for volatilization of soil-applied chlordane. This report covers three studies to assess volatility of aged chlordane in soil. The first was a laboratory study in a forced air system. Parameters such as temperature, relative humidity (RH), and various soil types were studied. Soils studied included chlordane-contaminated soils from McGuire Air Force Base (AFB), Davis-Monthan AFB, and a reference soil from the Vicksburg, MS, area called WES soil. Temperature variation studies (range from 10 to 50 deg C) using soils from McGuire AFB at 50% RH found a measurable chlordane flux only at 50 deg C. RH variation studies using McGuire AFB soil at 20 deg C found a measurable flux only at the 90% RH level. Tests of the various soils at 20 deg C and 50% RH indicated that of these, only the Davis-Monthan soil had a measurable chlordane flux. The second study was conducted in the field at Fort Dix Army Base to evaluate the effect of soil disturbance. This included simple vegetative removal, disturbance of the soil by tilling, and coring into the soil. Chlordane was found in all the sample locations and depths, with higher concentrations in deeper core samples. However, volatile chlordane was only

Final rept.

ERDC/EL-TR-
55 11-15

contains the Budget Message of the President and information on the President's budget and management priorities, including assessments of agencies performance. Analytical Perspectives, Budget of the United States Government, Fiscal Year 2003 contains analyses that are designed to highlight specified subject areas or provide other significant presentations of budget data that place the budget in perspective. The Analytical Perspectives volume includes economic and accounting analyses; information on Federal receipts and collections; analyses of Federal spending; detailed information on Federal borrowing and debt; the Budget Enforcement Act preview report; current services estimates; and other technical presentations. It also includes information on the budget system and concepts and a list of Federal programs by agency and account, as well as by budget function. Historical Tables, Budget of the United States Government, Fiscal Year 2003 provides data on budget receipts, outlays, surpluses or deficits, Federal debt, and Federal employment over an extended time period, generally from 1940 or earlier to 2007. To the extent feasible, the data have been adjusted to provide consistency with the 2003 Budget and to provide comparability over time. Budget of the United States Government, Fiscal Year 2003 Appendix contains detailed information on the various appropriations and funds that constitute the budget and is designed primarily for the use of the Appropriations Committee. The Appendix contains more detailed financial information on individual programs and appropriation accounts than any of the other budget documents. It includes for each agency: the

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This report contains summaries of research projects in the Department of Systems Management. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts.

Summary rept.
1 Jan-31 Dec 97 NPS-09-98-153 016

This report presents the results of an evaluation of a change in range factor as a result of an application of Racer's Edge polish to a T-38A aircraft (HAVE SLICKER). The objective of this effort was to characterize potential range factor (true airspeed multiplied by aircraft gross weight divided by fuel flow) changes as a result of the polish application. Testing was conducted by the USAF Test Pilot School Class 97B at Edwards AFB, California, from 16 March to 9 April 1998. Testing was requested by the Air Force Flight Test Center Single Face to Customer Office, at Edwards AFB, and was conducted under a Cooperative Research and Development Agreement number CR980100.

Final rept. 16 Mar-9 Apr 98 AFFTC-TR-98-72 05

The Naval Command, Control and Ocean Surveillance Center (NCCOSC) RDT&E Division (or NRaD) is a full-spectrum RDT&E laboratory serving the Navy, Marine Corps, and other Department of Defense and national sponsors within its mission, leadership assignments, and prescribed functions. NCCOSC is one of the Navy's four major warfare centers and reports directly to the Commander, Space and Naval Warfare Systems Command (SPAWAR) in Washington, DC. At NRaD we provide solutions to Navy, joint service, and national problems by generating and applying science and technology. We provide innovative alternatives to tomorrow's decision makers, enabling them to pursue new or expanded missions and capabilities. We work closely with NCCOSC inservice engineering divisions to provide Fleet, joint, and national users and customers with complete life-cycle support. This support spans efforts that range from generating science and applying technology to creating new system concepts and upgrading older systems to perform previously unforeseen roles. We also work with SPAWAR, other Navy system commands, the Office of the Chief of Naval Operations, the Fleet, the Office of Naval Research, defense and national agencies, academia, and industry to produce quality products and services. Our roles include providing leadership for developing systems and solutions and functioning as a smart buyer" to ensure that the government purchases quality products in an increasingly complex and technological market-place."

Rept. for Jan-
Dec 94.

NRAD-TD-
87 2735

The Annual Progress Report includes a description of the research conducted by the U.S. Army Aeromedical Research Laboratory (USAARL) during fiscal year 2011 (FY11) and an overview of FY11 activities. It also summarizes the FY11 personnel and funding strength of the USAARL.

Final rept. 1
Oct 2010-30
Sep 2011

80 null

Lead-based paint is no longer used in the field, but repair crews, nearby communities, and the environment may be exposed to unacceptable levels of lead as older steel structures are abrasive-blasted before repainting. Onsite dust-containment enclosures used during surface preparation are either inadequate or expensive and cumbersome. Lead exposure problems may be mitigated by the application of long-lasting metal coatings, effectively reducing the frequency of the blast/recoat maintenance cycle. Automated technologies can address containment and metallizing needs while offering higher speed and lower labor costs. They also can protect workers from excessive physical strain, safety hazards, and exposure to toxic materials released during paint removal. This report documents the design, construction, and field testing of a prototype Automated Thermal Spray System (ATSS) for surface preparation and coating of large steel public works structures. Using self-contained vacuum blasting technology, a video inspection system, and a thermal spray system, the remotely operated device was able to remove lead-based paint from part of a steel bridge and recoat the metal with a zinc/aluminum coating. Initial indications are that ATSS base operating cost of \$5.20 per square foot, for blasting and recoating combined, would be lower than the cost of blasting alone with environmental containment.

Final rept.

USACERL-TR-
69 98/08

As a result of the Navy's need to advance the U.S. industrial modernization and technology base, this document was developed to accentuate the Naval Ocean Systems Center (NOSC) Manufacturing Technology (ManTech) and Industrial Modernization Incentives Program (IMIP). Goals of the NOSC ManTech and IMIP programs are to develop new and improved processes, methods, techniques, and equipments to enhance our industrial-base capability, ensure quality and affordability of command, control, communications and ocean surveillance systems, enable the transition of Research and Development (R and D) from development to production, and expedite the implementation of advanced methods and technologies in defense production facilities. The Manufacturing and Computer Engineering Technology Branch personnel directly contributed to the concept and development of this report.

Final rept.

NOSC-TD-
109 2131

In the recent past, there have been increasing pressures for agencies within the national security space community to conduct joint or interagency programs, with the goal being to take advantage of potentially shared objectives and mission synergies. Expectations are that such joint or interagency programs will result in improvements in efficiency and effectiveness and the elimination of unnecessary redundancies among programs. However, the process of undertaking such efforts needs to recognize a number of policy issues and challenges that will influence how these programs are executed. This study seeks to illuminate these policy issues and challenges, particularly in how they will influence multi-mission space system concepts and programs conducted jointly by the National Reconnaissance Office (NRO) and the Air Force.

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RAND/MR-
146 1372-NRO

As an element in the Coast Guard's (CG) compliance strategy for decreasing greenhouse gases (GHG), and increasing the use of alternative fuels, the USCG Research & Development Center (RDC) tested a blend consisting of 16.1 percent biobutanol by volume (BU16), with regular E0 gasoline. BU16 is a renewable alternative gasoline fuel. The RDC tested BU16 on a USCG 38 Special Purpose Craft Training Boat (SPC-TB) powered by twin Mercury 300 HP Verado engines at CG Training Center Yorktown, VA. Butanol was obtained from Gevo Inc, currently the sole United States supplier, working through a local distributor who blended and delivered it. Fuel quality was monitored throughout the test. Before the operational test, Mercury Marine conducted materials testing to examine engine compatibility with BU16, bench testing to measure emissions, and on-water testing to assess engine performance. Operational testing was conducted from 1 July 2013 to 31 July 2014. The SPC-TB underwent typical training missions and ran periodic baseline tests using E10 gasoline and BU16 for comparison. The RDC collected and analyzed engine performance data and crew observations of boat performance and maintenance. Details of the testing, and the conclusions and recommendations are included in the report. Final rept.

CG-D-11-
15,RDC-UDI-
78 1253

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midazolam to stop seizures elicited by the nerve agent soman when midazolam was administered by different routes (intramuscular, intranasal or sublingual) at one of two different times after the onset of seizure activity. Guinea pigs previously prepared with cortical electrodes to record brain electroencephalographic activity were pre-treated with pyridostigmine (0.026 mg/kg, intramuscularly) 30 min. before challenge with a seizure-inducing dose of the nerve agent soman (56 microng/kg, subcutaneously), and 1 min. later, they were administered 2.0 mg/kg atropine sulfate admixed with 25.0 mg/kg 2-PAM Cl (intramuscularly). Groups of animals were administered differing doses of midazolam by the intramuscular, intranasal or sublingual route at either the onset of seizure activity or 40 min. after the onset of seizure activity that was detected in the electroencephalographic record. When given immediately after seizure onset, the anticonvulsant ED 50 of intramuscular midazolam was significantly lower than that of intranasal midazolam, which in turn was significantly lower than sublingual midazolam at that time. At the 40-min. treatment delay, the anticonvulsant ED 50 of intramuscular or intranasal midazolam did not differ and both were significantly lower than the sublingual route. Higher doses of midazolam were required to stop seizures at the 40-min. treatment delay time compared to immediate treatment. The speed of seizure control for intramuscular or intranasal midazolam was the same while sublingual midazolam acted significantly slower. Midazolam was effective in treating soman-induced seizures when given by all

Journal article

USAMRICD-
9 P08-003

The U.S. Army Construction Engineering Research Laboratory (USACERL) previously developed and tested an online embedded instruction system for teaching computer-aided design (CAD) to architects, engineers, and other design professionals. That study's results showed that online CAD instruction should provide more effective help for users having different learning styles and levels of experience with such systems. In addition, the study raised questions about the type of CAD concepts needed by designers and how to provide them in an online instruction program. This research used interviews with test subjects from the previous study to identify ways of making online CAD instruction more efficient and effective. The interviews showed that subjects displayed various levels of conceptual understanding of the system, differences in learning style, and individuality of work methods. This study recommends ways to enhance conceptual understanding and accommodate individual variations in learning style, online CAD experience, and work methods.

Technical rept.

CERL-TR-P-
20 90/10

Topics of the major articles in this report include: Adaptive radar; Synthesis and structures of new energetic materials; and Synchrotron x-radiation research. Summary articles are included in the following topics: Acoustics; Chemical/biochemical research; Electronics and electromagnetics; Energetic particles, plasmas, and beams; Information technology and communication, Marine technology; Materials science and technology; Numerical simulating, computing, and modeling; Optics; and Space research and satellite technology.

Annual rept. FY
90

NRL-PUB-181-
264 4830

Pharmaceutical companies frequently offer federal employees conditional gifts for research purposes. One condition often requested by pharmaceutical company attorneys is the exclusive right to any ideas or inventions developed at the federal facility by the federal employee working with products or equipment donated by the pharmaceutical company. Unfortunately for the pharmaceutical company, this is not allowable under federal regulations, which supersede any such contractual condition. In this column, I will discuss the evolution of the patent laws governing federal employees and the rationale behind them. I will also explain the circumstance under which federal employees can hold patents to products they develop.

Journal Article -
Open Access

4 null

This study is comprised of three trials, referred to as the Assessment of Chiropractic Treatment (ACT). The following accomplishments have been made in each study during the reporting period of February 15, 2015 through February 14, 2016. ACT 1 is a randomized controlled trial of chiropractic for low back pain with a nested smoking cessation component in active duty military personnel. During this reporting period the study: Completed 100 (N=750) of ACT 1 trial recruitment; Long-term follow up assessments underway. ACT 2 is a randomized controlled trial of response and reaction times in Special Operations Forces at Ft. Campbell, KY; Expanded Special Operation Forces recruitment; Achieved ~75 (N=89/120) of recruitment goal. ACT 3 is a randomized controlled trial of strength, balance, and re-injury comparing standard care with standard care plus chiropractic treatment; Secured full command support for military study moving forward at Naval Hospital Pensacola; finalized addition of ACT 3 to the Cooperative Research and Development Agreement (CRADA) and pending final approval of Data Sharing Agreement (DSA) will launch study.

Technical
Report, 15 Feb
2015, 14 May
2016

43 null

CONTENTS: Computational and Experimental Studies of Cratering on Earthen Dams By Byron J. Armstrong, Dr. Stephen A. Akers, Dr. Gordon W. McMahon, and Denis D. Rickman; Using HPC to Accelerate the Insertion of New Materials into DoD Systems By Dr. Charles Cornwell; Wave Information Studies (WIS) Pacific Region Hindcast By Barbara Tracy and Deanna Spindler; Higher Order Frequency and Time-Domain Seismic/Acoustic Modeling for UGS Applications By Saikat Dey, Charbel Farhat, Michael W. Parker, Stephen A. Ketcham, Christopher Kun, and Steven Wong; Jade Becoming Preferred Gem - Users Praise Cray XT4 By David Dumas, Phillip Bucci, and Kenneth Matthews; Large-Scale Performance on the Cray XT3 and XT4 Systems By Dr. Kent T. Danielson; ERDC Infrastructure - BUILDING STRONG! By Chad Christophersen; Fostering Next Generation of Scientists and Engineers By Rose J. Dykes; Solving the Hard Problems" at UGC 2008 in Seattle [18th Annual DoD High Performance Computing Modernization Program (HPCMP) Users Group Conference (UGC)] By Rose J. Dykes."

Journal

45 null

This document contains a catalog of cost research projects discussed at the IDA Cost Research Symposium held on 21 May 1998. Participants included representatives of offices and organizations that sponsor and conduct the research. The purpose of this annual symposium is to facilitate the exchange of research findings and other information in order to avoid wasteful duplication of effort and enhance each organization's ability to conduct research planning for the future. Each project summary included in this document presents the project title, a descriptive summary, classification, sponsor, performer, researchers, schedule, data bases, publications, and keywords. The research directors of the offices and organizations that participated report that catalogs associated with prior symposia (1989 through 1997) have been useful in facilitating the exchange of data, data sources, findings, and reports, thereby contributing to improved efficiency in the cost analysis function within the Department of Defense.

Final rept. Aug
97-Aug 98

IDA-D-
2173,IDA/HQ-
229 98-002091

It is well recognized that the U.S. Army Research, Development and Engineering Command (RDECOM) Prototype Integration Facilities (PIFs) provide an unmatched and critical capability, supporting RDECOMs overarching science and technology (S and T) strategic goal of transitioning technology to the warfighter. Since their inception they have provided a rapid method to field urgently needed products directly to the warfighter and played a vital role in bridging the gap between S and T and the user community. They provide the agility necessary to rapidly upgrade current systems to counter urgent threats and to develop, apply and evaluate leap-ahead technology for future systems. As fiscal resources become increasingly constrained in this new era of reduced defense budgets and loss of Overseas Contingency Operations (OCO) funding, one can assume that the collective prototyping and integration capacity within RDECOM may become unsustainable. These PIFs are largely funded through customer reimbursable funding, much of which has been resourced through OCO funding for the last decade. The changing fiscal environment may require a rightsizing of PIF capacity or novel new opportunities to leverage their unique capabilities. Given the right Army and RDECOM management and budget support, all of the PIF managers surveyed strongly felt that their facilities can play a larger role in tightening the linkages between RDECOMs S and T efforts and the Army's materiel acquisition community.

Technical
Report,22 Jul
2013,01 May
2014

121 null

Intellectual property (IP) is a critical consideration of most acquisitions that require sophisticated items or components and performance. Preparation of an intellectual property strategy is now a required element in Department of Defense acquisition guidance and major efforts such as Better Buying Power 2.0. The IP Strategy serves as a plan for competitive and affordable acquisition and sustainment of license rights in IP over the entire item or component lifecycle. This report is intended to help program managers understand categories of IP, various IP challenges, and approaches to assessing the license rights that the program needs for long-term execution and sustainment. Developing a strategy for the entire product lifecycle to obtain specific rights can be a major challenge. The program manager must now prepare the IP Strategy early in the development lifecycle, prior to release of the solicitation, and update it prior to each milestone.

Final rept.

CMU/SEI-
53 2014-SR-036

The Army's Laboratories at Watertown, Massachusetts have played a key role in the development of materials science and technology for the Army and the nation for 150 years. Partial contents include: The Early Years; A New Role As The Army's Corporate Laboratory; Armaments; Engines and Aircraft; Electro-optical Materials; Hardened Ballistic Missile Defense Materials Development; Chemical Defense; Laser Protection; Metal Matrix Composites; Mechanics; Welding; Corrosion; Significant Advances in Nondestructive Testing; and Basic Research.

null

108 null

This document is a list of acronyms and abbreviations frequently used by the Naval Oceanographic Office (NAVOCEANO).

Reference
publication

74 null

virus infections of humans has been attributed to only two viral subtypes, A/H1N1 or A/H3N2. In contrast, avian and other vertebrate species are a reservoir of type A influenza virus genome diversity, hosting strains representing at least 120 of 144 combinations of 16 viral hemagglutinin and 9 viral neuraminidase subtypes. Viral genome segment reassortments and mutations emerging within this reservoir may spawn new influenza virus strains as imminent epidemic or pandemic threats to human health and poultry production. Traditional methods to detect and differentiate influenza virus subtypes are either time-consuming and labor-intensive (culture-based) or remarkably insensitive (antibody-based). Molecular diagnostic assays based upon reverse transcriptase-polymerase chain reaction (RT-PCR) have short assay cycle time, and high analytical sensitivity and specificity. However, none of these diagnostic tests determine viral gene nucleotide sequences to distinguish strains and variants of a detected pathogen from one specimen to the next. Decision-quality, strain- and variant-specific pathogen gene sequence information may be critical for public health, infection control, surveillance, epidemiology, or medical/veterinary treatment planning. The Resequencing Pathogen Microarray (RPM-Flu) is a robust, highly multiplexed and target gene sequencing-based alternative to both traditional culture- or biomarker-based diagnostic tests. RPM-Flu is a single, simultaneous differential diagnostic assay for all subtype combinations of type A influenza viruses and for 30 other viral and bacterial pathogens that may cause influenzalike illness.

Journal article

19 null

As buildings become more complex or take on new functions, new operational problems tend to surface. These include excessive energy costs, malfunctioning mechanical equipment, and uncomfortable working conditions. Energy-related problems often can be identified and documented for correction through the process called commissioning. Commissioning could have a major positive impact on institutional energy bills and occupant comfort, but the procedures currently available are not standardized and are variously flawed. Problems include limited scope and quality control of inputs to building design model, need for inconveniently long-term energy flow data, and failure to provide substantial diagnostic information to correct problems. As part of the Army Corps of Engineers Construction Productivity Advancement Research (CPAR) Program, the U.S. Army Construction Engineering Research Laboratories (USACERL) and Colorado State University developed and demonstrated an inexpensive commissioning procedure based on short-term energy monitoring and performance testing. This commissioning procedure was field-tested on commercial-scale buildings of various design and locale. The procedure successfully revealed defects in the design, construction, or operations of each building tested.

Final rept.,

USACERL-TR-
165 96/78

null

Bimonthly rept.

ISSN-0892-
64 8657

Biomedical literature represents the primary source of experimental data and biological knowledge. This project developed a text mining system for pathogens of biodefense relevance, focusing on mining pathogen-host proteomic data. We developed a Support Vector Machine (SVM)-based system to identify abstracts containing protein interaction information using an annotated corpus of 1360 MEDLINE abstracts as the training set. It achieved good performance on document classification with a precision of over 80 among top 50 ranked abstracts. The SVM-based method is further augmented with other text mining tools (such as PIE) for mining and tagging PPI information. As part of an effort in enabling text mining tools for real world applications, we coupled our analysis with the functional annotation of proteomic experiment. All the data was then loaded into iProXpress system and provided to the collaborating USAMRIID laboratory for the analysis of bacterial pathogen proteomics data.

Technical Report, 20 Sep 2007, 19 Sep 2009

82 null

The Annual Report, Calendar Year 1996, summarizes development projects managed by the U.S. Army Medical Materiel Development Activity as authorized by The Surgeon General, the Commander, U.S. Army Medical Research and Materiel Command and supported by the RDTE funds from the Department of Defense.

Annual rept. 1 Jan-31 Dec 96,

72 null

The topic of this thesis is the Cooperative Research and Development Agreement (CRDA), a method employed to transfer technology from Government owned, Government operated (GOGO) laboratories to private industry. The unique aspect of the CRDA is it provides an avenue for Government researchers to negotiate agreements with private industry without being laden by numerous Government regulations, such as the Federal Acquisition Regulations (FAR), or its Department of Defense supplement, the Defense Federal Acquisition Regulations Supplement (DEFARS). The issue discussed during the research was whether a CRDA was a useful method to both expand the body of knowledge learned at Government laboratories to private industry and bring much needed funds to Government facilities and staff. The result of the study was an overall favorable opinion in the use of the CRDA, and a recommendation to expand future use of CRDA's in the environment of budget declines for Government agencies.

Master's thesis

160 null

The United States conducts a wide range of security cooperation missions and initiatives that can serve as key enablers of U.S. foreign policy efforts to assist and influence other countries. For a relatively small investment, security cooperation programs can play an important role by shaping the security environment and laying the groundwork for future stability operations with allies and partners. Security cooperation, in the form of noncombat military-to-military activities, includes normal" peacetime activities

Technical rept.

97 null

(ICAF) Environment Industry Study (EIS) evaluated a wide range of local, regional, and global environmental issues. It was clear the growths in the world population and global industrial activities have elevated the impact of environmental issues from localized issues to increasingly global concerns with potentially strategic implications. In contrast to the early environmental efforts in the 1960s and 1970s, in this increasingly complex, interdependent global economy, the environment industry is totally interdependent with all other sectors of the economy, especially energy, transportation, agriculture, and communications. This paper evaluates the status of the United States (US) and global environment industry; discusses implications regarding environmental national security, and provides recommendations to address the major challenges of the coming decades, including the impact of greenhouse gases (GHG) and climate change. The US Government (USG) plays a critical role in developing strategies to address these environmental challenges and to connect our national efforts with those of global and private institutions to achieve the needed synergies around the world. During the course of our study, we spoke with leading environmental leaders, both inside and outside the US. We learned first hand that clear and decisive leadership is critical at all levels and the opportunities for collective action to improve the environment are clear and compelling. More importantly, collective action is critical to success if we are going to develop truly global solutions that will be economically viable and effective for the entire world

Final rept.

32 null

The National Center for Industrial Competitiveness (NCIC), also known as NCIC Capital Fund, was established in 1994. NCIC functions as a private, not-for-profit corporation to provide evaluation and assessment services and to provide funding for technology-based businesses. During the performance period, NCIC provided technical, managerial and financial assistance to over 700 companies. Technical assistance included access to technology transfer and technology assistance centers. Managerial assistance included reviews of business plans, sales and marketing plans, and assistance in locating and securing sources of financing to fund growth. NCIC's financial assistance included the direct funding of start-up and early stage companies. NCIC's financial assistance amounted to nearly \$6.2 million in debt and equity financing in 25 companies and \$3.5 million in grants to Ohio businesses. These funds were matched by over \$37 million from private sources and nearly \$6.2 million from the State of Ohio. There were nearly 400 jobs created or retained as a result of NCIC's efforts. NCIC also provided direct project funding for selected projects designated by the U.S. Air Force.

Final rept. 6
Apr 1994-13
Jan 2001

AFRL-ML-WP-
48 TR-2001-4087

This report documents the sound attenuation characteristics of a product improvement of the standard DH-132A helmet. Results indicate the improved helmet exceeds the attenuation required by the specification at all test frequencies and is significantly better than the DH-132 at most frequencies. A spring tension band between the earcups, improves earcup-to-head retention. A thermo-plastic liner improves stability and comfort. All of the improvements are available in kit form for field upgrade of fielded DH-132A helmets. Sound attenuation, Tanker helmet, Hearing thresholds.

Final rept.

26 USAARL-92-8

This report is intended to be a historical record of activities describing the research programs of the U.S. Army Research Laboratory - Army Research Office (ARL-ARO) for fiscal year 2015 (FY15; 1 Oct 2014 through 30 Sep 2015). This report provides: (i) an overview of the mission and strategy employed to guide ARO research investments and factors affecting the implementation of that strategy, (ii) a snapshot of end-of-year statistics of basic research funding (i.e., 6.1 funding) and program proposal activity, and (iii) research trends and key annual scientific discoveries and accomplishments of the ARO scientific divisions.

Technical
Report, 01 Oct
2014, 30 Sep
2015

238 null

In a report accompanying funding for the National Institutes of Health for Fiscal Year 1995, the Senate Appropriations Committee requested a study from the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The study was to address 'the criteria that should be used in judging the appropriate allocation of funds to research and development activities, the appropriate balance among different types of institutions that conduct such research, and the means of assuring continued objectivity in the allocation process.' The study originated from the Appropriations Committee's concern 'that at a time when there is much opportunity to understand and cure disease, funding for health research supported by NIH in the next fiscal year is held to below the inflation rate for medical research due to budget constraints. Similarly, other Federal research agencies are confronted with constrained resources resulting from the virtual freeze in discretionary outlays'

Final rept.,

103 null

The purposes of the Program are: (1) To address environmental matters of concern to DoD and the DOE through support for basic and applied research and development of technologies that can enhance the capabilities of the departments to meet their environmental obligations. (2) To identify research, technologies, and other information developed by the DoD and the DOE for national defense purposes that would be useful to governmental and private organizations involved in the development of energy technologies and of technologies to address environmental restoration, waste minimization, hazardous waste substitution, and other environmental concerns, and to share such research, technologies, and other information with such governmental and private organizations. (3) To furnish other governmental organizations and private' organizations with data, enhanced data collection capabilities, and enhanced analytical capabilities for use by such organizations in the conduct of environmental research, including research concerning global environmental change. (4) To identify technologies developed by the private sector that are useful for DoD and DOE defense activities concerning environmental restoration, hazardous and solid waste minimization, and prevention, hazardous material substitution, and provide for the use of such technologies in the conduct of such activities.

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595 null

This report describes the current and emerging global security and industrial environments, and the multifaceted strategy that the Department has adopted to meet its national security responsibilities in those environments.

88 null

This publication is a compilation of significant events that occurred at the Naval Aerospace Medical Research Laboratory during 1993

Final rept. Jan-Dec 93,

145 null

Mild traumatic brain injury (mTBI) and post-traumatic stress disorder (PTSD) are major medical issues for the Warfighter. The current project is designed to evaluate the impact of mild traumatic brain injury (using blast overpressure) and the processes involved in traumatic stress (using a predator exposure procedure and a conditioned fear procedure) in a rodent model. The studies evaluate these insults alone and in combination to specifically address the question of whether mTBI can exacerbate the effects of psychological stress. Additionally, following the insults, a molecular biological evaluation is performed based upon the discovery of biomarkers that have been shown to be correlated with other forms of TBI. Thus, the project aims to systematically assess the combined effects of blast overpressure, traumatic stress and learned stress responses in rodents with the aim of understanding how these forces may interact to impact behavior as well as evaluating their outcome on known biomarkers involved in TBI and stress response system activation.

Annual rept. 1 Sep 2012-31 Aug 2013

59 null

Army RD&A (ISSN 0892-8657) is published bimonthly by the Acquisition Career Management Office. Articles reflect views of the authors and should not be interpreted as official opinion of the Department of the Army or any branch, command, or agency of the Army. The purpose is to instruct members of the Army Acquisition Corps and Workforce relative to RD&A processes, procedures, techniques, and management philosophy and to disseminate other information pertinent to the professional development of the Army Acquisition Corps and Workforce. Introduction The Project Manager for Soldier Systems (PM-Soldier) was officially chartered in June 1992. Creation of the PM-Soldier fulfilled the senior Army leadership's long-standing desire to structure an activity to centralize the life-cycle management of soldier system materiel acquisition. Since 1992, PM-Soldier's fundamental mission to modernize the individual soldier has remained constant, although the quantity and complexity of the programs managed by PM-Soldier have increased as we deploy the soldier onto the digital battlefield.

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DA-PB-70-99-
71 4

This SERDP document contains the Strategic Five-Year (1995-1999) Investment Plan and Annual Report of the five SERDP Thrust Areas including clean up, compliance, conservation, and pollution prevention. Energy/conservation and global environmental change issues are also addressed.

Annual rept.

565 null

Secretary Mattis 2018 National Defense Strategy acknowledges that the Department of Defenses (DoDs) asymmetric technological capabilities, which enable a decisive military advantage over U.S. adversaries, are steadily eroding. Implementing underutilized traditional and non-traditional acquisition authorities to navigate the innovation ecosystem may prove to be a fast, flexible solution to this technological innovation gap. We comparatively analyze the DoDs innovation ecosystem to understand the communities that make up the ecosystem and how they apply various acquisition authorities, techniques, or processes to accelerate future capabilities to the warfighter, and across the Defense Acquisition System. Our research shows that traditional and non-traditional micro-ecosystems play pivotal roles in the transition of cutting-edge technology through government, industry, and academic collaboration. Aside from traditional authorities, we highlight several non-traditional acquisition authorities with potential for broader adoption across the enterprise. Finally, we discuss lessons learned in terms of what, where, when, and how mid-level management decision makers can think and act entrepreneurially to positively disrupt status-quo bureaucracies that inhibit rapid innovation across the ecosystem.

Technical
Report

83 null

The AFOSR research efforts over the past three years have achieved the following goals. (1) We have now completed state to state scattering measurements for CH₄, H₂O and HF with rare gas (Ar, Ne and He) collision partners, based on direct infrared absorption in crossed molecular beams. (2) Hot atom state to state scattering of Cl with HCl has been studied using high resolution Dopplerimetric techniques to obtain both differential and total state to state cross sections. (3) The theoretical basis for extracting O₂(Δ 1) radiative rates from direct absorption studies has been reanalyzed, and which corrects a nearly 2 fold error between inferred and literature values for the O₂(Δ 1) - O₂(Σ 3) radiative lifetime. (4) Rotational alignment of CO₂ by collisions with He in supersonic beams have been studied. (5) Nascent quantum state distributions for CO₂ subliming from thin molecular films have been measured. (6) Slit discharge techniques for generating high radical and molecular ion densities have been developed for hyperthermal beam sources of reactive species.

Final rept. Dec
93-Nov 96,

AFOSR-TR-97-
16 0166

<p>The activities and accomplishments of Space and Naval Warfare Systems Center, San Diego (SSC San Diego) during calendar year 1998 are described, and the Center's mission and responsibilities are delineated.</p>	<p>Rept. for Jan-Dec 98,</p>	<p>SPAWAR-TD-72 3050</p>
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<p>This report contains summaries of research projects in the Department of Mechanical Engineering. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts</p>	<p>Summary rept. 1 Jan 97-31 Dec 97</p>	<p>NPS-09-98-79 012</p>
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<p>In FY 2002, Congress noted that the Department of Defense can no longer depend on a dedicated defense industrial base</p>	<p>null</p>	<p>70 null</p>
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<p>null</p>	<p>null</p>	<p>528 null</p>
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<p>This Handbook lists the alphanumeric codes and titles of the two principal structural elements of the FYDP: Program Element (PE) and Resource Identification Code (RIC). The Handbook also contains definitions for FYDP PEs and the alphanumeric codes for the DoD Components that have resources in the FYDP. These Component codes are subsidiary field in the PE codes. In addition, the Handbook states some of the major roles that guide the allocation of FYDP resources (Total Obligational Authority (TOA), Manpower, and Forces) to FYDP PEs.</p>	<p>null</p>	<p>DOD-7045.7-2161 H</p>
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The United States finds itself at a very important strategic juncture. Technological leadership, once the hallmark of American industrial might, is continuing to erode, and with it industrial productivity and personal standards of living. The success of America's trading partners, particularly Japan, coupled with the potential threat posed by a united Europe, has heightened interest in the formulation of a strategic, long-term, and highly focused national industrial policy. In that regard, the High-Performance Computing Act and the High-Performance Computing and Communications Initiative, while directly responding to threats to technological leadership, indirectly offers a paradigm for the formulation and execution of industrial policy. This research specifically looks at the high-performance domestic and international computer industry, addresses the requirements for continued government research and development spending, offers specific recommendations for improving government and industry cooperative efforts (consortia) and examines how future government policy could be better focused to improve productivity and increase national wealth.

Research rept.
Aug 1991-Apr
1992

NDU-ICAF-92-
48 S33

A health sciences university fulfills many roles: a citadel of knowledge, core of innovation and center of compassion. At the Uniformed Services University of the Health Sciences (USU), these roles thrive through the careful nurturing of a collaborative environment that stretches across the street and around the world. Our mission is to create an academic center of excellence where students, faculty and staff are challenged to do their best. Our students learn the art and science of military medicine and public service, while joining our faculty in cutting-edge research that leads to life-saving advances. Collaborations with colleagues in the U.S. and abroad are key drivers of excellence at USU. Evidence of these collaborations is everywhere. A traumatic brain injury program taps more than 200 experts throughout the National Capital Region to advance diagnosis and treatment, while a partnership between USU and Taiwanese scientists provides insight into a genetic condition that leads to the development of tumors. These partnerships are yielding improved medical education and groundbreaking scientific research. Our success has led the Department of Defense to increase its reliance on USU for advice on complex issues related to health care delivery. While the accomplishments noted in these pages are impressive, our past serves as a springboard to the future. With our facilities sharing the grounds of the new Walter Reed National Military Medical Center, we see bright days ahead full of opportunities for research and teaching excellence.

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33 null

Multisensor data fusion (MSDF) has been researched for decades yet programs relying on it to provide a situational, or threat, assessment continue to be less than successful. In order to alleviate the too-much-information, too-few-analysts issue, a better approach must be determined. A survey of recent and current data fusions programs was conducted along with a literature review on how different organizations handle a fusion-based assessment. Key points found in this study were used to develop an adaptation of models that can be used to provide an improved assessment while simplifying the process needed to get there.

Journal Article -
Open Access

6 null

Immunophenotyping of whole blood (WB) by flow cytometry (FC) is used clinically to assess a patient's immune status and also in biomedical research. Current protocols recommend storage of immunolabeled samples at 4 C with FC analysis to be completed within seven days. This data acquisition window can be extended to up to one year post-labeling, but this requires cryopreservation of the samples at ultra-low temperatures (80 C or in liquid nitrogen). In this study we optimized a standardized cryopreservation protocol to enable preservation of immunolabeled, human WB samples at 20 C for FC and tested its effectiveness after 0, 5, 15 or 30 days. Analysis of stored samples shows that this protocol effectively preserves immunolabeled WB samples and that the duration of storage has no effect on morphology, viability or frequency of WB cell subpopulations, and that the intensity of fluorescent signal from labeled extracellular markers is fully preserved for at least 15 days, and up to 30 days for some markers. We demonstrate that using this protocol, we are able to differentiate resting versus activated WB cells as demonstrated by detection of significantly increased expression of CD11b by myeloid cells in WB samples pretreated with LPS (100 g/mL for 12 h). Finally, we show that this method allows for labeling and detection of the intracellular cytokine (IL-8) up to 30 days following cryopreservation from myeloid cells, in previously labeled and cryopreserved WB samples.

Open Access

7 BUMED

Today, when government and science seem inextricably linked, when virtually no one questions the dependence of national defense on the excellence of national technical capabilities, it is noteworthy that in-house defense research is relatively new in our Nation's history. The Naval Research Laboratory (NRL), the first modern research institution created within the United States Navy, began operations in 1923. The first step came in May 1915, a time when Americans were deeply worried about the great European war. Thomas Edison, when asked by a New York Times correspondent to comment on the conflict, argued that the Nation should look to science. The Government

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33 null

The desire to incorporate theoretical mechanics into off-road vehicle performance prediction has generated great interest in applying numerical modeling techniques to simulate the interaction of the tire and terrain. Therefore, a full three-dimensional model simulating a tire rolling over deformable terrain was developed. Tires were simulated using a rigid wheel, a deformable tire simplified with user-defined sidewall elements, and modal analysis tire models. Model comparisons with measured, hard-surface tire deformation and contact stress showed very good agreement. The simplified tire model was much more computationally efficient but the modal analysis model yielded better contact stress distribution. Each of the tire models was then combined with rolling on deformable terrain. Fresh snow and compacted sand surfaces were modeled using critical-state plasticity models. The rigid wheel model was validated on snow using field measurements of tire forces and snow deformation and then compared to performance predictions using the NATO Reference Mobility Model. These comparisons indicate excellent agreement between the model and the measurements. Preliminary results of the modal analysis tire model on snow show very little deformation in the tire, indicating that the rigid wheel simplification may be a good approximation for soft terrain.

Technical rept.

ERDC/CRREL-
69 TR-01-16

MIT Lincoln Laboratory employs some of the nation's best technical talent to support system and technology development for national security needs. Principal core competencies are sensors, information extraction (signal processing and embedded computing), communications, integrated sensing, and decision support. Nearly all of the Lincoln Laboratory efforts are housed at its campus on Hanscom Air Force Base in Massachusetts. MIT Lincoln Laboratory is designated a Department of Defense (DoD) Federally Funded Research and Development Center (FFRDC) and a DoD Research and Development Laboratory. The Laboratory conducts research and development pertinent to national security on behalf of the military Services, the Office of the Secretary of Defense, the intelligence community, and other government agencies. Projects undertaken by Lincoln Laboratory focus on the development and prototyping of new technologies and capabilities to meet government needs that cannot be met as effectively by the government's existing in-house or contractor resources. Program activities extend from fundamental investigations through design and field testing of prototype systems using new technologies. A strong emphasis is placed on the transition of systems and technology to the private sector. Lincoln Laboratory has been in existence for 60 years. On its 25th and 50th anniversaries, the Laboratory received the Secretary of Defense Medal for Outstanding Public Service in recognition of its distinguished technical innovation and scientific discoveries.

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133 null

This report contains 359 summaries of research projects which were carried out under funding of the Naval Postgraduate School Research Program. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. The research was conducted in the areas of Aeronautics and Astronautics, Computer Science, Electrical and Computer Engineering, Mathematics, Mechanical Engineering, Meteorology, National Security Affairs, Oceanography, Operations Research, Physics, and Systems Management. This also includes research by the Command, Control and Communications (C3) Academic Group, Electronic Warfare Academic Group, Space Systems Academic Group, and the Undersea Warfare Academic Group. (MM)

Summary rept.
1 Jan-31 Dec
94.

NPS-09-94-
520 001

Environment, health, and safety management, if considered a part of the manufacturing process, can become an efficient, cost effective factor that will reap rewards beyond expectations. This document was designed to compile as many environmental success stories as possible and provide the information to programs, companies, and institutions concerned about the future. Let's all ensure that future generations will enjoy an environmentally safe and sound world.

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NAVSO-P-
174 3680

Despite conducting substantial research and development, the Army is facing a series of constraints in maintaining its technological edge: (1) future reductions in science and technology (S&T) funding that have averaged 15 percent per year over the past few years; (2) commercial domination of many of the important technological areas for the Army, such as information technologies; (3) growth in international technology capabilities and in competition from European and Japanese companies; and (4) a changing research climate within the government, with a growing ideological shift away from big government involvement in R&D. At the request of the Army Materiel Command (AMC), the Arroyo Center was asked to study promising options for the Army to consider in conducting collaborative research with nontraditional military suppliers (NTMSs), defined as U.S. profit-making companies that are accepted leaders in their technological fields and that have not historically worked for the Army.

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RAND-MR-
64 830-A

Clinical and nonclinical professional information designed to keep U.S. Army Medical Department personnel informed of health care, research, and combat and doctrine development information.

Quarterly rept.
Jul-Sep 2002

61 null

Since 1984, the Ballistic Missile Defense Organization (BMDO) has been committed to developing innovative technologies that strengthen our nation's defense. With the same spirit of commitment, BMDO is dedicated to technology transfer-moving state-of-the-art military technology from the government into the commercial sector. Key to this effort is the BMDO Technology Applications program, whose technology transfer specialists provide a variety of outreach and engineering activities to support BMDO technology transfer. For example, while performing technology transfer activities, our specialists have interviewed more than 300 BMDO technology developers about their commercialization efforts. The resulting data show BMDO technologies spawning new start-up companies and new products at a progressive rate. Chart 1 illustrates a 61 percent increase in the number of stan-ups between 1994 and 1996. Chart 2 depicts a similar trend for commercial products, with an overall increase of 38 percent over the same period. Data on new patents, public companies, and business relationships relating to BMDO technologies can be found on the inside back cover of this report. The Technology Applications program will continue its interviewing process to develop more data, which will be featured in future publications about BMDO technology transfer.

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99 null

In a previous study on technology for stabilization and reconstructions operations, hereafter SRO(I), the authors evaluated current stabilization and reconstruction (S&R) operations requirements and identified for Dr. Tom Killion, the Army Science and Technology (S&T) Executive, areas in which Army capabilities could be improved with advanced technologies. Stabilization and reconstruction operations establish, retain, and exploit security and control over areas, populations, and resources to employ military capabilities to restore essential services and facilitate the reestablishment of civil order and authority. They involve both coercive and cooperative actions and occur before, during, and after offensive and defensive operations.

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85 null

An Environmental Health Policy Study Model was applied to define the health mission in environmental programs and to identify the medical research and development contribution as a strategy. The Environment and Environmental Health definition and scope were delineated and Army organizations and relationships in both disciplines were identified. A Problem Statement (Opportunities for Improvement), and Vision were developed. Strategies to accomplish and/or improve partnerships between the two communities were identified as: Policy and Doctrine; Education and Training; Senior Leadership Buy-in; Organizations/Manpower and Personnel; Research, Development, and Acquisition; and Marketing. Conclusions were that: there is not universal acceptance of the definition and scope for Environmental Health; the potential contributions of environmental health are hampered by the lack of consensus on definition and scope; there are good examples of how the partnerships should work to integrate environmental health with environmental the close working relationships and integration of programs and initiatives must be improved at all levels; medical R&D should be a separate strategy and should complement other strategies to enhance interaction and partnering of environmental and environmental health programs; and the Environmental Health Policy Study Model and process is an appropriate way to evaluate and formulate policy.

Final rept. 26
 Aug 96-30 Sep
 97

153 null

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599 null

Contains briefing charts from presentations given at the 44th Annual Fuze Conference, held in Pleasanton, California, on 11-12 April 2000.

Conference
 Proceedings

504 null

This compilation is an integral part of the training material for DTIC's DoD STINFO (Scientific and Technical Information) Manager Training Course. It includes regulations, forms, and other documentation that support the DoD Scientific and Technical Information Program (STIP) and the implementing military services programs. The compilation is an aid to the operation and management of STI activities. The document is organized into tab index dividers for insertion in a binder, facilitating updating by the user. The table of contents lists the inclusive titles and includes a brief description of the purpose of each publication. Attendance at the course includes the training manual and the STINFO Documentation.

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838 DTIC-TR-97/7

Intellectual property has become one of the keys to the management of high technology sectors and communication systems. The concept is, however used to describe a variety of different situations influenced by the combined effect of technical and economic change. From this results an intensive legal activity, not only in the passing of new legislation and the creation of jurisprudence, but also in the field of contractual and professional practice, which is becoming more important. Although this process can be observed in a number of countries, it is far from being common to them. The clash of national, and even regional concepts has already begun with the internationalization of technology transfer activity and the dissemination of information products and services. The aim of this Lecture Series is therefore to provide a few markers, to look at the prospects for these trends and to assess the stakes involved, so as to enable better evaluation and control of national and international legal practices. It is thus addressed to decision-makers in both the public and private sessions, as well as to the managers of this strategic potential and those involved in the information market.

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AGARD-LS-
235 181

The purpose of this technical note is to provide a screening test that can be used to evaluate the potential for manufacturing artificial soil using dredged material, cellulose waste materials (e.g., yard waste compost, sawdust, wastepaper), and biosolids (e.g., N-Viro-reconditioned sewage sludge, BIONSOIL-reconstituted cow manure). This procedure will allow the most productive blend of any dredged material (uncontaminated or contaminated), cellulose, and biosolids to be determined and recommended for use in an environmentally productive and beneficial manner.

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WES/TN/DOE
9 R-C6

For many years, the U.S. Navy fleet has experienced severe corrosion and erosion problems in copper nickel seawater piping systems. Since titanium is extremely resistant to corrosion and erosion, it has been viewed as a potential solution to these problems. However, certain concerns regarding shipboard use of titanium needed to be addressed: marine fouling, galvanic action with other metals, welding, system fabrication in a normal shipyard environment, testing, and life cycle costs. Over a three year period, Ingalls Shipbuilding division of Litton Industries and the Naval Surface Warfare Center, White Oak, worked with various commercial equipment suppliers to address these concerns. Partially because of the success of this project, it was decided to retrofit titanium systems aboard TARAWA Class LHAs and to specify same for the new LPD 17 Class ships.

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21 NSRP-0532

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36 null

Implements policy, assigns responsibilities and prescribes procedures for implementation of T2 programs.

Instructions

20 null

Technical innovations were made to an existing helicopter magnetometry platform to improve performance in WAA. Wireless telemetry was implemented to remove the sensor operator from the helicopter. Based on a survey design study, the number of magnetometers was increased from 7 to 13, decreasing the across line sensor spacing from 1.5 to 0.75 m and allowing full sampling of the magnetic field at heights 1.5 m or greater, enabling the accurate calculation of horizontal and vertical gradients. Enhanced noise suppression filtering algorithms were developed. Performance testing was performed at a site in New Mexico and demonstrated significant performance improvements, including higher SNR, greater detection probabilities and improved characterization capabilities. All 81 mm mortars seeded in one area were detected within a 1.0 m halo and classified as sm-med ordnance. Only 23% of seeded 60 mm mortars were detected due to a higher than anticipated flying height. In a geologically challenging environment, 106 of 109 seeds were detected within a 1.0 m halo and classified as high-probability UXO.

Final rept. Jan-
Oct 2009

101 null

The Naval Research Laboratory (NRL) is the principal in-house research laboratory under the command of the Chief of Naval Research (CNR). As the corporate research laboratory of the Navy, NRL is an important component in the Office of the Chief of Naval Research's effort to meet its scientific research responsibilities. For its basic research effort, the Laboratory receives guidance from the CNR that establishes the level of effort and trend direction. The Laboratory then develops a comprehensive research proposal package that is submitted to the CNR for consideration for Navy basic research support. The total Navy basic research program ultimately is evaluated by Congress.

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148 null

This study assesses whether the capabilities of the US defense industrial base are being negatively affected by export control policy and its implementation. In particular, it assesses whether export controls as currently conceived and implemented result in economic impacts detrimental to US defense industrial base, particularly on suppliers of dual use technologies, without a concomitant benefit to US national security. This report presents analysis of whether and to what extent the US defense industrial base has been negatively affected by export control policy and its implementation in four major areas: satellite manufacturing, semiconductors, machine tools and advanced materials.

Final rept.

IDA-D-3363-
REV,IDA/HQ-
438 08-001627

The allocation of resources should be a rational decision making process where alternatives can be compared based on their estimated costs and benefits to the organization. In order to justify technology transfer activities, a sound methodology must be developed that will document the benefits derived from transfer activities. The risks or uncertainties associated with those benefits must also be estimated and analyzed. By detailing the costs, benefits, and uncertainties associated with technology transfer activities, decision makers will have a logical framework that can be used to determine the cost effectiveness of technology transfer. Leaders within the technology transfer arena are searching for better ways of quantifying the tangible and intangible benefits of technology transfer. The goal of this research is to build an acceptable methodology that can be used to identify and quantify the tangible and intangible benefits received within Air Force Materiel Command (AFMC) as a result of technology transfers. This exploratory study employs a structured interview methodology to identify and quantify the benefits received by the Air Force through its technology transfer activities.

Master's thesis,

AFIT/GCA/LAS
132 /96S-1

This test plan was developed to demonstrate the feasibility of using an alternative fuel in USCG diesel-powered boats. A blend of 100% biodiesel (B100) was selected as the test fuel and a USCG 49 Buoy Utility Stern Loading (BUSL) boat with Cummins main diesel engines and generator was chosen as the demonstration boat. Testing consists of four phases: materials, bench, field, and operational testing. Materials testing will ensure all components in the engine and fuel system are compatible with B100. Bench testing will ensure the engines operate satisfactorily on B100. Field testing will ensure there are no problems with using B100 on the USCG boat prior to operational testing. Operational testing will ensure there are no problems with using B100 on the test boat over an extended period that encompasses typical operational and environmental factors including cold weather operations. This test plan describes the procedures for the field and operational testing. Prior to commencing field testing, the BUSL engines and fuel systems will be modified in accordance with a Time Compliance Technical Order (TCTO) to ensure compatibility with B100.

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RDC-UDI-
1252,CG-D-07-
70 14

To ensure information superiority for warfighters in the 21st century, the Air Force needs to develop and implement a command and control battle lab. This facility must rapidly integrate new command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) technologies, doctrine, and concepts of operations into the joint warfighting arsenal. Air Force leadership has taken a critical first step by defining information superiority as a core competency. The next phase is to determine a strategy for its execution. Our current acquisition system is woefully lacking in its ability to obtain technology. Equally lacking is the warfighter's ability to modify doctrine and organizations to best exploit the technology. A promising solution is the battlefield laboratory, or battle lab. The philosophy of a battle lab is to create a place where warfighters, developers, and industry come together to evaluate, integrate, and apply technology. There are ongoing attempts to create this synergistic trinity, but the optimal combination has not been achieved. This paper will identify the critical elements of a battle lab, propose a prototype structure, and address major obstacles to its success. Because little has been written on battle lab operations, much of the research material was derived from interviews with visionary military and civilian leaders, and with personnel involved in ongoing battle lab projects. Literature was reviewed from sources such as the Air Force Scientific Advisory Board and the Advanced Battlespace Information Task Force.

Research paper

AU/ACSC/043
46 0/97-03

The First Annual SERDP Symposium was convened to emphasize transfer of SERDP accomplishments to the user communities. These abstracts, which represent the 58 technical papers and 96 exhibits/posters presented at the Symposium, illustrate why the almost 500 symposium attendees considered this kickoff effort to be a resounding success. Upon reading these abstracts, I think you will find that SERDP has already produced a wide variety of high-impact, high profile results that will greatly assist the Defense sector's mission readiness. As SERDP matures, these contributions will be even more significant. As DoD's corporate environmental S&T Program, SERDP is poised to continue and accelerate the development of these mission critical, environmental technologies into the next century.

Proceedings 12-
14 Apr 95

124 null

We use the phrase best value fairly often, usually to describe the type of source-selection process or evaluation criteria we will use in a competitive acquisition. Under the Better Buying Power initiatives, we have emphasized using a more monetized and less subjective definition of best value. As a way to spur innovation, we also have emphasized communicating the value function to the offerors so they can bid more intelligently. Some reluctance and understandable concern arose about the unintended consequences of trying to define best value in monetary terms. In fact, this decision cant be avoided. I would like to explain why it is unavoidable, provide some examples of using this approach, and discuss how we can avoid those unintended consequences some of us worry about. Ill also touch on the proper use of Lowest Price, Technically Acceptable (LPTA) which is a form of monetized best value, but with a very restrictive definition and range of applicability.

Journal Article

64 null

technical and economic viability of reactive powder concrete (RPC) a very high strength, high performance concrete material for producing precast sewer/culvert and pressure pipes with the ultimate program goals of gaining construction industry acceptance and implementing wide scale commercial fabrication of these products. By optimizing the design of the precast RPC pipes, it was projected that commercially competitive, lightweight units could be produced that would reduce handling, shipping, and installation times and provide improved resistance to attack by sulfates and other chemicals. Two mixtures, one flowable and the other zero slump, were selected as representative of RPC pipe production mixtures, and the hardened concrete properties were determined for each mixture. RPC prototype specimens were successfully cast using the wet cast, spun cast, dry cast, and packer head methods. The compressive strengths for RPC prototype specimens were in the range of 140 to 100 MPa. These specimens were steam cured for 24 hr at 70-90 deg C. The C wall pipe specimens cast at Lafarge using the packer head method performed well in both the pressure and three edge bearing tests. The Lafarge specimens showed no signs of leakage for internal pressures of 2.07 MPa and less. Based on results from casting of prototypes, it was concluded that RPC culvert and sewer pipes are technically feasible from a production standpoint. However, only sanitary sewer products appear to be economically viable as the culvert and conventional storm sewer applications appear to be well served by products currently on the market Based on the

Final rept.

WES-CPAR-SL-
88 98-3

The STERIS Vaporous Hydrogen Peroxide (VHP(Registered)) technology has been used for more than a decade to sterilize pharmaceutical processing equipment and clean rooms. Through a joint partnership, the U.S. Army Edgewood Chemical and Biological Center (ECBC) and STERIS Corporation, Inc., subsidiary of Strategic Technology Enterprises (STE), began the process to co-develop a modified VHP (mVHP) capable of biological and chemical decontamination. Significant improvements have been made through a series of laboratory, chamber-scale, and large-scale efforts. The primary objective of this test was to determine the mVHP system ability to decontaminate representative articles of sensitive equipment and operationally relevant materials for biological-warfare agent surrogate contamination. A replica of the SED prototype decontamination chamber was constructed for use under engineering controls for live chemical agent evaluation. The biological-efficacy coupon and equipment tests were to determine the decontamination efficacy. The decontamination efficacy was compared to the KPPs stated in the ORD for JSSED. The secondary objective of this testing was to evaluate the impact of fumigant on the operability of the representative sensitive equipment. The tests were performed between October 2005 and March 2006 in a space provided by the 20th Support Command at ECBC.

Final rept. Oct
2005-Mar 2006

152 ECBC-TR-526

This report describes the software improvement activities of Hughes Aircraft Company over the last 25 years. The focus is on continuous improvement of the software development process and the deployment of that process from a single organization at Fullerton, California, to virtually all the 5000 software engineers of Hughes Aircraft. For this achievement, the widespread deployment of a continuously improving software process, Hughes Aircraft was awarded the 1997 IEEE Computer Society Software Process Achievement Award.

Final rept.

CMU/SEI-98-
TR-006,ESC*-
101 TR-98-006

This is the concluding report of the Federal Infrastructure Strategy (FIS) Program, a three-year study exploring the development of integrated or multi-agency Federal infrastructure policies. It documents the results of FIS activities, including the findings of the intergovernmental coordination facilitated by the Advisory Commission on Intergovernmental Relations (ACIR) and approximately 30 other research elements. The principles essential to the development of a Federal strategy are outlined, an action agenda recommended, and the opportunities for further interagency cooperation are presented within the context of FIS policy research.

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102 IWR-95-FIS-20

A revolutionary program to help the U.S. construction industry improve productivity and regain its competitive edge nationally and internationally was begun in 1989 under the direction of the Assistant Secretary of the Army (Civil Works). The Construction Productivity Advancement Research (C PAR) Program is a cost-shared partnership among the Corps of Engineers and the U.S. construction industry, state and local governments, academic institutions, and other groups to facilitate research development and application of advanced technologies through cooperative research and development, field demonstrations, licensing agreements, and other forms of commercialization and technology transfer. Two important new Cooperative Research and Development Agreements (CRDA) for microtunneling and horizontal directional drilling are highlighted in this issue.

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6 null

the dynamic complexities of the ship construction process. The program, called Shipbuild, was developed by Decision Dynamics, Inc. (DDI) under a Small Business innovation Research (SBIR) contract sponsored by NAVSEA. The program greatly simplifies the planning and replanning process, making it easy to create a good production plan and keep it current. This simulation model of the shipyard production process captures both the essential physical shipbuilding activities and the essential management decision-making activities that support the physical production processes. The application consists of two independent submodels, a simulation capability and a results viewer component. The first submodel identifies the overall shipyard facility and manpower resources and the second identifies the construction tasks required to build a ship. The submodels interact to calculate the specific allocation of resources over time necessary to produce the ship. The output generated from the program provides the durations and manhour loadings of elements of the ship construction process based upon dynamic resource availability. The output (unlike other scheduling programs for which durations are typically input and resource allocations an output) provides both schedule and resource use. Task durations are calculated based upon the manhour requirements, the number of people assigned and their productivity. Output generated by the application can assist Program Managers and Design Engineers in analyzing the manhour cost and schedule impacts of alternative designs and construction sequences. The program can also help to quantify

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346 NSRP-0532

Partial Contents: Site Characterization: (1) What Should We Measure, Where (When?), and How? (2) Processes Controlling the Distribution of Oil, Air, and Water (3) New Tools to Locate and Characterize Oil Spills in Aquifers (4) Microbiological and Geochemical Degradation Processes (5) Field and Laboratory Results: Getting the Whole Picture (6) In Situ Bioremediation at the Seventh Avenue Site in Denver: Remediation of Sails and Ground Waters.

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EPA/540/R-195 94/515

In the National Defense Authorization Act for Fiscal Year 2002, the Report of the Committee on Armed Services, House of Representatives, stated that the Department of Defense can no longer depend on a dedicated defense industrial base, but will need to find ways to link advanced commercial technologies to improved military capabilities. Congress asked the Center for Technology and National Security Policy (CTNSP) to implement a program to find practical ways in which the defense information technology (IT) community can gain a mutual understanding of defense needs and industry capabilities and identify opportunities to integrate technology innovation in the U. S. military strategy. Subsequently, in the Report of the Committee on Armed Services for the National Defense Authorization Act for Fiscal Year 2006, the Committee requested that a report be provided that documents & the results of the program and plans for future efforts with the submission of the fiscal year 2007 budget request to Congress. This report summarizes the major findings and recommendations that CTNSP has developed through its IT program. These results were developed over three years through a structured set of nearly 40 coordinated activities, including studies and analyses, surveys, interviews, workshops, conferences, and prototypes. To the extent feasible, the program leveraged selected activities at CTNSP and related efforts at other centers at NDU. CTNSP also has taken steps to involve the most creative members of government, industry, academia, and think tanks in these activities.

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123 null

This report presents the results of blast load resistance testing of masonry walls that minimally meet applicable Unified Facilities Criteria (UFC) reinforcement requirements. The testing and analyses presented in this report involved partially-grouted (1) 6-inch, (2) 8-inch, and (3) insulated clay brick veneer (cavity wall) concrete masonry test panels. Three blast load experiments were conducted; each experiment tested one each of the three test panel designs (nine test panels total). The impulse loading to the panels varied significantly between each of the three experiments. Failure mechanism observations were made using interior and exterior high-speed videos that captured the response of each panel. A post-test forensic investigation was also conducted after each experiment to further explore and document the ultimate response of each test article. Dynamic deflections were captured and the responses were compared to blast analysis codes used for masonry design.

Technical rept.
11 Aug 2008-
20 Nov 2010

AFRL-RX-TY-
TR-2011-0025-
201 01

NAWCWD overcame some major obstacles, meeting both the low-temperature firing requirement (-65°F) and AUR action time (less than 4ms). Many reformulations were required to optimize the LFEP composite. To date there has not been a single incident with the current aluminum/molybdenum formulation. This demonstrates that the LFEP can be used with suitable safety guidelines. The final formulation consisted of 76% Al(50nm)/MoO3(45nm), 20% BTATZ, 2% Kel-F, and 2% Carbon Black. A critical parameter for nano aluminum powder stability in air was a passivation oxide thickness of at least 2.7 nm. Al powders with thinner oxide layers aged badly resulting in poor primer performance.

Final technical
rept. Feb 2004-
Dec 2006

97 null

This pamphlet: (1) Explains how the Army will execute the 'U.S. Army Environmental Strategy into the 21st Century'. (2) Provides detailed guidance to support implementation of AR 200-1 to include: water resources management, oil and hazardous substances spills, hazardous materials management, hazardous and solid waste management, air pollution, environmental noise management, asbestos management, radon reduction, pollution prevention, environmental restoration, environmental quality technology, automated environmental management systems, the Army environmental program in foreign countries, and other miscellaneous topics. (3) Replaces Deputy Assistant Secretary of the Army (Environmental, Safety, and Occupational Health) Memorandum, 1 November 1993, Subject: Application of the Resource Conservation and Recovery Act Hazardous Waste Management Requirements to Conventional Explosive Ordnance Operations-Interim Policy and Guidance. (4) Replaces Office of the Director, Environmental Programs Memorandum, 29 September 1999, Subject: Change in Environmental Compliance Assessment Reporting Policy. (5) Replaces Office of the Director, Environmental Programs Memorandum, 18 September 2000, Subject: Reporting Enforcement Actions and Fines.

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DA-PAM-200-
168 1

SURVIAC, a DoD Information Analysis Center (IAC), is administratively managed by the Defense Information Systems Agency (DISA), Defense Technical Information Center under the DoD IAC Program. SURVIAC is sponsored by the Joint Technical Coordinating Groups on Aircraft Survivability and for Munitions Effectiveness. Articles in this journal include Fire Suppression Technology, Space Survivability, Component Vulnerability Analysis, Product Availability and Model Availability.

Journal

25 null

Implementation of the Vietnam Head Injury Study Phase III (VHIS3) has begun. In Oct 2002, an understanding was reached with the National Naval Medical Center (NNMC), and the necessary administrative and testing space has been obtained. We received approval for a funding supplement to cover the costs of the CT and EEG procedures and reports. We have hired all study staff. A protocol to study subjects at NNMC has been approved. The test battery to be administered to the participants has been finalized, a database created, eligible participants have been contacted to send an updated address to us with good compliance, programmatic procedures for the evaluation week have been developed, equipment purchased, and staff is being trained. Thus, we are only awaiting final protocol approvals and inter-agency cooperative agreement signatures before we begin to directly contact and invited participants to be studied.

Annual rept. 24

Sep 2002-23

Sep 2003

5 null

MIT Lincoln Laboratory is a Department of Defense (DoD) federally funded research and development center working on problems critical to national security. The Laboratory's core competencies are in sensors, information extraction (signal processing and embedded computing), communications, integrated sensing, and decision support. Technology development is geared to the Laboratory's primary mission areas- space control; air and missile defense; communications and information technology; intelligence, surveillance, and reconnaissance systems; advanced electronics; tactical systems; homeland protection and biological/chemical defense; and air traffic control. Two of the Laboratory's principal technical objectives are (1) the development of components and systems for experiments, engineering measurements, and tests under field operating conditions and (2) the dissemination of information to the government, academia, and industry. Program activities extend from fundamental investigations through the design process and finally to field demonstrations of prototype systems. Emphasis is placed on transitioning systems and technology to industry.

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59 null

The Office of Technology Transition (OTT) was established by the Secretary of Defense to serve as a focal point for the domestic technology transfer activities of the Department of Defense. This report summarizes OTT accomplishments and highlights some technology transfer efforts throughout the Department for FY 2001. There have been some major successes in transferring technology this year and these are identified in Section A in this report. Appendixes B and C provide the numbers of technology transfer activities at our laboratories and statistical data on Cooperative Research and Development Agreements and patent licensing, respectively. Highlights, including an improved silicon rubber gasket design suitable for use in all Navy standard, manually operated non-ballistic structural closures in waterlight, airtight, and even firezone applications, are identified in Appendix D. Technology transfer award winning projects are identified in Appendix E. OTT provides leadership, oversight, and focus for programs supporting the technology transfer missions of the Department.

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72 null

The Department of Defense (DoD) medical mission is to enhance DoD and our Nation's security by providing health support for the full range of military operations and sustaining the health of all those entrusted to our care.¹ The Military Health System (MHS), one of the Nation's largest and most complex health care systems, carries out this medical mission. The MHS is a unique network of health professionals providing health care delivery services to approximately 9.4 million beneficiaries, including Service members, dependents, and retirees.² The MHS also performs other activities, such as medical education, public health services, and medical research and development,³ which are critical for enhancing the proficiency of its providers, maintaining the health of its beneficiaries, and advancing the science of health care.

Technical
Report

148 null

The Federal Aviation Administration (FAA) Plan for research, engineering and development (R,E&D) is published in response to statutory requirements to provide an annual report to Congress on the FAA's R,E&D program to ensure continued safety, security, capacity, and efficiency of aviation in the United States. The research programs selected for inclusion in the R,E&D program portfolio are those needed to bring the FAA's vision of the future system to reality in the context of a continuing top-level system engineering process. The FAA's R,E&D program has received contributions from across the spectrum of scientific, operational, and user communities. These contributions from both inside and outside government are always welcome, provide valuable inputs, and are greatly appreciated. bring the FAA's vision of the future system to reality in the context of a continuing top-level system engineering process. The FAA's R,E&D program has received contributions from across the spectrum of scientific, operational, and user communities. These contributions from both inside and outside government are always welcome, provide valuable inputs, and are greatly appreciated.

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222 null

Volume 2 of this Biennial Review features nine (9) technical papers describing and discussing innovative technologies being developed at the Spawar Systems Center in San Diego.

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In this report, we communicate the results of a 3-year US Army Research Laboratory Directors Research Initiative project focused on exploring the feasibility of using engineered conducting elastomer materials for interfacing to the human body to collect brain electroencephalographic (EEG) signals. We present a carbon-nanofiber-filled polydimethylsiloxane conductive elastomer material solution (CNF-PDMS) whose electrical impedance can be tuned over more than 4 orders of magnitude and which exhibits a flat electrical impedance shift when subjected to quasi-static compressive strains exceeding 60 . We present experimental results for our conductive elastomer used as a substrate for EEG measurement that indicate signal transmission remains intact when subjected to large compressions in excess of 60 . Specifically, although there is degraded signal-to-noise ratio (SNR) with lower CNF fill ratios, the single-channel hierarchical discriminant component analysis classifier of EEG data acquired using the CNF-PDMS indicates adequate performance across a wide range of compressive strains. Furthermore, we present a purpose-built modular and open-architecture EEG signal-processing board, which we have integrated with a dedicated network analyzer chip for exploring the efficacy of using real-time impedance monitoring for EEG error rejection under field conditions.

Technical
Report,01 Oct
2012,01 Sep
2015

36 null

The Navy and the California State Lands Commission entered into a Cooperative Research and Development Agreement for the development of seismic design criteria for waterfront construction. This task has produced NFESC TR-2103-SHR Seismic Criteria for California Marine Oil Terminals" by Ferritto et al.; Volumes 1 and 2 dated July 1999. The document develops and expands on work that was begun by the Naval Facilities Engineering Service Center to provide seismic design criteria for waterfront construction. The cited report presents criteria that are intended to define a minimum level of acceptable performance for marine oil terminals and includes in addition to the criteria

Final rept. Oct
1999-May
2000

NFESC-TR-
125 2103-SHR

It is my pleasure to Introduce the Air War College Maxwell Paper Anthology, a compilation of the award-winning papers from our 2010 graduates. Since we published the first Maxwell Paper in May 1996, we have distributed 47 papers demonstrating the highest level of analytical creativity and scholarship. The 12 papers presented here provide insight into and promote discussion on topics of importance to senior leaders.

Maxwell Paper
No.s 48-59

217 null

The Federal Aviation Administration (FAA) was created in 1958 to promote the safety of civil aviation and to foster air commerce. More than 48,000 career professionals are employed in the principal activities which support this mission: air traffic services; systems research and acquisition; regulation and certification; airport infrastructure development; civil aviation security; and agency administration. In the past three decades, progressive and substantial improvements in Air Traffic Control (ATC) technology, training, airframes, engines, avionics, cabin interiors, and airport security have greatly reduced the risk of air travel. Today, passengers can travel by air more safely, and for less cost, than ever before. And they are doing so in record numbers. In WY 1994, air travel on U.S. air carriers, regional and commuters increased from 513 million passengers to 555 million-- up 8.2 percent from the previous year and more than double the rate of growth which had been forecast. Along with enplaning roughly (30 percent of the world's commercial air passengers, the United States also has the world's largest and most active population of general aviation pilots. Aircraft in this category range from the homebuilt, one-seat single engine piston airplanes to the most sophisticated long-range corporate jets and helicopters.

Annual rept.,

103 null

This report provides an evaluation of three gaseous halon alternatives (CEA-410, FM-200, and NAF S-III) and one gas/powder mix (Envirogel) in full-scale machinery space applications. Halon 1301 was also tested to serve as a baseline comparison. The primary objective of this investigation was to evaluate the International Maritime Organization's draft test protocol for gaseous halon alternative fire extinguishing systems. The evaluation focused on various aspects of the test protocol such as compartment configuration, fire scenarios, discharge system parameters, and decomposition product formation.

Final rept.

USCG-D-D-24-
314 97

As has been documented in the study of the Packard Commission and in the report by the Center for Strategic and International Studies, commercial technology has outpaced DOD technology in a number of areas of vital importance to the development of weapon systems. While the owners of this commercial technology may want to perform work for the Government, there appears to be increasing reluctance to use their best commercial technology if there is a possibility that DOD will take the intellectual property rights in that technology. It also appears that there will be a greater confluence of commercial and DOD technology in the future. This indicates that there may be greater opportunities to utilize DOD sponsored technology in the commercial sector of the economy. These premises require a different focus for the intellectual property policies of the Department in the acquisition process. The new focus must be on fulfilling the Department's needs in the least intrusive manner with regard to intellectual property and on maximizing the flow of technology from the commercial sector to DOD and from DOD to the commercial sector.

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105 null

In the 20th century, scientific discovery and technological innovation have advanced America's military capabilities to the point where we are now the world's mightiest nation. We have before us an unprecedented opportunity to modernize our forces for the 21st century without worrying about a strategic rival that could threaten our existence. Our concerns look to the future. Who will be our future adversaries? What technologies will they employ? How do we maintain our technological edge in the 21st century? Technological superiority is an important component of military advantage. Military advantage goes to the nation best able to capture commercial technologies and incorporate them into weapon systems with new or improved operational capabilities. In large measure, the future readiness and effectiveness of America's Army will be determined by our investments in a relevant technology base. How do we determine whether the Army is investing in the right technologies to ensure military advantage in the 21st century, particularly for the Army After Next (AAN) in the year 2025 and beyond? And, how do we work with our industry partners to leverage their technological advances for military use? These are not easy questions, but they must be answered. The real challenge is to identify which technologies the Army must develop and which we can expect to buy from the commercial marketplace.

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DA-PB-70-99-
63 1

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(CPAR) Program, a new two-part system for improving the consolidation of concrete has been developed. First, a new vibratory consolidation subsystem was developed to enhance the efficiency and effectiveness of concrete consolidation in the context of a slipform paver. The system uses the phenomenon of resonance to efficiently vibrate a rigid and relatively large consolidation volume within concrete to relatively high-vibratory displacement amplitudes at a frequency appropriate for concrete consolidation. Dynamic finite element analysis and optimization techniques were used to design a mechanical system based on this concept which also satisfied the geometric requirement for installment in slipform pavers. The vibratory consolidation subsystem was then constructed, evaluated, and subjected to a comparative experimental study which revealed its advantages over conventional internal vibrators. A strain-gauge monitoring system was also devised and evaluated for real-time monitoring of the consolidation process of concrete under the action of the new system. A connection mechanism to interface between the new consolidation system and slipform pavers was devised, manufactured, and installed on a slipform paver. A large-scale field simulation was constructed for the purpose of evaluating the whole connection system under realistic operating conditions that closely simulated those of slipform pavers. Refinement of the hydraulic control and cooling system of the shakers that drive the resonant vibrators is going on currently. This will be followed by long-term longevity and fatigue evaluation of the complete system under realistic operation

Final rept.,

WES/CPAR-SL-
124 97-02

The USARIEM Environmental Medicine Genome Bank (EMGB) project is an ongoing effort to identify and characterize genes relevant to environmental injuries and illnesses and to human physical performance. To accomplish this, the EMGB banks DNA samples from human volunteers who have participated in USARIEM environmental and human performance studies and maintains a registry of phenotypic information. Because of the ethnically diverse and geographically dispersed backgrounds of the donors, the EMGB can be used to identify polymorphisms in genes that are potentially of interest to environmental medicine and to obtain an estimate of the frequency of these polymorphisms in young, healthy U.S. adults. Additionally, this resource also serves as a valuable source of control material for genetic studies of human diseases, such as asthma. The project is performed as part of a cooperative research and development agreement (CRDA) with the Division of Pulmonary and Critical Care Medicine at Brigham and Women's Hospital. This report provides updated information about the samples currently stored in the EMOB. It is intended as a reference document for researchers who wish to make use of this resource, and fulfills the annual reporting requirement of CRDA number DAMD 17-00-0017.

Technical note

USARIEM-TN-15 00/8

The Air Force Science and Technology Milestones assembled in this book often represent the combined effort of several scientists and engineers, or groups thereof, working as a team. The basic research, applied research, and follow-on technology development efforts described herein are essential to the continued success of the Air Force mission. This book is a compilation of notable Technology Milestones selected from the following categories: Response to Needs - Technology that demonstrates potential for, or has already achieved, application on a developmental or operational Department of Defense system and/or technology that provides Linguistic processing quick-reaction" response to problems or needs of field organizations. Discovery - Major innovative technological advancements that offer significant potential for existing and future Air Force systems. Demonstrations/Exercises - Examples of significant demonstration/exercise events

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142 null

Between the onset of World War II and 1991, more than 70 centers were created that came to be known collectively as Department of Defense (DoD) Federally Funded Research and Development Centers (FFRDCs). The maximum in existence at any one time was 43, in 1972. An ongoing sequence of DoD reviews has affirmed a continuing need for some FFRDCs. Other FFRDCs have been either discontinued because they were no longer required or, far more commonly, decertified as FFRDCs and allowed to continue, whether on a not-for-profit basis or not, without the FFRDC mantle. Currently, there are 10 DoD FFRDCs. These can be categorized as study and analysis centers, systems engineering and integration centers, and laboratories. DoD study and analysis FFRDCs have had a special role in combat modeling and simulation. Their history over the past 50 years is the focus of this background paper, which forms part of the Office of Technology Assessment (OTA) study of defense modeling and simulation. To provide perspective, some information on other DoD FFRDCs is included.

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OTA-BP-ISS-
77 157

This report contains summaries of research projects in the Department of Electrical and Computer Engineering. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts.

Summary rept.
1 Jan-31 Dec
98,

NPS-09-99-
101 006

This report provides an overview of the environmental and practical advantages and disadvantages of the major aquatic plant management methods, including biological, chemical, mechanical, and physical control techniques.

Final rept.

ERDC/EL MP-
38 00-1

Technology has been the foundation of America's economic and military strength. Our slumping economy, stifling deficit, and growing trade imbalance reflect our declining technological performance in comparison to other nations and threaten our preeminent position of leadership in the New World Order. To stimulate technological innovation and economic growth, U.S. lawmakers directed Federal scientists to transfer technology developed within Federal laboratories to private industry. The purpose of this paper is to assess the viability of on-going technology transfer initiatives. It addresses technology transfer legislation, identifies cultural barriers to successful transfer efforts, and analyzes proposed legislation and policies regarding Federal laboratories collaborating with industry. Findings suggest Federal laboratories will not be the panacea for industry's declining competitiveness. Recommendations include formulation of a national technology policy and streamlined process for joint Government/industry technology development programs and establishment of a civilian equivalent to ARPA at a comparable funding level.

Research rept.
Aug 1992-Apr
1993

NDU/ICAF-93-
39 RS5

The purpose of the present study is to investigate the effect of advanced refractive surgery on task performance in a military operational setting. In this prospective, randomized treatment trial we will enroll 224 nearsighted soldiers to undergo wavefront-guided (WFG) photorefractive keratectomy (PRK), WFG laser in situ keratomileusis (LASIK), wavefront optimized (WFO) PRK or WFO LASIK (56 in each group). Subjects will undergo extensive clinical and military visual performance testing pre- and postoperatively. Night Vision and Electronic Sensors Directorate (NVESD) performance prediction models (the Target Task Performance [TTP] metric) will analyze data derived from the contrast sensitivity function to predict whether there is a significant difference in either the range at which target identification can be made or the time a target can be detected. Military task performance will be further evaluated by the NVESD program (threshold target identification) in which tracked vehicle targets will be presented to observers at a sufficient distance to stress the eye response. The percentage of correctly identified stimuli will be plotted as a function of range to produce a psychometric function. Finally, night firing range performance will be determined before and after surgery. Study design will enable comparison to preoperative performance as well as comparisons between treatment groups.

Annual rept. 1
May 2009-30
Apr 2010

130 null

This report documents a 4-year program, completed in May 2013 by the Natick Soldier Research, Development and Engineering Center (NSRDEC), to develop and verify the capability to deploy multiple parachute systems from a structure suspended beneath a rotary wing aircraft. The concept is to suspend a range of bundle types, rigged for aerial delivery, from a structure and release them remotely. The development and verification process included payload releases from a helicopter and a crane prior to frame design, modeling and finite element analyses during design, and ground testing and flight maneuvers and airdrop tests of the frame and release system to identify shortcomings, make adjustments, and ultimately provide proof of concept. The tests demonstrated that the concept is feasible. Consequently, it is recommended that development of multiple payload airdrop beneath helicopters be continued at varying forward airspeeds to increase the resupply capability and mission flexibility of rotary wing aircraft and their passengers. The continued testing should incorporate payloads with varying densities to identify any further payload interaction issues that need to be addressed. Testing should also incorporate different fielded parachute systems to ensure these are compatible with the multiple payload airdrop concept. It is also recommended to expand the capability to unmanned systems.

Final rept. Apr
2009-May
2013

NATICK/TR-
96 15/030

Previous efforts by the US Army Engineer Research and Development Center, Construction Engineering Research Laboratory (ERDC-CERL) to develop a life-cycle building model have resulted in the definition of a core" building information model that contains general information describing facility assets such as spaces and equipment. To describe how facility assets (i.e.

Final rept.

ERDC/CERL-
62 CR-13-4

Although selective serotonin reuptake inhibitors (SSRIs) are routinely prescribed for acute stress disorder and early PTSD and recommended in the VA-DoD best practice guidelines, the efficacy of SSRIs as an early intervention for PTSD in service members returning from war-zone duty has still not been determined. Consequently, this study was designed to conduct a controlled trial of fluoxetine as an early intervention for recently redeployed soldiers, as well as to develop methodologies for understanding the multiple factors that may predict outcome. The study was conducted at two sites: Carl R. Darnall Army Medical Center and Central Texas Veterans Health Care System. Despite recruitment efforts, only 42 participants were enrolled. Of these, 18 were randomized. The limited enrollment obscures interpretation of the results. No unexpected side effects were observed. Our data does not support or refute the use of SSRIs for treatment of PTSD.

Final rept. 1 Jul
2007-30 Jun
2013

92 null

Biomedical literature represents the primary source of experimental data and biological knowledge. This project developed a text mining system for pathogens of biodefense relevance, focusing on mining pathogen-host proteomic data. We developed a Support Vector Machine (SVM)-based system to identify abstracts containing protein interaction information using an annotated corpus of 1360 MEDLINE abstracts as the training set. It achieved good performance on document classification with a precision of over 80 among top 50 ranked abstracts. The SVM-based method is further augmented with other text mining tools (such as PIE) for mining and tagging PPI information. As part of an effort in enabling text mining tools for real world applications, we coupled our analysis with the functional annotation of proteomic experiment. All the data was then loaded into iProXpress system and provided to the collaborating USAMRIID laboratory for the analysis of bacterial pathogen proteomics data.

Technical
Report,20 Sep
2007,19 Sep
2009

82 null

This paper discusses the development of a novel, lightweight protective structure and presents results of an analytical and experimental study of its response to explosive loading at a standoff. The paper provides background on the need for lightweight physical protective structures based on the current U.S. military operational paradigm, and briefly discusses the global system objectives and how they were incorporated into Spiral 1.0 of the system (fielded in FY 2008). Lastly, conclusions discuss capabilities and future challenges associated with this type of novel physical protective structure for use in the warfighters' rapidly changing contingency environment.

Conference
paper

9 null

The Program Manager for Aircrew Integrated Systems (PM-ACIS), formerly Aviation Life Support Equipment (PM-ALSE), requested the U.S. Army Aeromedical Research Laboratory (USAARL) examine the status of active noise reduction (ANR) systems available in the marketplace. The mechanism for acquiring the devices was a Cooperative Research and Development Agreement (ORDA) which was implemented with three U.S. corporations. Each corporation agreed to modify three HGU-56 aviator helmets, furnished by the Government, by installing their ANR system. The modified helmets, the communications earplug (CEP), and the standard HGU-56 helmet were evaluated by the USAARL Aircrew Protection Division to determine the electro-acoustic, hearing protective, and speech intelligibility characteristics. Standard techniques, using human subjects for sound attenuation and speech intelligibility, were used to complete the measurements.

Final rept.

USAARL-97-
61 08

This report describes the evaluation of the Aviation Weather Research Products (AWRP) conducted by ACT-320 at the Federal Aviation Administration (FAA) Technical Center from July 17 to August 25, 1995. The AWRP software produces graphical aviation weather products specifically intended for use by non-meteorologists such as Air Route Traffic Control Center (ARTCC) Traffic Management Unit (TMU) Coordinators and Automated Flight Service Station Specialists (AFSS). The AWRP evaluation was conducted from a Human Factors, Meteorological, and System Administration perspective. The Human Factors portion of the evaluation assessed AWRP user system interface and the AWRP User's Guide in addition to determining the extent to which the AWRP met the job task and weather information needs of controllers and specialists. The Meteorological portion of the evaluation determined the amount of meteorological interpretation needed for the individual products, whether products showed improvement over existing operational products, and meteorological consistency within and between products. The System Administration portion of the evaluation addressed the usability and effectiveness of the AWRP installation and system management documents. Although the evaluation identified improvements over current systems, several additional improvements would have to be made to the AWRP in order to consider the products for potential incorporation into FAA systems. This document defines the areas needing improvement.

Technical note

DOT/FAA/CT-165 TN98/12

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255 null

The purpose of this effort was to provide research and research support to on-going RDT&E efforts in the following areas: The effect of physical conditioning on acceleration tolerance/ endurance; Female G tolerance/ endurance; Effect of varied periods of acceleration layoff on acceleration tolerance/ endurance; Effect of crewmember posture and position on acceleration tolerance/ endurance; Use of animal models for human acceleration tolerance/ endurance; Life support equipment development laboratory; Testing of life support equipment, subatmospheric research; Molecular sieve technology; Spatial disorientation (SD) countermeasures research; Sustained operations research; Biomedical laboratory operation and support; and Task order requirements. This final report provides summaries and accomplishments including citations and abstracts for the publications documenting the results of the specific efforts.

Final rept. 11
Nov 92-7 Nov
97

AFRL-HE-BR-
156 TR-1998-0114

Ammunition Demilitarization Technology Research and Development Program and sponsored by the Army Defense Ammunition Center, a Multimetal Continuous Emissions Monitor System (MMCEMS) for hazardous air pollutant (HAP) metals was developed by the Naval Air Warfare Center Weapons Division (NAWCWD) at China Lake, California in collaboration with the U.S. Army Tank-automotive and Armaments Command, Armament Research, Development and Engineering Center (TACOM-ARDEC) at Picatinny Arsenal. The MMCEMS is capable of rapid and simultaneous detection of all 14 of the HAP metals targeted by the U.S. Environmental Protection Agency (EPA), plus virtually any metal in the contained periodic table. Under the current ESTCP project, validation of the MMCEMS has been carried out in two separate demonstrations. The first took place at Tooele Army Depot (TEAD), Utah, from May 3-6, 1999, on the stack emissions from an Ammunition Peculiar Equipment (APE) 1236 M1 munitions deactivation incinerator. The incinerator feed was empty 30-mm aluminum cartridge casings containing percussion primers, introduced into the furnace at an average rate of 2000 per hour. The second took place at the Retech Corporation's manufacturing facility at Ukiah, California, from October 14-20, 1999, on the Plasma Arc Hazardous Waste Treatment System (PAHWTS) under development in a separate ESTCP project. The incinerator was fed with surrogate wastes such as contaminated soil, paint mixtures, oily rags and solvents to investigate the effects of stack-gas moisture on MMCEMS operation. The MMCEMS employs an argon inductively coupled

Cost and
performance
rept.

49 null

global atmosphere and ocean environments; the effectiveness of clean-up technologies for hazardous waste materials; the approaches to minimize, treat, and dispose of hazardous waste; methods for assessing hazards in existing and restored sites; and applications of demonstrated energy sources for use by the DoD facilities infrastructure. Remote Sensing projects focus on characterizing the global environment, using advanced technologies for detection, analysis, and evaluation. Advanced surveillance methods are being applied to oceanographic and land characterization. Archival data (both classified and unclassified from national assets) and new data will contribute to environmental modeling and analysis. Several projects focus on the arctic region as it is a sensitive warning signal for global warming and climate change. Temperature data on permafrost and data on arctic ice draft will yield crucial knowledge about this very important region. Regulatory compliance is also an important area addressed by SERDP. A project on the effects of acoustic devices on marine mammals will broaden our knowledge of the consequences of mans intervention in the sea, suggest new possibilities for the design and construction of acoustic devices, and provide a data base of information that can ease and speed the regulatory process that provides permits and authorization for use of sound in the ocean. Data from assessing atmospheric pollution from USAF operations will allow for better compliance of clean air requirements as well as leading to improved procedures to control the combustion process and thus to minimizing pollutant emissions.

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91 null

This report responds to the tasks identified by the SAC-D Report No. 109-292. First, it highlights the reporting requirement. Second, it provides background information on the TMTI program. Third, it includes our reporting requirement response to the three specified Senate Appropriations Committee-Defense Congressional questions. Finally, it provides a summary.

rept.

22 null

...report presents the results of a research program to develop a computer software program, SmartPlant, which could reduce the cost of concrete mixtures and increase construction productivity by minimizing the adverse effects of materials and mixture variations upon construction operations. SmartPlant is comprised of five component programs. Most attention was given to seeMIX, the mixture proportioning program. A laboratory evaluation of this program was conducted in which simulated paving, structural, and mass concrete mixtures were proportioned using current American Concrete Institute (ACI) proportioning practices and seeMIX technology. Two field evaluations of seeMIX were also conducted. SeeMAT-A, the aggregate database program, was also evaluated under field conditions on two occasions. SeeMAT-C, the cement database program, and seeMAT-P, the pozzolan database program, were evaluated in the laboratory. SeeSTAT, the statistical database program was not evaluated. The results indicated that seeMIX mixture proportioning technology can proportion concrete mixtures having fresh and hardened properties equal to, and in some instances superior to, current ACI proportioning practices when richer mixtures, such as those used in paving or structural applications, are being proportioned. SeeMIX was less effective in proportioning lean mass concrete mixtures. SeeMAT-A, seeMAT-C, and seeMAT-P performed well and were judged to be useful tools, both as components of SmartPlant and as stand-alone tools. While the individual components of SmartPlant were evaluated, numerous logistical and technical problems prevented the evaluation of a fully automated SmartPlant system either in

Final rept.,

WES/CPAR-SL-
184 97-1

The overriding goal of this Naval S&T Strategic Plan is to provide the vision and key objectives guiding the essential science and technology efforts that will assure the continued supremacy of U.S. Naval forces in the 21st century. This plan implements the current guidance and direction of our senior civilian and military leadership. It focuses and aligns Naval S&T with Naval missions and future capability needs that address the complex challenges presented by both rising peer competitors and irregular/asymmetric warfare. It puts us on a path toward maturing and transitioning enhanced naval capabilities, such as persistent ISR and dominance of the EW spectrum, and toward pursuing revolutionary advances, such as speed-of-light weapons. This strategy will be reviewed and approved by the Naval S&T Corporate Board every two years to ensure its continued relevance. It provides a means and framework to communicate with decision makers and the various external communities that interact with Naval S&T. Inside ONR, this plan will guide our investment planning and decisions. It is also intended to broaden our reach into the scientific community as well as into industry. The plan will be posted on the ONR website (www.onr.navy.mil) as a gateway for industry and academia into the center of Naval S&T.

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The Air University Library Index to Military Periodicals is a subject index to significant articles, news items, and editorials appearing in 81 English language military and aeronautical periodicals. It originated with 23 titles as a quarterly publication in 1949 and has continued on a quarterly basis superseded by annual cumulations (triennial cumulative issues were published from 1952 through 1967). From 1949 to 1962 the Index was issued as Air University Periodical Index. Staff members of the Air University Library index all of the periodicals with the exception of seven titles which are indexed by other Air Force, Army, Marine Corps and Navy libraries. The Air University Library Index to Military Periodicals serves primarily the educational and research programs of Air University; it is available to other Libraries upon request.

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317 null

Watervliet Arsenal (WVA) and the U.S. Army Construction Engineering Research Laboratory (CERL) developed the Environmental Management Information System (EMIS) to supply the missing connections to the stand-alone systems already in place and in use. EMIS is an automated tracking system designed to provide cradle-to-grave" tracking of hazardous materials and their chemical constituents. EMIS gathers environmental information throughout WVA and provides this information to compliance officers

Final rept.

ERDC/CERL-
76 TR-00-28

The primary goal of the Acquisition Review Quarterly (ARQ) is to provide practicing acquisition professionals with relevant management tools and information based on recent advances in policy, management theory, and research. ARQ addresses the needs of professionals across the full spectrum of defense acquisition, and it intended to serve as a mechanism for fostering and disseminating scholarly research on acquisition issues, for exchanging opinions, for communicating policy decisions, and for maintaining a high level awareness regarding acquisition management philosophies. Some of the articles in this issue are International Cooperative, Research and Development Programs, The Impact of the Packard Commission's Recommendations on Reducing Cost Overruns on Defense Acquisition Contracts, The Impact of the Buy American Act on Program Managers, Logistics Test and Evaluation: An Overview, Value Cost Management Report to Evaluate the Contractor's Estimate at Completion, and The Problem with Aviation COTS Depot Utilization and Commercialization.

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124 null

This document provides supplemental information to the President's 2012 Budget and serves as the Annual Report on the NNI called for in the 21st Century Nanotechnology Research and Development Act (P.L. 108-153). In particular, the report summarizes NNI programmatic activities for 2010 and 2011, as well as those planned for in 2012. NNI budgets for 2010-2012 are presented by agency and PCA in Section 2 of this report. Information on the use of the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) program funds to support nanotechnology research and commercialization activities, also called for in P.L. 108-153, is included at the end of Section 2. Section 3 discusses activities that have been undertaken and progress that has been made toward achieving the four goals set out in the NNI Strategic Plan and highlights external reviews of the NNI and how their recommendations are being addressed.

Annual rept.

57 null

For this reason, C4I is more important than ever, and a critical element in ensuring that the Air Force can in fill its mission. Our military forces, although reduced in size must be highly flexible, globally responsive, and at times deadly precise. They must operate successfully in high threat, high technology environments, and in new missions such as humanitarian assistance where the threat and technology may be low but still potentially deadly. With revolutionary C4I technologies, we can achieve information superiority; responding accurately and effectively to the rapidly changing international scene and controlling both the increasing instability of the battlefield, and the likely sophistication of our adversaries.

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54 null

Although selective serotonin reuptake inhibitors (SSRIs) are routinely prescribed for acute stress disorder and early PTSD and recommended in the VA-DoD best practice guidelines, the efficacy of SSRIs as an early intervention for PTSD in service members returning from war-zone duty has still not been determined. Consequently, this study was designed to conduct a controlled trial of fluoxetine as an early intervention for recently redeployed soldiers, as well as to develop methodologies for understanding the multiple factors that may predict outcome. The Brooke Army Medical Center IRB, the regional IRB for the Carl R. Darnall Army Medical Center, has given full approval. A CRADA between TEMPVA Research Group, Inc and the Carl R. Darnall Army Medical Center has been executed. The protocol has now also been approved by the Central Texas Veterans Health Care System (CTVHCS) IRB and the Research and Development Committee. The review by Kristen R. Katopol, MS, CIM, Human Subjects Protection Scientist (AMDEX Corp.) Human Research Protection Office (HRPO) Office of Research Protections (ORP) U.S. Army Medical Research and Materiel Command (USAMRMC) Fort Detrick has been completed and the BAMC IRB is reviewing the documents revised to comply with her audit. No subjects have been enrolled and will not be enrolled until final approval is obtained from USAMRMC.

Annual rept. 1
Jul 2008-30 Jun
2009

66 null

This volume results from a symposium held at the 1995 MRS Spring Meeting, April 17-21, in San Francisco. The symposium, bearing the title of this volume, followed upon a highly successful earlier symposium entitled 'Defect Engineering in Semiconductor Growth. Processing and Device Technology,' held at the 1992 MRS Spring Meeting. The intent of the present symposium was to go beyond defect control and explore deliberate introduction and manipulation of defects and impurities in order to engineer some desired properties in semiconductor materials and devices. The response from the academic and industrial research communities was overwhelming, with over 280 abstracts submitted from around the world. The theme of defect engineering has clearly come of age. p2

Final rept. 1
Apr 95-31 Mar
96,

ARO-34543.1-
1052 MS-CF

represent the culmination of a one-year effort by the men and women of the Institute for Manufacturing and Sustainment Technologies (iMAST), as a component of the Applied Research Laboratory (ARL) at Penn State. We strive to better equip our Sailors and Marines and help them keep their equipment at the readiness levels our nation needs to fight The Global War on Terrorism. iMAST is a Navy Manufacturing Technology (ManTech) Center of Excellence established by the Office of Naval Research for the purpose of providing focal points for the development and technology transfer of new manufacturing technology, processes, and equipment in a cooperative environment with industry, academia, and U.S. Navy centers and laboratories. Navy ManTech Centers of Excellence: serve as corporate residences of expertise in particular technological areas develop and demonstrate manufacturing technology solutions for identified Navy manufacturing requirements facilitate the transfer of developed manufacturing technologies to the U.S. industrial base This report describes this years projects, executed within the six technical areas that are especially resident in the materials and manufacturing office of ARL Penn State. Along with the technologies, descriptions of completed and on-going projects are provided. These are representative examples of our competencies. ARL is proud of its 66-year history supporting the U.S. Navy and the Department of Defense with advanced engineering and science, applied to help solve today's technical challenges and accomplish the mission. In addition, iMAST and ARL have reach-back capability to the vast

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64 null

Substantial research has been done to find the best power supply to drive the Naval railgun. Inertial energy storage using rotating machines, high voltage and low voltage capacitors, and batteries have been candidates. Low voltage capacitors and batteries are, or may soon be, possible energy sources. These low voltage energy sources would require a pulse forming inductive network (PFIN) to transform the low-voltage electrical energy to power appropriate for the railgun. The PFIN electrical setup requires an opening switch that would carry high currents (50 kA) for times greater than 0.1 seconds and that could open against such high currents (circuit interruption). This thesis proposes a mechanical vacuum switch with an externally applied magnetic field to divert charged particles to an auxiliary electrode. A prototype switch suitable for H 5 kA has been designed but not yet tested. Computational results suggest that very large magnetic fields (>1T) may be required to divert heavy charged particles, e.g. Cu+.

Master's thesis

68 null

The objective of this project was to produce, analyze and deliver Fischer-Tropsch research fuel to a draft specification in the quantities required for direct support of high priority DoD-assured fuels research, demonstration plans, and schedules. A Fischer-Tropsch research fuel was successfully produced by the Syntroleum Corporation to a draft specification and 104,278 gallons was delivered to the DoD Assured Fuels Research Program. Trend analyses shows that a very consistent product was produced and shipped.

Final rept. 6
Jun-30 Sep
2006

AFRL-PR-WP-
131 TR-2007-2112

This document is a report of the Army Acquisition, Logistics and Technology publication for September and October 2003.

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60 null

In accordance with the National Oil and Hazardous Substances Pollution Contingency Plan, many Regional Response Teams (RRTs) throughout the country have established pre-approved zones for the In-Situ Burning (ISB) of oil. ISB is generally recognized as a potentially effective means of quickly removing large quantities of oil from the ocean surface to avert possible oil spill impacts to coastal beaches, marshes, and inland resources. However, for a variety of reasons, ISB is a seldom-used response technique, particularly within the offshore environment. Given this background, the U. S. Coast Guard was interested in more clearly understanding the factors that impact the actual use of ISB within one RRT pre-approved, offshore zone. The U. S. Coast Guard Research and Development Center, with assistance from the Texas General Land Office, the Marine Spill Response Corporation, and the National Response Corporation, has developed a multi-year project, which is designed to evaluate the feasibility of conducting ISB operations within an offshore Galveston, Texas, environment. It involves three field exercises, which are progressive in nature, in order to investigate thoroughly the critical aspects of a safe, efficient, and effective offshore ISB response. This report documents the data, findings, conclusions, and recommendations derived from the first of these three ISB field exercises, which focused on the trial implementation of three presently recognized JSB Operational Procedures.

Final rept.

CGR/DC-492-
00,USCG-D-18-
47 00

This brochure presents brief summaries of the FY92 research efforts at the Naval Training Systems Center (NAVTRASYSCEN) in Orlando, FL. NAVTRASYSCEN has comprehensive simulation and training systems responsibilities ranging from research and technology base development through system acquisition and life cycle support. The NAVTRASYSCEN is unique in this integrated role because it performs research, specifies the training device's engineering, instructional, and operational requirements, selects the contractor, evaluates the trainer as it is being built, and ensures the trainer can be properly operated and maintained in the field. In addition to the Navy, NAVTRASYSCEN provides services for the Marine Corps, Army, Air Force, and foreign governments. The NAVTRASYSCEN's research mission is to plan and perform a full range of directed research and development in support of Naval training systems for all warfare areas and platforms, to maintain an expanding technology base, and to transition research results to the fleet. R and D program emphasis is on fleet and training command requirements, rapid transition of products, industry/university coordination, improved planning, coordination with other services, and improved quality and cost effectiveness of products.

Annual rept.,

74 NTSC-91-01

The Naval Research Laboratory (NRL) on the Potomac River in Washington, D.C., is the United States Navy's Corporate Laboratory for research and development of technologies related to national defense. The opening of NRL in 1923 and its rise to prominence as one of the nation's leading defense establishments is well documented (see Suggestions for Further Reading at the end of this volume). As one of the two founding NRL research divisions, the Sound Division renamed the Acoustics Division around 1968 has a long, rich, and diverse history of technical achievement. It has conducted research operations continuously from 1923 to the present day. This volume recounts some of the key milestones and achievements of the NRL Acoustics Division over these first eight decades from 1923 to about 2008. Among the motivations for developing this volume was the realization that a coherent history of the Division had not yet been prepared. Several partial histories of the early years of the Division were written many years ago, and much rich and possibly fragile documentation resides in NRL's files and archives. The time appeared right to review the existing documentation and prepare this history. This volume brings together a wealth of material, including scientist biographies, technology descriptions, personal narratives, oral histories, photographs, and extensive lists of publications documenting the acoustics research conducted at the Laboratory.

Monograph

738 null

Partial contents: Formation of the Al-Mn icosahedral phase by electrodeposition; The electrodeposition of an Aluminum-Manganese metallic glass from molten salts; Phase formation in electrodeposited and thermally annealed Al-Mn alloys; Structural study of electrodeposited Aluminum-Manganese alloys; Patents: Metal-coated fiber compositions containing alloys barrier layer; Cooperative research and development agreement. jg (abstract is modified and taken from document titles.)

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72 null

This report summarized projects carried out during Fiscal Year 1999 by the U.S. Army Center's Pollution Prevention and Environmental Technology Division. The report describes the projects, participants, results, requirements, milestones, and products. P2&ETD conducts demonstrations of new and innovative environmental technologies and transfers successful technologies to the field. The division's experienced scientist and engineers handle projects in program areas such as environmental clean up, compliance, pollution prevention, and conservation.

Annual rept.

SFIM-AEC-ET-
113 TR-99070

This report contains four chapters. It begins with a historical overview of the influence of naturally occurring infectious diseases on U.S. military operations and the research that has been conducted in response to the threats posed by naturally occurring infectious diseases. Chapter 2 describes the role of USAMRMC in DoD-in particular its - Research Area Directorate for Infectious Diseases that manages the Military Infectious Diseases Research Program (MIDRP) - in the acquisition of vaccines against infectious diseases; the chapter includes the committee's understanding of how current priorities emerge within the organizational context. Chapter 3 describes current naturally occurring infectious disease threats and available vaccine countermeasures. In Chapter 4, the committee presents its recommendations.

Final rept. 7
Dec 1999-30
Sep 2002

ISBN 0-309-
152 08499-7

The U.S. Army maintains an aging inventory of over 143,000 buildings representing 54.6 billion in high priority, unfinanced maintenance and repair. Many of these structures fail to meet modern building codes and require structural upgrades. The objective of this research was to develop a cost-effective magnetostrictive fiber-reinforced polymer (FRP) composite material that can be fabricated into structural elements capable of generating data about their own structural condition, and which can be monitored and assessed by measuring its electromagnetic flux over time. The magnetostrictive material selected for these tagging experiments was terfenol-D. The studies documented in this report address theoretical and applied aspects of tagging FRP composites with magnetostrictive particles to enable the monitoring of loads, strains, and damage in structural members using portable, readily available nondestructive monitoring equipment. After theoretical models were developed, various types of magnetostrictive-tagged resin matrices - both unreinforced and glass-fiber reinforced were designed, fabricated, tested, and analyzed in laboratory experiments. Taken collectively, the results of these studies indicate that magnetostrictive-tagged composites have great potential for application in self-monitoring structural technologies in the field.

Final rept.

ERDC/CERL
79 TR-00-46

The activities and accomplishments of Space and Naval Warfare Systems Center, San Diego (SSC San Diego) during calendar year 1999 are described, and the Center's mission and responsibilities are delineated.

Technical rept.
Jan 1998-Dec
1999

SSC/SD-TD-
107 3111

Program Manager is intended to be a vehicle for the transmission of information on policies, trends, events and current thinkin affecting program management and defense systems acquisition.

null

141 DSMC-140

This report contains project summaries of the research projects in the Space Systems Academic Group A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised by faculty in the Department are also included.

Summary rept.
1 Oct 2000-30
Sep 2001

NPS-SP-09-02-
33 027

The Strategic Environmental Research and Development Program (SERDP) is the Department of Defense's corporate environmental science and technology program. To fulfill its mission to address problems through innovative research and share that information across federal and private organizations, SERDP executes the program in partnership with the Department of Energy and the Environmental Protection solicits interest from other public and private research organizations.

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325 null

This thesis evaluates potential uses of automatic identification technologies (AIT) in support of Naval logistics. AIT includes a range of technologies and techniques which incorporate the rapid and accurate capture of data and its subsequent processing for cognitive recognition and identification. An introduction to the various AIT system components, from the well established bar coding technology to the more versatile radio frequency identification (RFID) technology, is presented. Additionally, the underlying fundamentals of Naval logistics principles, functions, and elements are discussed, including how these themes translate into promising potential uses of AIT. Recent Naval AIT applications are featured and the results and lessons learned evaluated. In this era of joint operations and use of coalition forces, this work places emphasis on compatibility, interoperability, and the importance of enforcing standardization of AIT symbologies in the commercial and military sectors. The DoD is in the midst of great change and restructuring, especially in the area of logistics. This study provides Naval logistics stakeholders a broad overview of the prevalent MT system component capabilities and limitations. An AIT implementation model is also featured that delineates the various program elements which have significant impact on the efficiency and effectiveness of procured AIT systems. A thorough understanding of the technology and its associated integration issues should enable Naval leadership to make sound AIT acquisitions.

Master's thesis,

132 null

This report describes the fabrication and use of capture matrices for the enhanced detection of harmful chemicals. Capture matrices are composed of affinity ligands grafted onto magnetic microparticles. These capture matrices are essentially preconcentrators/transducers that can be used with either field-deployable sensors or microelectromechanical systems (MEMS) devices. For MEMS, these capture matrices address integrating the device with real-world" sampling. Depending on the chemical nature of the affinity ligands

Final rept.

102 TR-2073

In 2010, a National Defense University (NDU) research project called TIDES (Transformative Innovation for Development and Emergency Support) was invited to partner with a company to produce a tradeshow about humanitarian assistance and disaster relief missions and related capabilities. Despite senior-level Department of Defense (DoD) guidance to pursue public-private partnerships, DoD attorneys told TIDES managers to reject the agreement. Differing legal interpretations of the word partner" generated concern that the proposed partnership could create an impermissible perception of government endorsement of a private company. Even though it would have advanced the government's mission and promoted efficiency

Monograph

13 null

Technological superiority has been, and continues to be, a cornerstone of our national military strategy. Technologies such as radar, jet engines, nuclear weapons, night vision, smart weapons, stealth, the Global Positioning System, and vastly more capable information management systems have changed warfare dramatically. Today's technological edge allows us to prevail across the broad spectrum of conflict decisively and with relatively low casualties. Maintaining this technological edge has become even more important as the size of U.S. forces decreases and high-technology weapons are now readily available on the world market. In this new environment, it is imperative that U.S. forces possess technological superiority to achieve and maintain the dominance displayed in Operation Desert Storm. The technological advantage we enjoy today is a legacy of decades of investment in science and technology (S&T). Likewise, our future warfighting capabilities will be substantially determined by today's investment in S&T.

null

600 null

The National Security Strategy (NSS) highlights the dramatic changes in the security needs of our nation. The Department of Defense (DoD) is transforming to meet the challenges that it will face in the 21st century. Taking full advantage of science and technology" is a critical aspect of the transformation. To take full advantage of Science and Technology (S&T)

null 206 null

Technological innovation is essential to the future well-being of the United States. The ability of the nation to sustain economic growth, increase its standard of living, and improve human health and the environment depends, in many ways, on its success in developing and commercializing new products, processes, and services. The growing capabilities of competitors in Europe, Asia, and elsewhere around the world increasingly challenge the ability of U.S. firms to convert the nation's science and technology base into a competitive advantage. Such concerns have prompted much debate about the proper role of government in encouraging innovation and the commercialization of new technologies. To date, however, the debate has been hampered by an incomplete understanding of the ways in which firms develop and market new products, processes, and services and the barriers they must overcome in the process.

null OTA-BP-ITC-104 165

The Naval Research Laboratory is the Department of the Navy's corporate laboratory; it is under the command of the Chief of Naval Research (CNR). As the corporate laboratory of the Navy, NRL is the principal in-house component in the Office of Naval Research's effort to meet its science and technology responsibilities. NRL has had a long and fruitful relationship with industry as a collaborator, contractor, and most recently in Cooperative Research and Development Agreements (CRADAs). NRL values this linkage and intends for it to continue to develop. NRL is an important link in the Navy RD&A chain. Through NRL, the Navy has direct ties with sources of fundamental ideas in industry and the academic community throughout the world and provides an effective coupling point to the R&D chain for the Office of Naval Research (ONR). The NRL fact book is published every two years as a reference sources.

null 136 null

Summary of the research to develop an active topical skin protectant as a follow-on product to Skin Exposure Reduction Paste Against Chemical Warfare Agents (SERPACWA).

Technical Report,01 Jan 1994,31 Dec 2004 1087 null

MISSION: To conduct a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems, and ocean, atmospheric, and space sciences and related technologies. The Naval Research Laboratory provides primary in-house research for the physical, engineering, space, and environmental sciences; broadly based applied research and advanced technology development programs in response to identified and anticipated Navy and Marine Corps needs; broad multidisciplinary support to the Naval Warfare Centers; and space and space systems technology, development, and support.

Journal

NRL/PU/3430-
256 09-515

The Navy, Air Force, Advanced Research Projects Agency, Defense Nuclear Agency, Ballistic Missile Defense Organization and U.S. Special Operations Command hereafter referred to as DoD Components, invite small business firms to submit proposals under this program solicitation entitled Small Business Innovation Research (SBIR). Firms with strong research and development capabilities in science or engineering in any of the topic areas described in Section 8.0 are encouraged to participate. Subject to availability of funds, DoD Components will support high quality research or research development proposals of innovative concepts to solve the listed defense-related scientific or engineering problems, especially those concepts that also have high potential for commercialization in the private sector.

null

388 null

This report investigates the scope and boundaries surrounding Open Innovation methodologies, Web 2.0 technologies and Crowdsourcing to determine their appropriateness for government use and how/when they can be used. Open Innovation methodology revolutionizes the inflow and outflow of organizational information and the administration of intellectual property. It brings together individuals with diverse talents across multiple disciplines to collaborate on projects. Web 2.0 technologies include Wikis, blogs, video-sharing and social-networking sites, used for more efficient communication and knowledge sharing. Crowdsourcing is an online collaborative decision-making effort that reaches thousands of people at one time, who deliver bits and pieces of information, which are compiled into an innovative product or service. This process captures talent from research institutes, universities, non-profit organizations, small businesses, consultants, inventors and others to produce solutions to tasks, pioneer new technologies, or capture, systematize, and examine large amounts of data. Commercial businesses are using these technologies and methodologies to successfully bring new products to market, improve their existing products and improve customer service. The government may benefit in a similar manner.

Joint applied
project

185 null

Tri-Service Conference on Corrosion Committee: Session I: Corrosion Characterization; Session II: Microbiological Corrosion; Session III: Corrosion Composites and Ceramics; Session IV: Detection and Monitoring of Corrosion NDI & E; Session V: Environmental Cracking; and Session VI: Corrosion Mechanisms. null

836 null

President Kennedy's call for a manned lunar landing within the decade galvanized our country for a massive and challenging undertaking. Neil Armstrong stepped onto the Moon a little more than eight years after the President's May 1961 speech before Congress-an accomplishment that stands as one of the great scientific, technical, and management achievements in human history. Viewed within the context of today's typical large aerospace programs, the rapidity of the Apollo Program's development is particularly impressive. Apollo succeeded despite the tragic January 1967 fire that prompted a major redesign of the manned capsule as well as significant personnel and management changes within NASA. As the 1960s drew to a close with the US basking in the limelight of its space successes, some space managers were already developing plans for space initiatives that would follow the Apollo Program. Despite the breathtaking success of Apollo, American public and Congressional opinion did not support funding large new space missions at the level and priority enjoyed by the manned lunar landing program. President Nixon's March 1970 statement reflected the sentiment within the US government at the time. The US needed a cheaper, simpler means of achieving access to space. The strong desire for economical space transportation may have been partially motivated by an image of wastefulness associated with the Apollo launch vehicle.

Research rept.,

233 AU-ARI-93-8

...the project, ...
know under the trade name ECOSOAR) for treatment of three environmental contaminants: diesel fuel, PCBs (arochlor 1254) and nutrients (nitrogen forms). The KRIA water treatment system works by charging water with the superoxide radical (O_2^-), which is electrochemically generated from oxygen in the atmosphere. At the injection site, both cavitation and microbubble reactions may also occur. A review of the literature indicates that superoxide is a relatively weak radical, but it can work both oxidatively and reductively. A review of the literature also showed that superoxide can transform chlorinated solvents and microcystin (a toxin associated with algae). Studies of the KRIA yielded promising results, but most of these studies lacked sufficient control to isolate variables, possibly casting doubt on the exact nature of the mechanism. Background studies were conducted to evaluate the KRIAs effect on water. The KRIA charged water for 135 minutes and was compared to a control in which the superoxide valve was turned off. It was found that the superoxide charging resulted in elevated (approximately threefold) levels of oxygen, which led to the water being supersaturated (by approximately 300%). Conductivity was also increased, presumably due to the addition of charged oxygen species into the water. These elevated levels persisted for at least 24 hours after the charging, suggesting that the effect was persistent. The team also documented elevated concentrations of superoxide ion after charging. Treatment of diesel resulted in a 58% increase in removal compared to the control reactor, and this was statistically significant. Treatment of PCBs resulted in a

DoD environmental concerns may be divided into two broad categories: (1) those which impact training, logistics, and combat operations; and (2) those which have cost impacts on the supporting infrastructure. In either case, these concerns can have negative impacts on the Department's ability to perform its primary mission of maintaining military readiness for national defense. SERDP strives to minimize or eliminate major negative impacts of environmental concerns or requirements on DoD's ability to conduct this mission. Current DoD costs of environmental compliance, cleanup, and conservation are significant. Development and application of innovative environmental technologies will reduce costs, environmental risks, and/or time required to resolve environmental problems in these areas while simultaneously enhancing safety and health. Equally important, the development and application of innovative pollution prevention technologies serves to reduce or eliminate waste problems before they occur. Thus, SERDP is improving mission readiness through environmental research by: Accelerating cost effective cleanup of contaminated Defense sites; Facilitating full compliance with environmental laws and regulations at reduced cost; Enhancing training, testing, and operational readiness through prudent land management and conservation measures; and Reducing or eliminating Defense industrial waste streams through aggressive pollution prevention.

This report contains project summaries of the research projects in the Department of Mechanical Engineering A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports Thesis abstracts of students advised by faculty in the Department are also included.

Annual rept.
for FY96.

328 null

Summary rept.
1 Oct 2000-30
Sep 2001

NPS-ME-09-
58 02-023

Table of contents include: (1) Longuemare Endorses Two Important Modeling and Simulation Documents; (2) Simulation Based Acquisition; (3) Modeling and Simulation Use in the Army Acquisition Process; (4) Air Force Space Command Establishes First Space Battlelab; (5) Modeling and Simulation - A New Role for the Operational Tester; (6) SPY-1D(V) Models and Simulations Support Operational Testing in a Remote New Jersey Cornfield; (7) Put a Virtual Prototype on Your Desktop; (8) The Theater Missile Defense System Exerciser; (9) A New Vision, Further Leveraging Emerge From Orlando's Simulation Superstructure; (10) National Simulation Superstructure; (11) Integrated Ship Defense Modeling and Simulation Pilot Program; (12) Integrated Acquisition-Logistics Synthetic Environments for Total Value Assessment; (13) Why is Modeling and Simulation So Hard to Do? and (14) Air Force Modeling and Simulation Trends.

null 65 null

This report contains project summaries of the research projects in the Institute for Defense Systems Engineering and Analysis (IDSEA), Institute for Information Superiority and Innovation (1251) and The Modeling, Virtual Environments and Simulation (MOVES) Institute. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised by faculty in the Department are also included.

Summary rept.
1 Oct 2000-30
Sep 2001 NPS-IJWA-09-
68 02-029

The Naval Sea Systems Command (NAVSEA) Acquisition Strategy Guide (ASG) provides guidance and procedures for the Program Manager (PM) and other personnel assigned to participate in acquisition planning, development, review, and/or approval of the Acquisition Strategy (AS) document for an acquisition program. The ASG is intended to assist the PM staff in preparing the AS document that will be reviewed by interested parties and approved by the Milestone Decision Authority (MDA). The ASG was derived from Defense, Navy, and NAVSEA content requirements. The template in Appendix A is provided as guidance and can be tailored to address specific requirements of an individual program as addressed with the MDA.

null 87 null

Access to space has always been a challenge, especially for organizations with limited budgets. In the last decade a group of universities has overcome many of the obstacles associated with placing experiments on orbit by using a nano-satellite standard called the CubeSat." In addition to universities many private
 This report contains project summaries of the research projects in the Department of Computer Science. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised by faculty in the Department are also included.

Master's thesis 129 null

Summary rept.
 1 Oct 1999-30
 Sep 2000 NPS-09-02-
 104 003

This report details the research being conducted by the Federal Aviation Administration (FAA) to develop fire-safe cabin materials for commercial aircraft; The objective of the Fire-Resistant Materials program is to eliminate burning cabin materials as a cause of death in aircraft accidents. Long-term activities include the synthesis of new, thermally stable, low fuel value organic and inorganic polymer systems. The synthesis effort is supported by fundamental research to understand polymer combustion and fire resistance mechanisms using numerical and analytic modeling and the development of new characterization techniques. Aircraft materials which are targeted for upgraded fire resistance are (1) thermoset resins for interior decorative panels, secondary composites, and adhesives; (2) thermoplastics for decorative facings, telecommunication equipment, passenger service units, molded seat parts, transparencies, and electrical wiring; (3) textile fibers for upholstery, carpets, decorative murals, tapestries; and (4) elastomers/rubber for seat cushions, pillows, and sealants. During the first 2 years of the program (1995- 1996) we have made significant progress in achieving our interim goal of a 50 percent reduction in the heat release rate of cabin materials by 2005 and zero heat release rate cabin materials by 2018 with respect to the 1996 baseline for new aircraft. A previous report, Fire-Resistant Materials: Research Overview, DOT/FAA/AR-97/99, summarizes the background and technical objectives of the program and serves as an introduction to the present document.

Final rept., DOT/FAA/AR-
 294 97/100

the Federal Technology Transfer Act of 1986 encourage the transfer of technology derived from Federally sponsored research and development (R and D) to both the public and private sectors. The acts require each Federal agency conducting R and D and its major laboratories to identify and encourage transfer of technologies having potential commercial or practical application. Under new regulations, exclusive licensing is offered as an incentive to transfer Federal technology to U.S. industry and to encourage venture capital investment in improving the nation's technology base. The mission of the David Taylor Research Center (DTRC) is to serve as the principal Navy RDT and E Center for naval vehicles and logistics and to provide RDT and E support for the U.S. Maritime Administration and the maritime industry. DTRC is an active participant in various domestic technology transfer activities sponsored by the U.S. Navy. These include the Navy Potential Contractor Program (NPCP), Cooperative Research and Development Agreements (CRDAs), the Federal Laboratory Consortium (FLC) for technology transfer, and the National Technology Transfer Center (NTIC). The present document provides examples of Center inventions having potential for commercial use. This document contains a list of patents issued to DTRC employees from June 1977 through June 1991. These selected patents have been examined by the Center's Patent Review Committee and are considered to have possible commercial application. They are grouped in accordance with technological areas so as to facilitate search and identification of promising inventions by businesses.

Final rept. 1977-
1991,

DTRC-
50 91/CT07

The work detailed in this report was carried out in FY 97 as part of the Office of Naval Research In-house Laboratory Independent Research (ILIR) program. Summaries of the projects are presented, and three projects are described in detail: Magnetic Signal Detection Using Stochastic Resonance in a Radio Frequency (rf) Superconducting Quantum Interference Device (SQUID); Decision Theory Augmented by Natural Event Metrics with Applications to Data Fusion; and Performance Analysis of Multichannel Adaptive Equalization (MAEQ) for Line-of-Sight Digital Radio.

null

SPAWAR-TD-
189 2987

In the spring of 2010, CSIS launched a year-long, independent examination of the U.S. Army and U.S. Navy overseas medical research laboratories. The impetus was an awareness that despite the laboratories' impressive scientific accomplishments and contributions to U.S. national interests and global health, they are not well understood outside of research circles, and consequently find themselves undervalued in today's environment of fiscal austerity. They stand at the intersection of health and security, a topic of increased importance to U.S. approaches to global health. The CSIS project aimed to assess the laboratories' contributions and achievements; examine the factors that constrain their performance; and propose reforms that will put them on the best course to continued success. It included considerable background research, three formal meetings of experts, travel to five overseas laboratories, and interviews with dozens of laboratory researchers and collaborators.

Technical
Report

50 null

The industry studies program is part of the College's continuing commitment to keep in touch with industry" a charge made by Bernard Baruch at its founding almost 75 years ago. The following chapters provide an assessment of the condition and outlook of 18 industry sectors considered vital to the nation's security. While the senior civilian and military student authors are not experts in each industrial sector

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425 null

Since 1980, the Congress has enacted several laws designed to make federally funded technology available to the public by facilitating the transfer of technology from federal laboratories to U.S. businesses. In particular, the National Competitiveness Technology Transfer Act of 1989 authorized federal laboratories operated by contractors including the Department of Energy's (DOE) national laboratories to enter into cooperative research and development agreements (CRADAs) that are consistent with the laboratories' missions. Under a CRADA, the partner and DOE laboratory agree to jointly conduct research and typically share the research costs. By fiscal year 1992, DOE's national laboratories were among the leading federal laboratories participating in CRADAs with businesses, universities, and other partners. In addition to CRADAs, DOE's laboratories have participated in technology partnerships by providing technical assistance to small businesses. DOE's laboratories have also transferred technology to businesses and other nonfederal entities without using partnerships by (1) work-for-others agreements, in which laboratory scientists perform specified research and the business pays full costs; (2) licensing their technology to businesses; and (3) making specialized user facilities available.

null

43 GAO-02-465

...municipalities and other government organizations. The purpose of this study was to clarify the appropriate use and potential value of public-to-public partnerships (PuPs) to Department of Defense (DoD) installations, identify barriers to their cost-effective application, and recommend ways to overcome these barriers. The objectives also included providing an overview of existing installation PuPs, including their purposes and approaches, and lessons learned from their development and implementation. The authors found that installation partnerships exist in a wide range of functional areas, including infrastructure and management partnerships (e.g., water, energy, environment, transportation, operations and maintenance, safety and security, and emergency services partnerships) and partnerships involving services and support for military personnel, their families, retirees, and DoD civilians (e.g., partnerships for recreation, childrens services, adult education, libraries, social services, and medical and health issues). Installation partnerships also aid military missions, such as helping with testing, training, and research and development. The authors also found that partnerships yield many kinds of benefits to both installations and communities: economic value; enhanced missions, installation operations, and support services; access to additional expertise and resources; energy and environmental advantages; enhanced ability to address regional issues; improved military-community relations; and support for community values. Partnerships require resources and time to develop, and not all partnerships will succeed.

Technical
Report

RR-1419-
A/AF/NAVY/O
211 SD

This report contains project summaries of the research projects in the Interdisciplinary Academic Groups: Command, Control, Communications, Computers and Intelligence; Information Systems; Information Warfare; Modeling, Virtual Environments and Simulation; Space Systems; Special Operations; and Undersea Warfare. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised of an interdisciplinary nature are also included.

Summary rept.
1 Oct 1999-30
Sep 2000

NPS-09-02-
152 013

In order to (1) assess the current state of the art in vehicle mobility modeling, (2) identify the most promising areas of current research, and (3) determine the most profitable directions for future research, the Mobility Systems Division of the U.S. Army Engineer Waterways Experiment Station (WES) invited recognized leaders in the field of vehicle mobility modeling from throughout the United States and Canada to participate in a two-day workshop on 'Modeling the Mechanics of Off-Road Mobility.' This report documents the proceedings of that workshop. Mobility performance, Soft soil, Off-road vehicles, Vehicle-terrain interaction.

Final rept.

WES/MP/GL-
154 94-30

The purpose of the Systems Engineering Plan (SEP) is to outline the technical approach for the design development, testing and integration of the Tactical Assault Light Operator Suit (TALOS) system, the United States Special Operations Command's 1 research and development priority. The approach uses a model based, data-driven approach that leverages state-of-the-art Systems Engineering and Project Management practices in order to facilitate a shared understanding for the TALOS team and partners.

Technical
Report,01 Jun
2017,30 Jun
2019

01,USSOCOM-
45 01

This guide is a collection of material, most original, some borrowed from other organizations, but designed to present in 'picture' format everything you may need to know to prepare a Scientific or Technical Publication. The Scientific and Technical Information Office (STINFO), Human Effectiveness Directorate, Integration and Operations Division, created a Style Guide for your use in the preparation, organization and distribution of technical publications prepared by our in-house scientists and engineers, as well as our DoD contractors. The documents are representative of our product to the outside world and play an extremely important marketing" role for future customer interest as well as possible technology transfer to the commercial world. It is the responsibility of everyone involved in this process to ensure the best possible quality of the end product in the most efficient manner possible. It is for that reason this guide has been written."

null

AFRL-HE-WP-
77 TR-1998-0108

A major component of the US Army's Future Combat Systems (FCS) will be a fleet of eight different manned ground vehicles (MGV). There are promises that 'advanced automation' will take on many of the tasks formerly performed by soldiers in legacy vehicle systems. However, the current approach to automation design does not relieve the soldier-operator of tasks; rather, it changes the role of the soldiers and the work they must do, often in ways unintended and unanticipated. This thesis proposes a coherent, top-down, overarching approach to the design of a human-automation interaction model. First, a qualitative model is proposed to drive the functional architecture and human-automation interface scheme on the MGV fleet. Second, proposed model is applied to a portion of the functional flow of the common crew station on the MGV fleet. Finally, the proposed model is demonstrated quantitatively via a computational task-network modeling program. The modeling approach offers insights into the impacts on human task-loading, workload, and human performance. Implication for other domains in human systems integration are discussed. The proposed model gives engineers and scientists a top-down approach to explicitly define and design the interactions between proposed automation schemes and the human crew.

Master's thesis

130 null

This report contains summaries of research projects in the Department of Aeronautics and Astronautics. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts.

Summary rept.

1 Jan-31 Dec

97

NPS-09-98-60 015

Air Force policy states the fundamental reason for participating in technology transfer is to maximize the return on investment (ROI) on research and development (R&D) funds. Public law dictates that federal agencies, including the Air Force, are to spend no less than 0.5% of their overall R&D budget in the pursuit of technology transfer. However, there is currently no ROI model available to the decision maker in the evaluation of alternative transfer opportunities. This research effort develops a model that measures the ROI of individual cooperative research and development agreements (CIWAs) on the basis of the objective and subjective benefits amassed. The model results assist the decision maker by providing a relative ranking of each transfer opportunity in comparison to one another. A sensitivity analysis method and results are included which identify definite regions of alternate optimal choices depending on the weight given to objective and subjective benefits. Consequently, the decision maker is provided with a flexible model for use in maximizing ROI, the Air Force's goal for technology transfer.

Master's thesis

AFIT/GCA/LAS
117 /98S-5

Although selective serotonin reuptake inhibitors (SSRIs) are routinely prescribed for acute stress disorder and early PTSD and recommended in the VA-DoD best practice guidelines the efficacy of SSRIs as an early intervention for PTSD in service members returning from war-zone duty has still not been determined. Consequently this study was designed to conduct a controlled trial of fluoxetine as an early intervention for recently redeployed soldiers as well as to develop methodologies for understanding the multiple risk factors that may predict outcome. The approval letter has been received from the Brooke Army Medical Center IRB the regional IRB for the Carl R. Darnall Army Medical Center. The IRB has approved the protocol with the caveat that a CRADA must be completed between TEMPVA Research Group Inc and the Carl R. Darnall Army Medical Center. The protocol has now also been approved by the Central Texas Veterans Health Care System IRB and the Research and Development Committee. The review by Kristen R. Katopol, MS, CIM Human Subjects Protection Scientist (AMDEX Corp.) Human Research Protection Office (HRPO) Office of Research Protections (ORP) U.S. Army Medical Research and Materiel Command (USAMRMC) Fort Detrick is in progress. No subjects have been enrolled and will not be enrolled until final approval is obtained from USAMRMC.

Annual rept. 1
Jul 2007-30 Jun
2008

37 null

laboratory for the development and execution of collaborative research to achieve military ground- vehicle superiority for Force XXI and the Army After Next. The NAC identifies dual needs of the Department of Defense and the commercial automotive sector and then initiates joint government, industry and academic programs to develop and insert new technologies into current and future fleets of military vehicles. This Strategic Plan outlines the four primary NAG programs which meet the objectives of the future Army ground-vehicle fleet; The Automotive Vehicle Modernization Program * The Automotive Driver Safety Enhancement Program * The Automotive Logistics and Maintenance Improvement Program * The Automotive Manufacturing Innovation Program Using cost-shared partnerships and virtual team concepts, the NAC adroitly leverages talent to follow through on the objectives and goals delineated in this Strategic Plan. Composed of members from the government, the automotive industry and academia, the NAC virtual teams enhances the Army's science and technology investment strategy and result in the formation of a world-class technology network to achieve military fleet maneuver excellence, fuel efficiency and vastly reduced logistics. This Strategic Plan lays the foundation to achieve the Army's future battlefield ground-vehicle performance superiority. The NAC identifies dual needs of the Department of Defense and the automotive industry By fostering relationships and forming cost-shared partnerships, the NAC accelerates the exchange and implementation of automotive technologies.

null

38 null

This report includes the details of the subtask technical efforts including superconductivity, thermoelectric, magnetic materials, carbon nanotube (CNT), silicon carbide (SiC) power module, actuator, battery, thermal management, and INtegrated Vehicle ENergy Technology (INVENT) support.

Final rept. 20
Jul 2012-21
Aug 2015

AFRL-RQ-WP-
284 TR-2015-0132

This is the final report for the Ohio State University CRDA, Project Number CRDE9501. The objective of this research project was two-fold: (1) develop improved knowledge regarding (but not limited to) Molecular Beam Epitaxy (MBE) Crystal Growth and Characterization for application to optoelectronic and other devices; (2) make available government facilities and expertise to help the OSU Research Foundation perform research and testing requested by industrial firms and other governmental organizations. The CRDA resulted in the development of spatial mode characterization techniques for semiconductor lasers. The CRDA provided an avenue to supply the OSU Research Foundation with in-house developed ridge waveguide semiconductor lasers and in return provided verification of in-house developed models used to design the laser devices as well as fabrication verification.

Final rept. 14
Apr 1995-10
Oct 2003

AFRL-SN-WP-
TM-2003-
15 1196

null

Final rept.

AFOSR-TR-95-
578 0740

The U.S. Army Edgewood Chemical Biological Center (ECBC) with URS Corporation was tasked with identifying, removing, and disposing of hazardous materials from a former BZ Agent/Munitions Disposal Facility (BZDF) located at Pine Bluff Arsenal (PBA), Pine Bluff, AR, prior to mass demolition of the facility. This project required ECBC to provide the necessary technical expertise, labor, and equipment to support site mobilization/setup; to survey, sample, and analyze all suspected hazardous materials; remove all hazardous materials from the BZDF; dismantle the interior and exterior of BZDF contaminated equipment as required to remove the hazardous material/waste; conduct final sampling and analysis to indicate the equipment/area is clear of hazardous materials/waste to acceptable levels; package all materials waste according to regulatory requirements; ship waste, debris, and recyclable materials to a disposal facility or recycler; and demobilize the site upon completion. ECBC completed these tasks, and all remediated BZDF areas and equipment were determined clear of hazardous materials/waste to acceptable levels by the Washington Demilitarization Company and ECBC prior to demobilization. All materials/waste removed from the BZDF were characterized, segregated, packaged, transported, and disposed of in accordance with approved procedures and regulatory requirements.

Final rept. Jun-
Dec 2009

22 ECBC-TR-797

The initial period (FY02) was spent preparing supporting information for the award, gathering the parts and supplies for the construction of the two calorimetry systems, convening of a kickoff meeting for the project, and restructuring of the proposal to allow University of Ottawa to assume responsibility as the primary Performing Organization. In FY03, a Cooperative Research and Development Agreement was developed and signed between NHRC and Univ. of Ottawa to allow reciprocal support between this MIPR and contract DAMD17-02-2-0063 at the Univ. of Ottawa, a calibration manikin for the calorimetry systems was constructed and provided to Univ. of Ottawa, and the liquid-cooled garment calorimeter was rebuilt at NHRC.

Annual rept.

13 null

The Small Business Innovation Research Phase III Conference, 10-11 June 1993, was organized to foster partnerships between the most successful SBIR firms and other small businesses, major corporations, venture capitalists, and technical representatives of Federal organizations. This document, provided to participants, describes the capabilities and goals of over 160 of the companies that were represented at the conference. Participating small companies all have been successful in developing technically innovative products and processes under the Federal SBIR program. Goals of the SBIR program include stimulating technological innovation, strengthening the role of small business in meeting Federal R&D needs, encouraging participation by minority and disadvantaged firms, and increasing the commercial application of Federally-supported research and development results. Conference attendees included: 75 major corporations, 233 small businesses, and 17 venture capitalists. Small Business Innovation Research (SBIR), SBIR Phase II, SBIR Phase III.

Final rept. 10-11 Jun 1993

160 null

In the past, research programs funded by the Department of Defense (DoD) often led industry efforts in technology. Today the reverse is largely the case. Technology leadership has shifted to industry, where most research and development (R&D) dollars are spent.

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100 null

The current very high frequency (VHF) air/ground (A/G) communication system is based on Double Sideband Amplitude Modulation at a channel spacing of 25 kilohertz (kHz). Communications within this band for air traffic control communications is now almost entirely by voice. The system is approaching capacity in the high traffic density areas of Europe resulting in the need for a new more spectrum efficient radio architecture. European States favor transition to an analog channel split system. This paper describes an alternative approach wherein transition would proceed directly to a digital system. This digital system is based on a time division multiple access (TDMA) approach that maintains the current 25 kHz channelization. This alternative approach emphasizes near term implementation of the voice function with data link functionality to follow later.

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79 null

The Department of Homeland Security's (DHS) Science and Technology (S&T) Directorate and Private Sector Office tasked the Homeland Security Institute (HSI) to analyze the potential applicability of the United States Government Venture Capital (USG VC) models in discovering, spurring, and fostering technological innovation to meet homeland security mission needs. This 6-month study reviewed 12 existing USG VC programs, interviewed a representative group of 15 authoritative senior staff and substantive expert leaders involved with technology decisions at DHS, assessed the relative strengths and weaknesses of alternative USG VC approaches with respect to DHS needs, identified options, and provided recommendations. Based on the study's findings, the HSI team recommends that DHS establish an internal Venture Capital Exchange (X-Change) Office. The X-Change Office would respond in the near-term to emerging technologies in the private sector, and in the longer-term could prepare DHS to make direct equity investments. The X-Change office would create a foundation for building relationships with entrepreneurs and private venture capital firms and allow the DHS technology requirements process to mature.

Final rept.

HSI-RP05-
107 006B-01

In this document, LTC Potts discusses, the history of Watervliet Arsenal, the current conditions surrounding it, and recommends where it might position itself for the future.

Research rept.
Aug 93-Apr 94,

NDU-ICAF-94-
41 F12

This course is designed to train new USAF STINFO Program Managers to carry out the duties and responsibilities of that position. The goals of the course are to ensure: (1) Awareness of the complete spectrum of STINFO duties; (2) Sufficient guidance as to how to carry out these duties; (3) Awareness of the complete set of STINFO regulations and policies; (4) Introduction to some of the skills that will help in carrying out the duties. To run a successful local program, the STINFO Program Manager will need to promote the program within their activity to both the management and scientist/engineer levels.

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USAF-STINFO-
MANAGEMENT-
T-
90/8,SAF/AQI-
204 SR-90-015

This scoring record documents the efforts of GEO-CENTERS, Inc., to detect and discriminate inert unexploded ordnance (UXO) utilizing the YPG Standardized UXO Technology Demonstration Site Blind Grid. Scoring Records have been coordinated by Larry Overbay and the Standardized UXO Technology Demonstration Site Scoring Committee. Organizations on the committee include, the U.S. Army Corps of Engineers, the Environmental Security Technology Certification Program, the Strategic Environmental Research and Development Program, the Institute for Defense Analysis, U.S. Army Environmental Center, and the U.S. Army Aberdeen Test Center.

Final rept. 18-
20 Oct 2004

49 ATC-9110

combining a promising metric, strategic planning, probability encoding, risk management, and the Taguchi Design of Experiments technique into a new 'out of the box' methodology for program management. Although the methodology is applicable to many large programs, the United States military technology transfer program partnering Department of Defense laboratories with civilian industries was chosen as the focus for the demonstration. The method demonstrated goes beyond current documented attempts at metric development within the federal program. The result of the research yields useful management information for the technology transfer activity of the Air Force Wright Laboratory. Transferring military technology to civilian industry results in products and services solving deficiencies in food supply, shelter, education, health care, transportation and recreation while simultaneously contributing toward the attainment of national employment goals yet assuring new capabilities for civil security and national defense. The Wright Laboratory investment in mission related research and development programs which also show promise for potential future technology transfer will benefit from informed management making good decisions. The ability to predict the necessary investment funds to accomplish Cooperative Research and Development Agreements through a method capable of measurement by a proposed metric results from this Program Demonstrating Excellence. This new theoretical approach toward management of federal laboratory research and development programs results in a new methodology grounded in the theory

Final rept. 1
Mar 96-1 Oct
97

WL-TR-97-
100 6011

VS1 supports TARDEC's stakeholders in the requirements community so that these organizations may better understand the art of the possible for future ground vehicles. The organization will shift from focusing on components with a sole focus on broad acquisition needs to system-level demonstrators that can influence requirements for future systems. VS1 Lines of Effort (LoE) will create advanced leap-ahead capabilities for future ground vehicles with an emphasis on maximizing flexibility and adaptability. VS1 is comprised of four LoEs that are focused on the technology areas with the most potential to ensure the enduring value of the future ground vehicle fleet, each of which directly supports Army S&T Priorities.

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60 null

This report details progress and changes in SDI during the past year. It examines SDI's role in the changing international threat environment, particularly the use of SDI technologies in global protection against limited strikes (GPALS). This report also details current research and development strategy, allied participation in the program and compliance of SDI with the ABM Treaty. The report summarizes program funding and provides Congressional Descriptive Summary Extracts in the appendix.

Final rept.

216 null

MIT Lincoln Laboratory employs some of the nation's best technical talent to support system and technology development for national security needs. Principal core competencies are sensors, information extraction (signal processing and embedded computing), communications, integrated sensing, and decision support. Nearly all of the Lincoln Laboratory efforts are housed at its campus on Hanscom Air Force Base in Massachusetts. MIT Lincoln Laboratory is designated a Department of Defense (DoD) Federally Funded Research and Development Center (FFRDC) and a DoD Research and Development Laboratory. The Laboratory conducts research and development pertinent to national security on behalf of the military Services, the Office of the Secretary of Defense, the intelligence community, and other government agencies. Projects undertaken by Lincoln Laboratory focus on the development and prototyping of new technologies and capabilities to meet government needs that cannot be met as effectively by the government's existing in-house or contractor resources. Program activities extend from fundamental investigations through design and field testing of prototype systems using new technologies. A strong emphasis is placed on the transition of systems and technology to the private sector. Lincoln Laboratory has been in existence for 60 years. On its 25th and 50th anniversaries, the Laboratory received the Secretary of Defense Medal for Outstanding Public Service in recognition of its distinguished technical innovation and scientific discoveries.

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79 null

The President's Commission on Critical Infrastructure Protection (PCCIP) was charged with developing a national strategy on critical infrastructure protection. As part of this effort, the National Security Agency tasked IDA to (1) provide an assessment of commercial information assurance (IA) R&D funding, and (2) determine where commercial technology providers are currently investing and where they think investment should occur in the future. An IDA research team interviewed 21 providers in the areas of telecommunications and computer technology. These providers included large companies with significant information technology markets and niche security technology companies that provide specialized solutions. IDA's findings were derived primarily from the interviews, although additional material was incorporated to expand the context of some findings. The results documented in this report assisted the PCCIP in developing its own set of recommendations for a national IA research agenda. These recommendations became a part of the PCCIP's final report, Critical Foundations: Protecting America's Infrastructures, released in October 1997.

Final rept

IDA-P-
3359,IDA/HQ-
109 97-002996

The Federal Integrated Biotreatment Research Consortium (Flask to Field) represented a 7-year Strategic Environmental Research and Development Program (SERDP)-funded effort by several research laboratories to develop bioremediation technologies for contaminated U.S. Department of Defense (DoD) sites. The project was proposed as a new 6.2-level research program to enhance, but not duplicate, the existing funded efforts in the DoD. It also complemented both the U.S. Environmental Protection Agency and U.S. Department of Energy short- and long-term research strategies. The primary objective of this project was to develop the most promising biotreatment processes at the bench, intermediate, and pilot scale in each of four thrust areas: polycyclic aromatic hydrocarbons (PAHs), chlorinated solvents, energetics and explosives, and polychlorinated biphenyls (PCBs). The consortium structure consisted of a lead principal investigator or director and four thrust area coordinators. Lead researchers at various government installations and academic institutions carried out the individual projects in each thrust area. Engineering groups worked closely with scientists in evaluating the potential of the resulting technologies and in the transfer of technologies from bench scale to field. A technical advisory committee consisting of leading biotechnology specialists in academia, industry, consulting, and government assisted and advised the director and reviewed individual projects for technical merit.

Final rept.

ERDC/EL-TR-
501 02-37

The Air Force will improve the quality of the aircraft munitions loading process by fielding a new generation of munition handling equipment that incorporates emerging telerobotics technology. An active program is underway to develop a Next Generation Munitions Handler (NGMH) Advanced Technology Demonstrator (ATD). This project uses air campaign planning principals to address the development of the technology roadmap and dual use business case study required to transition the ATD into a full-scale prototype. A discussion of the history and performance requirements for telerobotic munition handling is provided as a background for creation of an initial critical technologies list. The maturity level and validity of that list is investigated through an intelligence preparation operation that supports the election of nine specific technology targets. Courses of action to bring those technologies to commercial-off-the-shelf availability are explored. Scenarios for technology application in a range of alternative military and commercial applications lay the groundwork for development of a dual use business case. Civilian industry coalition partners were identified. Creation of a full scale NGMH prototype acquisition campaign is now possible.

Research paper

ACSC/DEA/20
135 5/95-05

The National Pollutant Discharge Elimination System (NPDES) requires that aquatic herbicide applicators revise treatment strategies to achieve high precision delivery of products and detailed reporting of treatments. A unique three-dimensional (3-D) technology was developed to meet these requirements using a new system that accounts for depth variation within a treatment area. Adaptations to a 3-D aquatic environment must account for variable depth, boat speed, difficult to see treatment plot boundaries, prevention of overtreatment by unintended crossing of treatment lines, and effects of horizontal and vertical dilution of the applied chemical. A test was conducted in Lake Underhill, FL, during which dye was delivered by the new system using the existing techniques and using the new 3-D technique. Results showed that a computer could automate a liquid herbicide treatment process and account for depth variations within a plot. Testing of the delivery system was a successful phase in developing and refining precision application techniques for submersed aquatic herbicide applications.

Technical
Report

ERDC/EL-TR-
72 19-14

The format for this 3-day workshop (27-29 October 1998) included plenary presentations by USGS Biological Resources Division (BRD) and U.S. Fish and Wildlife Service personnel who use and develop decision support systems (DSS); breakout sessions addressing DSS technical information aspects, outreach/customer requirements, and future perspectives; and a DSS Steering Committee meeting to evaluate workshop goals and to provide guidance for future efforts. Steering committee action items developed from workshop inputs were to (1) develop a 'DSS framework' document for use in biological research, (2) develop a 'proof of concept' DSS based upon the framework document, and (3) integrate decision support systems into BRD program elements.

Conference
proceedings

USGS/BRD/IT
49 R-2000-0002

pressing issues: increasing maintenance costs and decreasing availability. Nearly 30% of Air Force platform Operations & Support (O&S) costs are for structure inspection and repair. Condition-Based Maintenance plus Structural Integrity (CBM+SI) offers an opportunity to achieve significant platform availability increases and maintenance hour per flight hour decreases. A promising solution to both of these issues is the application and integration of CBM+ and Structural Health Monitoring (SHM) technologies and processes into the Aircraft Structural Integrity Program (ASIP) activities. Lockheed has developed an approach to integrate CBM+SI into a new ASIP framework and demonstrate the potential improvements in aircraft availability, total cost of ownership and maintenance man-hours per flight hour. In order to spur the adoption of CBM+SI into the Aircraft Structural Integrity Program of each platform, the benefits to the USAF from employing CBM+SI must be clearly established. The benefits with the most impact for the Air Force are, in order of importance, increased aircraft availability, reduction in total cost of ownership, and reduction in maintenance hours per flight hour. Widespread adoption of CBM+SI into the Aircraft Structural Integrity Programs, and a strong technical pull developed for the enabling technologies; will occur once a solid business case is made for CBM+SI. Specific Objective: Develop and demonstrate a CBM+SI strategy for at least one structural application on a United States Air Force weapons platform. As part of this demonstration, the benefits to the Air Force as result of employing this CBM+SI strategy shall be determined.

Final rept. 21
Oct 2008-31
Oct 2010

FZM-
9949,AFRL-RB-
WP-TR-2010-
167 3110

The cost of characterizing and monitoring U.S. government hazardous waste sites could exceed \$100 billion utilizing traditional methods and technology. New sensor technologies are being developed to meet the nation's environmental remediation and compliance programs. A consortia consisting of the CRDA partners, Dakota Technologies Inc., and NDSU submitted a proposal to the Advanced Research Projects Agency, Technology Reinvestment Project and won an award to fund the commercialization. The result, Rapid Optical Screening Tool or ROST is a state-of-the-art laser spectroscopy system for analysis of aromatic hydrocarbon-contaminated soil and groundwater. With ROST, environmental investigators are able to find, classify, and map the distribution of many hazardous chemicals in the field instead of waiting for reports to come back from the analytical laboratory. The research and development program leading to prototype laser spectrometers is summarized along with results from laboratory and field demonstrations illustrating system performance and benefits for site characterization. The technology has recently been demonstrated in Germany, the Netherlands, and several sites in the United Kingdom having light, medium, and heavy aromatic hydrocarbon contamination from fuel spills and refinery or chemical plant operations.

Technical rept.

14 null

This report contains project summaries of the research projects in the Department of Physics. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised by faculty in the Department are also included.

Summary rept.
1 Oct 1999-30
Sep 2000

NPS-09-02-
57 005

This report reviews U.S. Legislative and Executive Branch actions initiated during the past quarter century to upgrade technological competence, innovation, and economic competitiveness in the industrial marketplace. It discusses and analyses some recent actions aimed at expediting cooperative arrangements among and between government, industry, and academic communities so as to minimize risk, enhance common purposes and objectives, and better meet national economic interests. The report introduces the concept of a product-innovation spectrum of activities; a Manufacturing Process Spectrum of activities; and a spectrum of Financial Support Mechanisms, as templates through which the utility of various financial mechanisms can be assessed. It highlights that financial mechanisms must be custom-fitted to match the life-cycle phase in the activity spectrums to be effective. Detailed analyses of actual past cases, ranging from support for synthetic rubber plants in WWII to support for Sematech, an industrial consortium for improved manufacturing of large memory chips, are provided.

Rept for Dec
1987-Jun 1988

57 null

This report contains project summaries of the research projects in the Department of Computer Science A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports Thesis abstracts of students advised by faculty in the Department are also included.

Summary rept.

NPS-CS-09-02-
106 016

The environmental heat stress monitor (HSM) is a pocket-sized electronic device that uses microprocessor technology to integrate the USARIEM heat strain prediction model software with a comprehensive suite of environmental sensors. It can provide real-time tailored guidance to reduce heat injury risk across the spectrum of heat stress environments including chemical protective clothing encapsulation. This report describes current status of the HSM as it has evolved through a series Army technology base efforts to support potential Army applications and related efforts undertaken through a cooperative research and development agreement (CRDA) to develop a hand-held heat stress monitor suitable for application in Australian industry.

Technical rept.

USARIEM-TR-
23 T-02/15

This report documents the FY88 Technology Transfer Test Bed (T3B) demonstration of the design 4D Program. The program was developed by USACERL as an architectural modeler that uses three-dimensional geometry and a seamless database manager. The overall objective of this research was to test microcomputer-based architecture design tools for applicability to the U.S. Army Corps of Engineers Military Design Program. Among the features in the Design 4D program is the ability to easily sketch in a three-dimensional (3D) perspective view, as well as an equivalent two-dimensional (2D) view. A set of 3D layout tools is available that works in the principal three orthogonal planes, as well as any user defined plane. Design 4D allows the user to easily manipulate both the 2D and 3D views using 3D rotates, zooms, and pans. Design 4D's modeling techniques allow the user to evaluate the design at any early stage. Architects at the Corps of Engineers Huntsville Division, Savannah District, Sacramento District, and Norfolk District used Design 4D as their workload allowed. They indicated that Design 4D is easy to use, helps them analyze early alternatives, and helps them visualize design alternatives. Based on their responses, the menu structure will be recognized, digitizer input will be accepted, and the user will be able to assign the button functions on the mouse input device. Based on interest and demand, the number of test sites for Design 4D will be increased.

Interim rept. 25 CERL-P-90/03

This publication contains the abstracts of theses submitted during the period of 1 October 1992 to 30 September 1993 by candidates for Doctoral, Master's and Engineer's degrees at the Naval Postgraduate School, Monterey, CA 93943-5000. (AN)

Summary rept.
1 Oct 92-30
Sep 93, 432 null

The Office of Science and Technology Policy asked the IDA Science and Technology Policy Institute (STPI) to collect information on the state of planning, prioritization, and assessment of facilities and infrastructure (F&I) at a set of Federal laboratories that conduct national security research and development. These laboratories referred to in this report as Federal security laboratories advance the state of science and technology for military purposes, civil defense, emergency preparedness, intelligence services, and nuclear stockpile maintenance. Aging and deteriorating F&I of Federal security laboratories threaten their ability to successfully complete their national security missions.

Final rept. IDA-P-
4916,IDA/HQ-
183 13-000229

This conference is sponsored by the National Defense Industrial Association, Systems Engineering Division, with technical co-sponsorship by IEEE AES, IEEE Systems Council and the International Council on Systems Engineering, and is supported by the Office of Under Secretary of Defense for Acquisition, Technology and Logistics, Director, Defense Research and Engineering, and the Office of the DoD Chief Information Officer. This conference seeks to create an interactive forum for Program Managers, Systems Engineers, Chief Scientists and Engineers and Managers from the Requirements, Design, Verification, Support, Logistics and Test communities from Government, Academia, and Industry. The conference will provide the opportunity to shape policy and procedures by exchanging innovative tactics and lessons learned.

Conference
Proceedings

2327 null

On May 13, 2016 the Department of Homeland Security (DHS) outlined the five lines of effort with the greatest anticipated impact on homeland security: Combat Terrorism and Transnational Organized Crime; Secure the Global Supply Chain and the International Travel System; Expedite Lawful Flows of U.S.-Bound People and Goods; Promote Lawful Immigration; and Enhance Cybersecurity. In order to accelerate introduction of innovative solutions to address these security mission needs, close collaboration is needed with DHS's foreign counterparts throughout scientific and technical development. The International Cooperative Programs Office (ICPO) oversees S and T's international activities, which contribute to the implementation of the Secretary's strategy and pursuit of S and T's Visionary Goals. Since its inception, ICPO has facilitated more than 100 initiatives conducted across the department with international partners, including cost-sharing arrangements worth nearly \$100 million in combined U.S. and foreign funding. Currently, ICPO manages relationships with 12 bilateral partner nations and with the European Commission. ICPO works with staff from across S and T to facilitate engagement, address export control issues, host foreign visitors, draft cooperative and technical agreements and issue legal guidance on international law and intellectual property issues. ICPO will play an important role in realizing this vision and achieving its mission.

Technical
Report

20 null

The technology transition efforts of the Department of Defense are intended to ensure that industry, other Federal agencies, State and local governments, colleges and universities and private persons benefit from the United States investment in defense technology. The development of dual-use products, processes and expertise by the DoD can and does make important contributions to the economic competitiveness of U.S. industry through the transition of DoD technology to the private sector. As the Department of Defense pursues its primary national security mission, close DoD-third party interactions can also foster the development of commercial technologies that are subsequently applied with DoD technology and system development programs (spin- on). These interactions improve DoD technology managers' understanding and utilization of scientific and technological progress outside the department and are particularly important given the current emphasis on merging the national and defense industrial bases.

null 27 null

This report discusses the issues surrounding more effective utilization of the civilian industrial base by the Department of Defense (DoD) and the U.S. Air Force. The first section of the report focuses on the dual-use" nature of civilian and military technologies

null RAND/MR-237 1147-AF

The founding years of America were filled with contemplation on how best this country could be established. The Constitution sought to end the cycle of fortune which takes young republics into corrupt adulthood, a cycle alluded to in Washington' s Farewell Address" which warns against parties and emphasizes the value of morality and religion for our young nation' s success. Pausing in the current time

Technical Report 11 null

Arctic ice is receding and creating increased activity. A navigable Arctic poses security concerns, but also represents accessible resources and reduced shipping costs. This research investigates the following questions: Does the Department of Defense (DOD) have the capabilities to meet U.S. security objectives in the Arctic? What are the DODs related national strategy responsibilities? What opportunities exist to minimize cost while providing capability? What contract actions are appropriate for Phase Zero of Arctic planning? Included is a literature review of national strategy and international policies, limited to specific research areas. Analysis of procurement stakeholder integration uses Yoders Three-Tier Model. Examination of successful integration uses Yoders Three Integrated Pillars. The agility, discipline, and risk pillars are used to determine contract considerations. This research found that the DOD is not prepared to conduct military operations in the Arctic, and has deficiencies in equipment and training for national defense roles. Also, the DOD lacks trained personnel capable in the immersive interagency, international, and non-governmental integration necessary for procurement efforts. There are several tasks the DOD is charged with supporting; only one task was specified. Joint interagency integration and selection of an appropriate contract type are key to meeting U.S. national security objectives in the Arctic.

...the federal government spends approximately one-third of its annual research and development budget(1) for intramural R&D to meet mission requirements in over 700 government laboratories (including Federally Funded Research and Development Centers). The technology and expertise generated by this endeavor may have application beyond the immediate goals or intent of federally funded R&D. These applications can result from technology transfer, a process by which technology developed in one organization, in one area, or for one purpose is applied in another organization, in another area, or for another purpose. It is a way for the results of the federal R&D enterprise to be used to meet other national needs, including the economic growth that flows from new commercialization in the private sector; the government's requirements for products and processes to operate effectively and efficiently; and the demand for increased goods and services at the state and local level. Congress has established a system to facilitate the transfer of technology to the private sector and to state and local governments. Despite this, use of federal R&D results has remained restrained, although there has been a significant increase in private sector interest and activities over the past several years. Critics argue that working with the agencies and laboratories continues to be difficult and time-consuming. Proponents of the current effort assert that while the laboratories are open to interested parties, the industrial community is making little effort to use them. At the same time, State governments are increasingly involved in the process. At issue is whether incentives for technology transfer remain

Congressional
rept.

23 CRS-RL33527

Technology Area's mission is to lead the Air Force in conducting CE & EQ technology development that sustains Air Force wartime and peacetime operations. The Wright Laboratory Airbase Systems Branch conducts civil engineering research; the Armstrong Laboratory Environics Directorate (AL/EQ) conducts environmental quality research. The CE & EQ Technology Area provides technologies fundamental to the operation, maintenance, survivability, and post attack recoverability of airbases. This includes the environmental treatment technologies necessary for hazardous waste cleanup and process controls for routine operation and maintenance of airbases throughout the world. Increased reliance on sophisticated electronic and computer-based systems dictates the development of fail-safe utility technologies. Recent technology breakthroughs in power generation and control, coupled with application of superconductivity, facilitate laboratory development of miniaturized - power generation systems. The concept of global deployment mandates that utility systems be able to stand alone and use a variety of fuels. To address this requirement, our scientists are developing interface systems to allow use of available theater fuels. Pavement integrity is essential to the flying mission during peacetime and critical to sortie generation in wartime. Our scientists are developing advanced pavement evaluation technologies that can provide total assessment of an airfield in hours. Deployment to remote airfields around the world is critical to supporting the strategy of Global Reach-Global Power. Advanced materials and soil stabilization techniques now null

The threat of terrorist detonation of a dirty bomb, one type of radiological dispersal device (RDD), has focused public attention on efforts to counter the use of this weapon. RDDs are devices, other than a nuclear explosive device, designed to disseminate radioactive material to cause destruction, damage, or injury. A dirty bomb is a type of RDD in which explosives disperse the radioactive material, but in general RDDs do not require explosives. An RDD attack might cause casualties, economic damage, and, potentially, public panic, though experts disagree on the likely magnitude of each of these effects. The impact of an RDD attack would depend on many variables, such as meteorological conditions, type and amount of radiological material, duration of exposure, and method of dispersal. Issues of potential congressional interest include the level of federal funding for research and development of medical countermeasures against RDDs and the appropriateness of current standards for environmental decontamination following an RDD attack. The possibility that terrorist groups might use an RDD in a civilian setting has increased government and public concern about such weapons. This report addresses the controversies surrounding the health effects of low-level radiation, concerns related to decontamination following an RDD attack, and the issue of federal research into RDD countermeasures. The report will be updated as events warrant.

Congressional
rept.

7 CRS-RS21766

The objectives of this research were (a) to quantitatively demonstrate the diamond-coated-bit, culler-boom tool as an expedient, cost-effective, concrete-removal method for the rehabilitation of locks, dams, tunnels, and other similar structures and (b) to provide real production and cost data for comparison with other removal methods. The end product of this research was to be a new diamond-coated-bit, culler-boom tool that would give U.S. contractors a competitive edge in the world concrete-removal market. (MM)

Final rept.,

WES/MP/SL-
47 95-3

Due to reduced funding levels and increased pressure towards cooperation with industry, government research and development (R&D) organizations are becoming increasingly involved in the transfer of technology to the commercial sector. However, the process of technology transfer is complex, and transfer activities are being applied inconsistently across the Department of Defense. This research explores the approaches, processes and mechanisms to accomplish technology transfer. A comprehensive literature review documents many of the transfer concepts that have been proposed or are currently in use. A detailed case study then examines the technology transfer efforts of an advanced government research organization: the National Aero-Space Plane (NASP) Program. Using personal interviews with key NASP personnel as primary data, unique examples of NASP technology transfer are examined to determine whether specific transfer activities support the overall transfer goals of the organization. The analysis further investigates the similarities between the NASP program and the elements documented in the literature, and highlights recurring elements and underlying themes. The key findings of this research suggest recommendations that can be applied to enhance the transfer activities of any organization involved in technology transfer. Opportunities for additional research in this area are also offered.

Master's thesis,

AFIT/GSM/LA
158 S/95S-8

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DA-PAM-5-6-
719 1

This 2000 NRL Review introduces you to the Naval Research Laboratory the Navy's Corporate Laboratory and focuses on research highlights from fiscal year 1999. In addition, it presents the special honors awarded to NRL employees and describes programs available to NRL and non-NRL employees. As you read the NRL Review, you will become even more aware that the Naval Research Laboratory comprises a dynamic team of scientists, engineers, and support personnel working together to promote programs that will continue to foster discoveries and scientific advances for the Navy of the future. The Naval Research Laboratory provides primary in-house research for the physical engineering, space, and environmental sciences, broadly based exploratory and advanced development programs in response to identified and anticipated navy needs, broad multidisciplinary support to the Naval Warfare Centers, and space and space systems technology, development and support.

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267 null

The objective of this thesis is to determine if a significant difference in the innovative strength of businesses exists when factors such as firm size, agreement type and other firm attributes are considered. Sample data for this study was collected by a telephone survey from firms selected from the Air Force population of CRDAs and SBIRs for Fiscal Years 1991-1993. The design of this survey, based on one used by Dr. Robert Berger to study SBIR outcomes, determines the degree of commercialization of the firm's product resulting from its agreement with the Air Force. This determination is then employed as a measure of the innovative ability of the firm. Additionally, the survey collects several variables describing the state of the firm at the inception of the SBIR or CRDA, such as firm size, product orientation, and prior business experience in order to assess their correlation with the commercialization outcome. This researcher found that the degree of commercialization differed significantly between the two contract mechanisms. Moreover, firm size possessed a negative relationship with the degree of commercialization for CRDAs. Additionally, the more mature the technology transferred under both SBIRs or CRDAs, the greater the degree of commercialization. (MM)

Master's thesis,

AFIT/GCM/LA
113 S/95S-8

there are hundreds of scientists and engineers whose research and development activities contribute to the advancement of science and technology for mankind. The opportunities for successful technology transfer within these research activities are unbounded. This thesis examines the Air Force Office of Research and Technology Applications (ORTA's) involvement with technology transfer, the complexities they face, the importance of their position, and what best practices ORTAs use to facilitate technology transfer. Air Force concerns and initiatives are detailed to provide perspective on balancing technology transfer with mission requirements and adherence to United States law. Legislative requirements mandate laboratories to transfer federally developed technologies to the commercial sector. Research indicates that several Air Force organizations routinely experience successful technology transfer more frequently than other Air Force organizations. The literature review indicates that historically, technology transfer from DoD has been predominantly passive. However, over the last three years with the involvement of partnership intermediaries, a more active trend has been indicated. Questionnaires and interviews were conducted with key personnel from Air Force ORTA's to identify successful technology transfer attributes and best practices throughout the Air Force, and capture them in a central repository for all Air Force personnel to access. Recommendations offered to help technology transfer in Air Force laboratories include: (1) development of a more thorough training program conducted on Master's Thesis

AFIT/GRD/EN
116 V/06J-03

the resources and people formerly devoted to the Nation's defense. Channeling the savings from reduced defense R and D to civilian R and D is, of course, only one option for using the peace dividend. There are many others, including deficit reduction. This Report examines opportunities to advance civilian technologies and improve U.S. industrial competitiveness internationally by redirecting research and development from defense to dual-use or civilian purposes. The Report has two parts. Part One analyzes how R and D institutions currently pursuing defense missions could be more responsive and useful to civilian technology development. Defense R and D has historically dominated government R and D, and it will continue to do so even with reduced funding. However, there are opportunities to use a growing portion of the resources and talents of the defense research infrastructure for civilian technology development. The Report focuses particularly on the Department of Energy's (DOE's) three nuclear weapons laboratories, Livermore National Laboratory, Los Alamos National Laboratory, and Sandia National Laboratories. These labs are very large, with combined operating budgets of \$3.4 billion and more than 24,000 employees. More than other defense-related R and D institutions, these labs are under heavy pressure to devote greater resources to civilian technologies, largely through cooperative research and development agreements (CRADAs) with industry. In the short term, DOE needs an improved process for initiating CRADAs in order to be responsive to industry's surprisingly large demand for shared R

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243 null

This case study examines how U.S. Government (USG) policy, U.S. corporate policy, and Polish government policy affect the strategy of technology transfer of military and/or dual-use technologies in Poland. The traditional supplier/recipient relationship is explored and found to be insufficient to describe the process associated with military and/or dual-use technology transfer. An alternate model is proposed that accounts for the activities of the USG, U.S. corporations, and the Polish government. These relationships are investigated in the context of six strategies to determine the validity of the model in the case of military and/or dual-use technology transfer to Poland. The analysis provides evidence that in an increasingly globalized economy, appropriate strategies for technology transfer are critical for each participant to attain their particular objectives. Further, these strategies are influenced by intra-participant forces that shape goals and inter-participant relations that both create and inhibit opportunities to transfer technology.

Master's thesis,

AFIT/GCM/LA
97 L/98S-3

This thesis responds to Marine Corps Systems Command (MARCORSYSCOM) Program Managers' desire to track Total Ownership Costs (TOC) for the procurement programs in the Marine Corps. DoD has adopted TOC as a means of reducing costs to generate the necessary resources for critical modernization and recapitalization. TOC serves as a strategic goal that focuses the efforts of the acquisition community on understanding Life Cycle Cost(LCC) and the support infrastructure for existing and future weapon programs. This study examined the budget process, funding flow and appropriations along with major appropriation categories, and tracking TOC in the major appropriations. Data was collected from historical accounting records, Budget Estimate Submission (BES) to Congress, and other supporting systems. The major finding of this study is that TOC may be tracked in the major appropriation categories of RDT&E and Procurement with limited administrative accounting modifications. Personnel and funding restrictions prevent actual cost for the Military Personnel appropriations from being attained, but estimates can be used with a reasonable degree of certainty. The Operations and Maintenance appropriations will continue to be the most difficult to track for TOC. However, the introduction of new accounting and supply systems, plus awareness, will improve the ability to track TOC in this appropriation.

Master's thesis

151 null

Table of Contents: Program Manager Interviews Gary Smith, SOCOM Acquisition Executive; Naval Postgraduate School; SECDEF Speaks at NDU Joint Operations Symposium-QDR Conference OASD Public Affairs News Release; 1997 Acquisition Research Symposium - Report And Highlights; DSMC Graduate Tapped to Lead Army's Acquisition Corps; Program Stability - The Kaminski Initiative. Also in this issue --Breaking Up is Hard to Do; From Our readers; DSMC, San Diego Conduct Technology-Based Education and Training Trial Run; Industry Managers Participate in Field Trip; DSMC Conducts Successful Ninth International Acquisition/Procurement Seminar with German Federal Academy; Western region Picks Up Where Central region Leaves Off; Front End Work Pays Off for Defense Medical Logistics Standard Support (DMLSS) Program; and From the Commandant. null 139 DSMC-140

The project will demonstrate that Clinical Decision Support (CDS) material can be retrieved from a central, shared repository and executed within the MHS and civilian health information systems to improve quality of care through the use of reminders, alerts, guidelines, etc. The system design and approach will decrease guideline development time and speed translation of evidence based medicine into clinical practice. It will decrease costs and enable multiple stakeholders to work in an open content/source environment to exchange clinical content, develop and test technology and explore processes in applied CDS. Annual rept. 29 Sep 2008-28 Sep 2009 109 null

This study documents the use of beach dewatering systems to accrete beach sand and minimize erosion, and to develop quantitative guidance for constructing and operating beach dewatering installations. The study describes three independently operating dewatering systems deployed along the eastern shore of Nantucket Island, Massachusetts, and the field monitoring program established to study the influence of the system on beach processes. The monitoring program included measurements of beach morphology and hydrogeology, nearshore bathymetry, meteorology, system operation and maintenance, discharge water quality, and the effects on beach vegetation and meiofaunal communities. The ecological and environmental assessment of the influence of the dewatering systems on Nantucket revealed that the systems had a minimal effect on ocean water quality and quality of the local freshwater aquifer. The observed changes in maritime vegetation and the inter-tidal invertebrate communities could not be attributed to system operation. However, it is advisable that potential environmental impacts be assessed in detail for future installations. A simplified modeling exercise to determine the aerial influence of system drawdown at Codfish Park revealed that the landward extent of drawdown is considerably greater than the longshore extent. Landward extent of drawdown may have adverse ramifications if the local groundwater is exploited as a public water supply, or if septic systems are within the system's influence.

Final rept.

WES/CPAR/C
113 HL-98-1

Western Kenya is endemic for some of the highest transmission rates of Plasmodium falciparum in the world. It therefore offers the most rigorous test of the efficacy of candidate vaccines. The planned field evaluation of the recombinant vaccine RTS,S-TRAP was not done because of equivocal Phase I results in American volunteers. The field population was maintained and a site for a new field clinic was obtained from the Ministry of Health.

Annual rept. 29
Dec 1998-28
Dec 1999

6 null

This report contains 55 summaries of research projects in the Department of Electrical and Computer Engineering which were carried out under funding of the Naval Postgraduate School Research Program. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports.

Summary rept.
1 Jan-31 Dec
95,

NPS-09-96-
70 005

This is the annual report for the Naval Research Laboratory, Washington, DC for the year 2000. The mission of the Naval Research Laboratory is to conduct broadly based scientific and multidisciplinary programs of technological development directed toward maritime applications of new and improved materials, techniques, equipment systems, and ocean, atmospheric and space science and related technologies. NRL provides primary in-house research for the physical, engineering, space and environmental sciences.

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254 null

This year's awards were given to six teams of Laboratory scientists who made major progress in the fields of aerogels, lasers, mass spectrometry, and electron beam processing.

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15 null

bottom of waterways. These soil particles become sediment that eventually has to be removed from the waterways to maintain navigation. The U.S. Army Corps of Engineers is responsible for maintaining the Nation's navigable waterways and annually dredges approximately 400 million cubic meters of sediment. A small volume of this dredged material contains a wide range and level of contaminants such as polynuclear aromatic hydrocarbons, polychlorinated biphenyls, pesticides, and metals. Dredged material that cannot pass stringent open-water disposal testing criteria requires confined disposal alternatives. Finding disposal sites for dredged material is becoming difficult, since most confined disposal facilities (CDFs) are at full capacity. Likewise, sewage sludge can no longer be disposed of in the ocean; consequently, sewage sludge is accumulating on land at many sewage-treatment facilities. Also, large volumes of sewage sludge are currently placed in landfills; however, landfills are filling at accelerated rates. To resolve the accumulation and disposal of sewage sludge, the U.S. Environmental Protection Agency has issued 40 CER Part 503 regulations. The 503 regulations promote the reuse of biosolids derived from sewage sludge and establish maximum limits for metals in soils amended with biosolids derived from sewage sludge for agricultural production. The recycled soil manufacturing technology offers a quick, simple, low-technology, effective, and affordable means of allowing the reuse of dredged material, provides additional placement capacity for future dredged material by emptying many existing full CDFs, and recycles waste materials to the

Final rept.

ERDC/EL TR-
36 01-25

Success stories from 1997/98 that recognize the accomplishments and combined efforts of the Air Force Research Laboratory Scientists and Engineers. Stories have been selected from the following categories: (1) Support to the Warfighter: Technology that has potential for or has achieved application on a Department of Defense system in development or operation or that has provided quickreaction" response to problems or needs of field organizations; (2) Emerging Technologies: Major innovative technological advancements that offer significant potential for existing and future Air Force systems; (3) Technology Transfer: Technology that has transferred from the laboratory to the private sector

Final rept. 1997-1998

AFRL-WS-WP-115 TR-1999-9002

Technology Needs and Emerging Technologies' is one of three initial Federal responses to a Memorandum of Understanding (MOU) signed by the U.S. Departments of Defense

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196 PB93-111052

In an era of declining defense budgets, the North American defense industrial base faces the challenges of advancing and maintaining technological superiority with reduced government research and development funding. In response to this challenge, the North American Defense Industrial Base Organization (NADIBO) sponsored the Metal Matrix Composites (MMCs) assessment as a case study to assess the potential for emerging technologies to continue to advance and to remain viable in the current and projected economic environment. This assessment provides a methodology and framework for conducting similar studies in the future and identifies opportunities to enhance the level of joint effort between the U.S. and Canada in creating and sustaining a viable MMC marketplace.

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218 null

Today, when government and science seem inextricably linked, when virtually no one questions the dependence of national defense on the excellence of national technical capabilities, it is noteworthy that in-house defense research is relatively new in our Nation's history. The Naval Research Laboratory (NRL), the first modern research institution created within the United States Navy, began operations in 1923.

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254 null

The Institute for Manufacturing and Sustainment Technologies (iMAST) is a Department of the Navy Manufacturing Technology (ManTech) Center of Excellence located at The Pennsylvania State University's Applied Research Laboratory in State College, Pennsylvania. Formally established in 1995, the institute is comprised of five technical thrust areas: Mechanical Drive Transmission Technologies * Materials Processing Technologies * Laser Processing Technologies * Advanced Composites Technologies * Repair Technology. iMAST provides a focal point for the development and transfer of new manufacturing processes and equipment in a cooperative environment with industry, academia, other Navy acquisition, and in-service use. The Institute leverages the resources of The Pennsylvania State University to develop technology and business practices that enhance the industrial sector's ability to address advanced weapon systems issues and challenges for the Department of Defense. Sponsored under Navy contract N00039-97-D-0042, iMAST provides manufacturing technology support to the systems command of the U.S. Navy and Marine Corps.

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43 null

This report has been written in support of the BMDO's Technology Applications program. It is intended to put those in the electric utility industry in touch with developers of highly advanced technology funded by BMDO.

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87 null

The U.S. Navy is addressing the primary causes of severe injury and death in survivable military helicopter mishaps through advancing crashworthiness technology. Computer simulation for both aircraft and occupant dynamics has been useful in defining the ideal crashworthy systems. Greater use of simulation is being employed to understand a wide range of crashworthiness-related areas. For example, the effects of a water impact on an aircraft structure are being evaluated, effects of occupant restraint system geometry are being analyzed, and the performance limitations on supplemental restraint systems can be determined. Advances in crash sensor technology has made it possible to integrate supplemental restraint systems into aircraft while adding a capability to record crash impact pulses. An increased awareness of occupant accommodation has brought about novel approaches for crashworthiness for an expanded anthropometric range for systems such as energy absorbers on crew and troop seats.

Professional
paper

9 null

Partial contents: Mission Performance Indicators, FY 1995
Financial Highlights, Supplemental Program Information, and
Financial Statement.

null

149 null

The Strategic Materials industry contributes to economic prosperity and military strength because its products enable performance advantages on a national scale. Heavily reliant on technological innovation to remain competitive, this diverse industry includes a broad range of products from metals to nanoscale materials. Research and development and the ability to respond flexibly to promising discoveries are essential to maintaining a competitive advantage within the commercial and defense sectors in an increasingly globalized world. Collaborative efforts between government, industry and academia push the edges of scientific and technological possibility in search of new materials and applications that will revolutionize the way Americans live and work.

Final rept.

26 null

This Research Report presents the FY06 research statistics and contributions of the Graduate School of Engineering and Management (EN) at AFIT. AFIT research interests and faculty expertise cover a broad spectrum of technical areas related to USAF needs, as reflected by the range of topics addressed in the faculty and student publications listed in this report. In most cases, the research work reported herein is directly sponsored by one or more USAF, or DoD agencies. AFIT welcomes the opportunity to conduct research on additional topics of interest to the USAF, DoD, and other federal organizations when adequate manpower and financial resources are available and/or provided by a sponsor. In addition, AFIT provides research collaboration and technology transfer benefits to the public through Cooperative Research and Development Agreements (CRADAs).

Rept. for 1 Oct
2005-30 Sep
2006

AFIT/EN/TR-
242 07-02

We quantify dynamical change in nonlinear time-serial data via dissimilarity measures between statistical distribution functions. These new measures are superior to traditional nonlinear measures and give robust and timely forewarning of normal-to-abnormal transitions in physiological regimes. These novel measures also provide rapid quantitative assessment of physiological change such as alertness, soldier readiness and bioagent exposure.

Conference
paper

9 null

Smiths Detection-Edgewood (SDE), Inc., recently developed a hand held PCR instrument, the Bio-Seeq(Trademark), an updated, redesigned version of the small, portable PCR instrument previously known as the Handheld Advanced Nucleic Acid Analyzer (HANAA). The SDE developed the Bio-Seeq(Trademark) to provide a portable platform for first responders to use for detecting biological threats in civilian areas. To be ready for introduction into the marketplace, the instrument must be accompanied by a menu of reagents that will enable the user to detect the presence of pathogens in environmental samples. In previous work, SDE obtained probe and primer sequences constituting an assay for a gene present in *Francisella tularensis* the causative agent of tularemia. The SDE incorporated this probe and primer set into dried reagent beads, which also contain reagents required for an internal control. These, in turn, are part of a self-contained sampling device that contains buffer and the PCR reagent beads. This report details an analysis of the assay for *F. tularensis*, including the sensitivity and specificity of the assay, and the effect of some common nontarget (interferent) materials on the performance of the assay.

Final rept. Dec
2003-Jan 2004

25 ECBC-TR-380

The purpose of this MBA Project is to discuss the use of the coordinative acquisition tool, which supports Defense Acquisition Performance Assessment (DAPA) recommendations calling for more streamlined acquisition architecture. Specifically, we conduct an analysis of the coordinative acquisition strategy as presented by Dr. Joseph P. Avery in his January 2006 presentation entitled, *Coordinative Acquisition Strategies; Hyperswift Response to the Warfighter as an acquisition tool used outside of the Federal Acquisition Regulation (FAR)*. We compare this method to DoD Directive 5000.1, DAPA, and other acquisition policies calling for acquisition cycle-time reduction and for a more simplified acquisition architecture. We also conduct a case study on the Rapid Identification Friend or Foe (RIFF) test kit prototype and develop lessons learned as it relates to DoD-wide implementation of coordinative acquisition as a viable streamlined acquisition tool for rapid acquisition of immature technologies necessary for warfighter support. We also discuss interviews with Government and industry representatives at all levels in order to better explore legal and ethical considerations of coordinative acquisition. Feedback from these interviews provides useful insight into industry's actual willingness to accept this form of acquisition for future projects within the DoD.

MBA
professional
rept.

87 null

Public Law 102-396, Section 9070 of the Department of Defense (DOD) Appropriations Act, 1993, enacted on 6 October 1992, requires that, 'where cost- effective, all Department of Defense software shall be written in the programming language Ada....' The Department of the Navy (DON) prepared this second edition of the Ada Implementation Guide to help Program Managers and their staffs to implement this law. New additions to this guide include the following: (1) Software engineering and Ada training requirements; (2) Information on standard Ada bindings to commercial application software; (3) A section on the way Ada facilitates the application of software engineering principles; (4) Integration of Ada and new emerging technologies (e.g., open systems architecture, software reuse, computer-aided software engineering, reengineering); and (5) A DOD/DON Software Policy Matrix that includes policy descriptions and related policies.

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192 null

Traditional contracting in the Federal Government is laborious and time consuming, largely due to the amount of statutes, regulation and policy. This results in the manifestation of large amounts of documentation on the procuring organization as well as potential contractor prospects. Traditional contracting adds additional burden in cost accounting and reporting unique to the Federal Government. While traditional contracts have served the Government well, in cases of relatively mature technology and the objective system requirements were well defined, their lack of flexibility is cited as an inhibitor to the Government gaining access to emerging commercial technologies. Research suggests that the Department of Defense, among other federal organizations, do not use Other Transactions Authority fully because of lack of understanding and education on how to implement Other Transactions (Dunn R. L., 2017). The Department of Defense has issued guidance on OTs for Prototype Projects, however, explicitly states that it does not cover OTs for basic, applied and advanced technology research. This indicates a significant gap in the usage of this agreement mechanism in the formative stages of a technology. This research paper builds on the body of knowledge for OTs and provides a perspective for consideration on OTs for DoD research Budget of the United States Government, Fiscal Year 1999 contains the Budget Message of the President and Information on the President's 1999 budget proposals. In addition, the Budget includes the Nation's first comprehensive Government-wide Performance Plan.

Technical
Report

57 DAU

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380 null

Beginning in 1980, Congress passed a number of public laws to encourage the cooperative development of commercial products between the federal government and private companies. This cooperative process is called technology transfer. The main point of the laws is to allow commercial vendors and the organizations of the federal government to enter into cooperative research and development agreements (CRADAs) that enable both partners to the agreement to maximize their resources. Until now, these laws had only been applied to federal laboratory inventions and technical data. This paper applies those same laws to other intellectual properties of the federal government by developing a policy for the U.S. Army Military History Institute for the broad commercial development of their collection. This policy has broad application throughout the Department of Defense.

Research
project,

78 null

This Naval Postgraduate School periodical is published by the Office of the Dean of Research in accordance with NAVSO P-35. Topics in this issue include research overview, featured projects, research and education, research laboratories, student research, conferences, faculty news, conference calendar and articles such as time critical strikes and naval capability, shipboard navigation displays, NPS software engineering programs, spacecraft research and design center, and other items of interest.

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57 null

Presented are the proceedings of the 16th Annual Electronics Manufacturing Seminar, held on 19-21 February 1992, in Ridgecrest, Calif. The proceedings include the papers presented at the Seminar and cover all aspects of soldering technology and electronics manufacturing. The proceedings are a compilation of information provided by both nongovernment and government sources. The proceedings are published in the interest of furthering communication and broadening awareness of current activities among soldering technology and electronics manufacturing specialists. (Author)

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375 NWC-TP-7163

Technology transfer between federal laboratories and industry is increasingly viewed as a significant factor in the economic growth and well-being of the United States. Cooperative Research and Development Agreements (CRADAS) are one of several mechanisms whereby federal laboratories and private industry collaborate on research and development (R&D). CRADAS define the terms and conditions of the collaboration. You asked us to review the role of CRADAS in successfully transferring technology to the private sector. Subsequently, we agreed with your office to develop a series of case studies that highlight the benefits of engaging in such collaborations at the Departments of Agriculture, Army, Commerce, and Health and Human Services. We did not attempt to assess the costs of these collaborations. While all CRADAS may not achieve the same level of benefits, both the federal agencies and private companies we reviewed benefited from the collaborations. Specifically, we identified the following: The CRADAS offered opportunities for federal laboratories and industry to collaborate on research while meeting their missions. Technology from federal laboratories was transferred to the private sector, resulting in commercial products. R&D programs were advanced. The sharing of resources aided federal laboratories and private companies in accomplishing the CRADA's objectives. In addition, some of the CRADAs demonstrated a potential for long-term improvements to our nation's economy, health, and environment.

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GAO/RCED-95-
27 52

Nanotechnology is the creation and utilization of materials, devices, and systems through the control of matter on the nanometer-length scale, that is, at the level of atoms, molecules, and supramolecular structures. The essence of nanotechnology is the ability to work at these levels to generate larger structures with fundamentally new molecular organization. These nanostructures

Technical rept.

260 null

Contracts, grants, cooperative agreements, and other transactions are among the tools DOD has to support or acquire research. The instruments are not interchangeable, but rather are to be used according to the nature of the research and the type of government-recipient relationship desired. Contracts are procurement instruments and, as such, are governed by the Federal Acquisition Regulation (FAR) and DOD procurement regulations. Contracts are to be used when the principal purpose of the project is the acquisition of goods and services for the direct benefit of the federal government. In contrast, grants, cooperative agreements, and other transactions are assistance instruments used by DOD when the principal purpose is to stimulate or support research and development efforts for more public purposes. Assistance instruments are generally not subject to the FAR or DOD procurement regulations, thereby providing DOD a considerable degree of flexibility in negotiating terms and conditions with the recipients.

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GAO/NSIAD-
24 96-11

The Naval Research Laboratory is the Department of the Navy's corporate laboratory; it is under the command of the Chief of Naval Research (CNR). As the corporate laboratory of the Navy, NRL is the principle in-house component in the Office of Naval Research's effort to meet its science and technology responsibilities. NRL has had a long and fruitful relationship with industry as a collaborator, contractor, and most recently in Cooperative Research and Development Agreements (CRADA). NRL values this linkage and intends for it to continue to develop. NRL is an important link in the Navy R&D chain. Through NRL, the Navy has direct ties with sources of fundamental ideas in industry and the academic community throughout the world and provides an effective coupling point to the R&D chain for the Office of Naval Research (ONR).

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140 null

This effort reviews the existing procedures and equipment used at Lock 8 on the Welland Ship Canal, Ontario, Canada, to control ice and to reduce the possibility of ice causing a shipping vessel to get stuck or jammed in the lock chamber. The lock uses several methods, including an air curtain to hold ice above the lock, bubblers and mechanical means to reduce the ice accumulation on the lock walls, and bubblers to flush ice from the gate recesses. A review of all of these methods shows that mostly they have been effective, though some recommended modifications include reducing the air-curtain and bubblers nozzle size to make the flow across the manifolds more uniform. The only system that the St. Lawrence Seaway Management Corporation might consider replacing entirely is the blaster bubblers, which are unreliable and ineffective. This report details recommended improvements to ice control at Lock 8, including a secondary air curtain below the existing air curtain, a manifold recess bubbler, and methods to further reduce the quantity of ice passing through the breakwater and bypassing ice down the weir channel. Further work is required to determine feasibility and the final design for each of these recommended changes.

Technical
Report

ERDC/CRREL-
50 SR-16-1

CONTENTS: Depot Maintenance Competition - Leveling the Playing Field, and Question & Answer Session; Some Thoughts on National Security and Industrial Base Issues, and Question & Answer Session; OSD Logistics Perspective in an Era of Change, and Question & Answer Session; Logistics Panel, and Question & Answer Session; The Winds of Change, and Question & Answer Session; Acquisition Leadership in Changing Times, and Question & Answer Session; An Overview of Science & Technology, and Question & Answer Session; Technology Panel, and Question & Answer Session.

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89 null

Science and technology have a pervasive influence over a wide range of issues confronting the nation. Decisions on how much federal funding to invest in research and development (R&D), and determining what programs have the highest priority, for example, may have implications for homeland security, new high technology industries, government/private sector cooperation in R&D, and myriad other areas.

CRS Report for
Congress

52 RL32837

...the apparent and the threat of global war has passed... now are dangers that were little understood even just a few years ago, but which have become increasingly clear as we look at the new world laid in front of us. The current security environment is one that holds four principal dangers: (1) weapons of mass destruction, (2) threats to democracy in the former communist world, (3) regional conflict and (4) economic insecurity. This report is the department of the Navy's response to these dangers and to the dramatic changes in our world - a response which we have reflected in our budget. Much work has already been done developing a new strategic vision and reorganizing headquarters staffs and assessment processes to focus on this strategy. There are four principal areas for the Department of the Navy to focus on; personnel, readiness, efficiency and technology. These will guide us as we ensure our naval forces have the right personnel, are right-sized and recapitalized for the future, and are ready to perform their missions. Two Navy-Marine Corps missions have now become especially salient. The first calls for the Navy and Marine Corps to be able to project military power from the sea to land, to deal with warfighting in regions of the world that are far from the United States. The second calls for the Navy-Marine Corps to be ever present overseas to demonstrate United States will and to perform a variety of functions short of warfare. These functions include crisis response deterrence of others' use of force, evacuation of non-combatants and the provision of humanitarian aid and protection. Near continuous forward presence best facilitates accomplishing these functions.

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53 null

The US Army Research Laboratory's (ARL's) Human Research and Engineering Directorate conducts a broad-based program of scientific research and technology development directed into 2 focus areas: 1) enhancing the effectiveness of Soldier performance and Soldier-machine interactions in mission contexts and 2) providing the US Army and ARL with human factors integration leadership to ensure that Soldier performance requirements are adequately considered in technology development and system design. This report provides an overview of ARL/HRED's sensory perception research during 2011-2014. The goal of this research is to understand the perceptual requirements of interpreting unaided and aided visual, auditory, and tactile signals in complex, dynamic, militarily relevant environments. Research is conducted in 3 areas: 1) fundamental sensory capabilities of the Soldier; 2) methods, devices, and technologies for aiding perception; and 3) advanced approaches for augmenting perception. Models of human visual, auditory, and tactile perceptual capabilities that drive detection, recognition, and spatial orientation are being developed. Ultimately, this research will provide a foundation for principled guidance to the materiel development community.

Final rept. 2011-
2014

90 ARL-SR-0293

The Federal Aviation Administration (FAA) manages and operates the National Airspace System (NAS), a significant national resource. However, the demands on this system are continuously growing, and changing technologies provide the opportunity to dramatically improve system effectiveness and efficiency. To this end, the FAA's R,E&D Program is an investment in the future that will sustain the United States preeminence in aviation throughout the world. Without this investment, the United States leadership would erode. Thus, the importance of aviation to the Nation Mandates a comprehensive research, engineering, and development program to ensure both the safety of public air transportation and the fulfillment national priorities and policy goals. The contributions of aviation to the Nation's economy cannot be overstated. Aviation and related industries contribute over \$600 billion to the United States economy (5.5 percent gross domestic product (GDP), encompassing over 8 million jobs. Aviation is critical to business travel, tourism, and travel services (a \$47.5 billion industry), as well as aircraft components (\$24.7 billion), cargo and mail transport, and industrial national and international competitiveness. Aerospace is by far the largest exporting industry for the United States, with a 1990 industry trade surplus of \$27 billion. The United States is currently the recognized world leader in aerospace, aviation, and air traffic control, However, this leadership role cannot be sustained without continued research into new and evolving technologies.

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199 null

When an institution brings together committed faculty with the intellectual curiosity of young minds and offers them the challenge of solving real-world research needs, a perfect storm is born. It allows us to shape young minds into officers of character who will embody the values of respect, leadership, and the willingness to look beyond the easy answer. At the same time, it empowers our graduates to enter the active duty Air Force with a burning pride in their accomplishments and in their alma mater. Research builds stamina, discipline, decision-making, teamwork, and strong oral and written communication skills - all of which will serve them well as their careers in the Air Force advance and begin to shape future Air Force policies and actions. Guided by military and civilian faculty members, cadets learn to think outside of the box" and to respond to scenarios that often do not offer clear answers that require independent thinkers.

Today

Annual rept.

61 null

This report contains information of research projects in the interdisciplinary: (1) groups, Command, Control, and Communications Academic Group, (2) Information Systems Academic Group, (3) Information Warfare Academic Group, (4) Space Systems Academic Group, and (5) Undersea Warfare Academic Group. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts.

Summary rept.
1 Jan-31 Dec
98

NPS-09-98-
121 007

This report details the results of Phase I of the Dual Hard Steel Armor Program funded by the PM, Survivability, U.S. Army Tank-Automotive Command (TACOM). This report investigates the use of an induction heat-treating process to produce a gradient hardness monolithic steel armor to complement MIL-A-46099, Armor Plate, Steel, Rolled-Bonded, Dual-Hardness, for thicknesses of approximately 0.5 in. Results of this investigation indicate that a conventionally heat-treated steel armor plate (tempered to a hardness range of Rc 42-52; induction-hardened to approximately Rc 60 and induction tempered to approximately Rc 50 with a high hardness thickness of approximately 40%) will provide acceptable ballistic results when compared to the ballistic requirements of MIL-A-46099. Future efforts (Phase II) will include optimization of the composition, hardness levels, and thickness gradients. Production-size plates will also be processed to ensure that the technology can be transitioned from the laboratory to production.

Final rept. 1993-
1995,

75 ARL-TR-1193

This report contains project summaries of the research projects in the Department of Electrical and Computer Engineering. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports Thesis abstracts of students advised by faculty in the Department are also included.

Summary rept.
1 Oct 2000-30
Sep 2001

NPS-EC-09-02-
112 021

Subject report identifies the research activities conducted at William Beaumont Army Medical Center by investigators who had protocols approved by the Institutional Review Board and the Institutional Animal Care and Use Committee. This report includes all protocols registered within the Department of Clinical Investigation during FY 1995. All known presentations and publications are also included. The research protocols described were conducted under the provisions of AR 40-38 (Clinical Investigation Program); AR 40-7 (Use of Investigational Drugs in Humans and the Use of Schedule I Controlled Substances); AR 70-25 (Use of Volunteers as Subjects for Research); HSC 40-23 (Management of Clinical Investigation Protocols and Reports); and AR 70-18 (The Use of Animals in DoD Programs).

Annual
research
progress rept.
Oct 94-Sep 95,

RSC-MED-
216 300(R1)

The United States is now selling products and services in a global economy that is dynamic, complex, and increasingly competitive. To maintain U.S. prestige as a world-class innovator, American business leaders and entrepreneurs must manufacture the highest quality products at competitive prices. The Ballistic Missile Defense Organization (BMDO) recognizes that one of the most efficient ways to incorporate innovation into the nation's economy is to transfer federal technology - developed by matchless expertise - into American businesses. BMDO's Technology Applications program has been a leader in federal technology transfer for seven years, and to solidify our leadership we recently formed a new partnership with the National Technology Transfer Center (NTTC). Under this agreement, the NTTC will operate the Technology Applications Information System, our on-line database, and provide other technology transfer and commercialization Support, including many of the activities described in this report. Some technologies discussed in this report include: microelectronics, optoelectronics, optics, manufacturing, health, materials, energy and assorted spinoffs.

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This report on Regional, State, and Local (RSL) Initiatives in Nanotechnology is the result of a topical workshop convened 1-3 April 2009 in Oklahoma City, Oklahoma, by the Nanoscale Science, Engineering, and Technology (NSET) Subcommittee of the National Science and Technology Council's Committee on Technology. The report was made possible with the help of the NSET Subcommittee's Nanomanufacturing, Industry Liaison, and Innovation (NILI) Working Group and with staff support from the National Nanotechnology Coordination Office (NNCO). The workshop is part of the NSET Subcommittee's long-range planning effort for the National Nanotechnology Initiative (NNI), the multi-agency Federal nanotechnology program. The NNI is driven by long-term goals based on broad community input, in part received through workshops such as this one. The NNI seeks to accelerate the research, development, and deployment of nanotechnology to address national needs, enhance our nation's economy, and improve the quality of life in the United States and around the world through the coordination of activities and programs across the Federal Government.

Workshop

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This Handbook provides guidance and information about the policies, processes, procedures, and programs that collectively make up the international armaments cooperation effort of the U.S. Department of Defense (DoD). This Handbook covers international cooperative research, development, test & evaluation, production, and logistics functional areas to assist DoD acquisition personnel in identifying, developing, and implementing any international activities related to their acquisition responsibilities.

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197 null

Masonry construction continues to predominate in U.S. military construction and other sectors, but there has been little improvement in masonry structural technology for several decades. Without improvements in materials and productivity, the cost of masonry construction will significantly increase. To help keep masonry construction affordable, the U.S. Army Construction Engineering Research Laboratories (USACERL) initiated a Cooperative Research and Development Agreement with the University of Nebraska Center for Infrastructure Research to develop a lightweight high-strength concrete masonry unit (CMU). The objective of this research was to merge high-strength concrete and lightweight concrete technologies to produce a high-performance lightweight CMU up to 50 percent lighter than normal-weight units while maintaining or improving structural characteristics. The work produced a new type of high-strength lightweight CMU that can be manufactured using industry-standard equipment and meets or exceeds all performance-based requirements for block masonry. Using expanded shale aggregates and an optimized unit shape as the primary innovative components, the high-performance lightweight CMUs weigh about 8.6 kg and have average net compressive strength of 4000 lb/in.² The minimum void gradation of the expanded shale was modified to provide high strength, good durability, and a smooth, uniform texture. Details on mix design and optimized block shape are provided.

Final rept.,

CERL-TR-
145 97/84

The purpose of the research is to conduct burn research that will benefit combat casualties in the current conflict. The Nathan Speare Regional Burn Treatment Center is under contract with the U.S. Army Institute for Surgical Research and the Army Burn Center to carry out two studies according to protocols established by Army researchers. The purpose of Study 1, Automated Fluid Resuscitation of Burn Patients, is to collect data which will be used to create an effective resuscitation algorithm for the development of a closed loop resuscitation system. Approximately 20 patients will be enrolled in the Crozer Burn Treatment Center. Study 2, Evaluation of Aquacel Ag, will compare the performance of Aquacel Ag to the normal standard of care (Xeroform). Approximately 20 patients will be enrolled. A third study, A Comparison of Clinical and Microbiological Efficacy of Three Separate Antibiotic Regimens Against Acinetobacter baumannii, has been designed by the Principal Investigator and will be carried out at Crozer only. During the past year, Crozer began enrolling patients in Study 2 (see above).

Annual rept. 19
Jun 2008-18
Jun 2009

8 null

northern New York, and New England disrupted the lives of millions of people. The ice that accreted on trees and wires damaged electrical transmission and distribution lines, causing power outages that lasted many weeks in some areas. In this report, ice storms in the St. Lawrence Valley region of Quebec, eastern Ontario, and northern New York and Vermont are analyzed, focusing on the amount of ice on power lines. Although there are many photographs of ice-covered wires from this storm, only rough estimates of the equivalent radial thickness of ice on the wires can be obtained from these photos. The analysis in this report relies on historical weather data and ice accretion models to estimate the equivalent ice thickness on wires both in this storm and in past freezing-rain storms. The CRREL and Simple ice accretion models incorporate a physical model of the process of ice accretion with empirically determined parameters. Qualitative information from newspapers, Storm Data, and other reports on damaging storms supplement the model results to provide a better understanding of the climatology of ice storms in the region. Ultimately, all this information is used to calculate equivalent ice thicknesses from freezing rain for long return periods. For the St. Lawrence Valley region in the vicinity of Montreal, ice thicknesses on wires 10 m above ground and perpendicular to the for 50 and 200 year return periods are estimated to be 33 mm and 52 mm, respectively. Gust speeds concurrent with these ice thicknesses are about 20 m/s. Ice thickness estimates for the 1998 storm at the three weather stations in the Montreal area range from 48 to 55 mm.

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ERDC/CRREL
129 TR-03-1

Authorization for Government-operated Federal laboratories to enter into Cooperative Research and Development Agreements (CRADAs) was initially provided by the Stevenson-Wydler Technology Innovation Act of 1980, which was amended by the Federal Technology Transfer Act of 1986. The Department of Defense and the Department of the Navy have each issued specific guidelines governing technology transfer. This guidebook was prepared for the Naval Surface Warfare Center, Dahlgren Division (NSWCDD), Dahlgren, Virginia, and provides guidelines concerning responsibilities, requirements, options, types, format, and contents of CRADAs.

Final rept.,

NSWCDD/MP-
20 95/216

Contrary to what many perceive, the AF has been in the business of environmental quality since day one. However, only recent successes have received significant attention. Today's Air Force Environmental Quality Program is the product of an evolution which began almost 50 years ago when the AF became a separate Service. The ceaseless efforts of countless AF civil engineers and planners led to enormous advances and to the AF's emergence as a leader in the field, not only within the DOD, but throughout the United States and even the world. However, AF leaders are guilty of not adequately documenting these accomplishments. This report provides, for the first time, a historical document outlining achievements that clearly demonstrate the AF commitment to environmental quality. The report's focus is two-fold: first, it documents the evolution of the program since its beginning in the late 1940s; and second, it highlights AF successes in the cleanup of past hazardous contamination, compliance with current environmental laws, stewardship of natural and cultural resources, and prevention of future environmental pollution. The report also encapsulates leadership goals and policy, program structure, education and training efforts, technological advances, and partnerships with DOD and industry. The research conducted for this report included various media. HQ USAF Civil Engineer Historical Reports and various publications of the day, such as professional journals, served as valuable sources of information regarding the early years of the Program.

Research rept.,

ACSC/DEA/21
137 1/96-04

on electrical energy for daily operations. Energy shortages translate to decreased productivity, higher costs, and increased health risks. But for the United States military, energy shortages have the potential to become national security risks. Over ninety-five percent of the electrical energy used by the Air Force is supplied by the domestic grid, which is susceptible to shortages and disruptions. Many Air Force operations require a continuous source of energy, and while the Air Force has historically established redundant supplies of electrical energy, these back-ups are designed for short-term outages and may not provide sufficient supply for a longer, sustained power outage. Furthermore, it is the goal of the Department of Defense to produce or procure 25 percent of its facility energy from renewable sources by fiscal year 2025. In a government budget environment where decision makers are required to provide more capability with less money, it is becoming increasingly important for informed decisions regarding which energy supply options bear the most benefit for an installation. The analysis begins by exploring the field of energy supply options available to an Air Force installation. The supply options are assessed according to their ability to provide continuous and reliable energy, their applicability to unique requirements of Air Force installations, and their costs. Various methods of calculating energy usage by an installation are also addressed. The next step of this research develops a methodology and tool which assesses how an installation responds to various power outage scenarios. Lastly, various energy supply options are applied to the tool, and

Technical
Report

177 RPAF/CA

This document is the presentation of the Secretary of Defense's annual report to the President and the Congress.

Annual rept.

297 null

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Fiscal 2006, Congress adopted four wide-ranging reforms to the Department of Defense Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs in order to increase the effectiveness of SBIR and STTR for both the DoD and the defense industry. First, Section 252 directed closer alignment between R&D and acquisition goals of SBIR and STTR. Second, Section 252 authorized and funded creation by the Department of Defense (DoD) and the military Services of the Commercialization Pilot Program (CPP) to facilitate transition of SBIR technologies into the acquisition process. Congress conditioned the use of CPP funds on detailed evaluative reporting to Congress. Third, Congress codified into statutory law President George W. Bush's Executive Order No. 13329, which incentivized manufacturing technologies through the SBIR and STTR programs. Fourth Congress clarified the authority to conduct testing and evaluation of SBIR and STTR technologies in SBIR and STTR Phases II and III. The implementation requirements were specified in the text of Section 252 and the Congressional Guidance Letter issued by the House and the Senate Small Business Committees. This study analyzes the implementation of Section 252 by the Secretaries of Defense, the Army, the Navy, and the Air Force. It reflects the results of literature review and a survey of SBIR and STTR program executives. The study questions are based on Section 252 text and the Congressional Guidance Letter, as well as on best practices identified in relevant academic and professional literature. The study finds that although the DoD and the military

Research paper

NPS-AM-11-
C8P23R02-
96 077

During the height of the Cold War, the United States Department of Defense had a focused acquisition effort to produce major weapons systems. These weapons systems were developed as single service acquisition efforts. Their high costs were justified by their sophisticated technology, which enabled the U.S. military to gain and maintain air and ground combat superiority. Such acquisition practices significantly increased the defense budget, which peaked in 1985 at \$414 billion. However, with the collapse of the Soviet Union and an absence of a single galvanizing threat to global security, the U.S. has been forced to drastically cut defense spending. Although there is no longer a central security concern for the U.S., there are new threats that require new defense objectives -- and containing these threats is not cheap. Senior defense leaders agree that the U.S. policy of fielding technologically superior weapon systems will not change. What alternative, then, will effectively enable the U.S. to meet reduced spending goals, yet maintain current national security levels? This thesis suggests that international armaments cooperation is one such alternative.

Master's thesis,

AFIT/GAL/LAL
129 /97S-3

This research project examined current technology transfer programs and developed a template for Air Command and Staff College (ACSC) to use to transfer its research programs to the private sector. Several technology transfer processes and opportunities within the Department of Defense and the National Aeronautics and Space Administration (NASA) were analyzed. Findings indicate transferring government owned technology to the private sector is not only possible, but strongly encouraged. Commercializing government owned technology is now policy directed from the national level down to the individual Service department level. The Technology Transition Office and the Air Force Institute of Technology, located at Wright-Patterson AFB, Ohio; and the Technology Transfer Office at NASA Marshall Space Flight Center in Huntsville, Alabama are currently enjoying tremendous success in the technology transfer area. ACSC, by virtue of its definition as a research producing institution, can potentially be a major player in the technology transfer process. The product of this research is a fully integrated, user friendly multimedia personal computer application designed to facilitate the learning process and enhance the usability of the technology transfer process. Results of this research are applicable to a wide variety of audiences and are recommended for incorporation into ACSC curriculum.

Research rept.

ACSC/CAT/02
36 7/95-05

The Strategic Environmental Research and Development Program was established by Title 10 U.S.C. 2901-2904. The Strategic Environmental Research and Development Program (SERDP) addresses environmental matters of concern to the Department of Defense and the Department of Energy. It is a Department of Defense Program planned, managed, and executed in full partnership with the Department of Energy and Environmental Protection Agency with participation by numerous other Federal and non-Federal organizations. This report of the SERDP Council provides a summary of SERDP's activities and most significant accomplishments during fiscal year 1997, its plans for fiscal year 1998, and new initiatives to be addressed in fiscal year 1999.

Annual rept.,

317 null

The mission of Air Force basic research is to sponsor and sustain basic research, to transfer and transition research results, and to support Air Force goals of control and maximum utilization of air and space. Only a vigorous, focused, and diversified basic research program can provide our Nation with the required depth and scope of options for new and advanced technologies to meet the air and space superiority goals of the Air Force. Furthermore, the relative decrease in planned acquisition of new weapon systems makes it imperative to rely more on a partnership with the U.S. industrial base, logistics support and the operating Air Force. This focus of basic research not only strengthens the ability of U.S. firms to meet defense needs, but also contributes to the ability of U.S. industry to succeed in world competition and international markets.

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The Institute for Manufacturing and Sustainment Technologies (iMAST) is a Department of the Navy Manufacturing Technology (ManTech) Center of Excellence located at The Pennsylvania State University's Applied Research Laboratory in State College, Pennsylvania. Formally established in 1995, the institute is comprised of seven technical thrust areas: Mechanical Drive Transmission Technologies * Materials Processing Technologies * Laser Processing Technologies * Advanced Composites Technologies * Manufacturing Systems * Complex Systems Monitoring * Repair Technology. iMAST provides a focal point for the development and transfer of new manufacturing processes and equipment in a cooperative environment with industry, academia, other Navy acquisition, and in-service use. The Institute leverages the resources of The Pennsylvania State University to develop technology and business practices that enhance the industrial sector's ability to address advanced weapon systems issues and challenges for the Department of Defense. Sponsored under Navy contract N00039-97-D-0042, iMAST provides manufacturing technology support to the systems command of the U.S. Navy and Marine Corps.

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The Naval Command, Control and Ocean Surveillance Center, RDT&E Division, or NRaD, Command History for calendar year (CY) 95 is submitted in conformance with OPNAVINST 5750.12E. The history provides a permanent record of CY 95 activities at NRaD. Although the history covers one calendar year, most information was available on only a fiscal year (FY) basis and is so noted in the text. The history is divided into two main sections. The first section gives an introduction to NRaD and describes developments in finance, organization, personnel, and facilities. The second section documents technical programs underway during 1995. Because the results of scientific work often develop out of many years' effort, programs are not always documented annually. Previous command histories provide extensive background articles on many major programs. When possible, background articles are prepared for new or previously untreated programs. By consulting command histories written over a period of several years, a reader can follow the broad thrusts of Division research and development. Appendices to the history provide supplementary information to the main text. Appendix A lists achievement awards given in CY 95. Appendix B lists patents awarded in FY 95. Appendices C and D provide lists of distinguished visitors hosted by NRaD and major conferences and meetings at NRaD, respectively. Appendix E lists additional program information (project name, number(s), role, point of contact, principal/supporting sites, and leadership area). A descriptive list of technical facilities is provided in appendix F.

Rept. for Jan-
Dec 95,

NCCOSC/RDT/
171 E-TD-2899

This 2003 Edition of the USU Journal documents that the Uniformed Services University of the Health Sciences (USU) continues to meet, or exceed, its Congressionally established and Department of Defense directed mission to provide continuity and leadership and ensure medical readiness and continuing education for the Military Health System (MHS) through the provision of career-oriented, uniquely trained physicians, advanced practice nurses and scientists and specialized educational training, exercises and research to meet the combat, humanitarian, and peacetime health care requirements of the MHS.

Annual rept.

659 null

This publication documents the achievements of companies that participated in the 2003-2004 Transition Assistance Program (TAP) sponsored by the US Department of Navy's Small Business Innovation Research (SBIR) Program Office as a means of expediting the transition of technology to the fleet. This competitive 10-month program is offered to Navy SBIR and STTR Phase II awardees. It is designed to assist companies in transitioning to Phase III. Within 18 months of program completion, 72% of the 81 participating firms in the 2003-04 TAP received additional non-SBIR government or private funding and increased sales. This publication features the success stories of 18 of those companies.

Final rept. 2003-2004

42 null

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94 null

This report contains 40 summaries of research projects in the Department of Aeronautics and Astronautics which were carried out under funding of the Naval Postgraduate School Research Program. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports.

Summary rept.
1 Jan-31 Dec
95,

NPS-09-96-
50 003

This report contains project summaries of the research projects in the Department of Electrical and Computer Engineering. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised by faculty in the Department are also included.

Summary rept.,
1 Oct 1999-30
Sep 2000

NPS-09-02-
105 011

Since its inception, faculty of the Naval Postgraduate School (NPS) have conducted research and development for the United States Navy, its sister military services, and other various agencies spread across the Federal Government. For its support of research efforts, NPS is reimbursed for actual costs incurred in association with providing research and development. Over the past several years the school has experienced a significant increase in the amount of reimbursable program dollars coming into the school. Recently, school administrators questioned whether reimbursement rates charged to research customers accurately reflected the actual cost incurred in providing the service. In 2003, NPS commissioned PricewaterhouseCoopers (PwC), a professional consulting firm, to study the current rate structure and make recommendations as to what rates NPS should charge for reimbursable research and education. PwC's final report was submitted to the school in the spring of 2004. The purpose of this research project is to analyze their final report to understand the methodology and procedures PwC used to determine rates, and determine if the rate structure proposed by PwC is appropriate for implementation at NPS.

Master's thesis

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During the week of January 23, 1995, a Best Manufacturing Practices (BMP) survey was conducted at Sandia National Laboratories (SNL) located in Albuquerque, New Mexico and Livermore, California. The multiprogram SNL, a Department of Energy national effort, maintains sites in New Mexico and California with test facilities in Nevada and Hawaii. They are operated by the Sandia Corporation, a wholly owned subsidiary of Martin Marietta, and employ over 8500 personnel with an annual budget of more than \$ 1.4 billion.

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81 null

into a Cooperative Research and Development Agreement for the development of seismic design criteria for waterfront construction. Both organizations face similar problems in the safe design of facilities and the need for a design guide. The California State Lands Commission (CSLC) has oversight of over sixty marine oil terminals, some of which are over eighty years old and built to unknown standards. Typically, they were built to resist minor earthquake intensity. New earthquake hazard information from recent events such as Loma Prieta (1989) and Northridge (1994) indicates that much higher intensities are possible. It is prudent that these facilities be evaluated and unsafe deficiencies corrected. This document develops and expands on work that was begun by the Naval Facilities Engineering Service Center to provide seismic design criteria for waterfront construction. This report presents criteria that are intended to define a minimum level of acceptable performance for marine oil terminals and seven chapters and three appendices of technical supporting material. The development of the criteria recognized the need to protect the environment from oil spills, the need to provide for the transfer of required natural resources into the State, and the economics of operating a commercial facility in a competitive structure. The development of this guide has taken the approach of providing reasonable and prudent levels of design consistent with the state-of-the-art of engineering practice. The document is intended to be dynamic in nature; it is expected that it will be revised and updated by the experience gained through usage.

Final rept. Sep
98-May 99

NFESC-TR-
413 2103-SHR

This report contains project summaries of the research projects in the Department of Physics. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised by faculty in the Department are also included.

Summary rept.
1 Oct 2000-30
Sep 2001

NPS-09-02-
55 026

The U.S. Army has policies to minimize production of waste materials, maximize recycle of waste materials, and minimize energy consumption on its installations. A beneficial way to implement these policies is to convert paper, wood, vegetation, and Municipal Solid Waste (MSW) fractions into a carbon-rich feed stock by pyrolysis to fuel Direct Carbon Fuel Cells (DCFCs). DCFCs potentially offer a unique approach for the direct conversion of biomass-derived, carbon-rich solid fuel to electricity at very high conversion, with the production of a CO₂-rich flue gas. This work gathered information on the quantities of waste material available at U.S. Army installations from installation reports and from the U.S. Army Solid Waste Annual Reporting System (SWARS) database, then estimated the amount of electricity that DCFC technologies could generate from those wastes, and finally compared those amounts with the current average annual electrical loads at the 10 largest Army installations.

Final rept.

ERDC/CERL-
54 TR-07-32

This report contains summaries of research projects in the Department of Operations Research. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts.

Summary rept.
1 Jan-31 Dec
98

NPSOR-09-99-
92 013

Our curriculum, while adapting to changing times, maintains its core purpose of study and research of the resources component of national power. Special emphasis is placed on materiel acquisition and joint logistics. By conducting in-depth examinations of 18 industry sectors-both at home and abroad-the Industry Studies Program allows ICAF students to assess industry's ability to support our national security strategy. The following pages comprise an assessment of each industry sector and are offered as part of the ongoing dialogue concerning the health of the industrial base. The 270 senior military and civilian students who contributed to this volume have brought a great deal of collective expertise and experience to the effort.

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418 null

This project conducts a cost benefit analysis to systematically examine the relative strengths and weaknesses of the current method of obtaining original equipment manufacturer (OEM) parts by the Marine Corps versus additive manufacturing alternatives. These alternatives include the established method of Extrusion and the emerging technology of continuous liquid interface production (CLIP). The findings from the cost benefit analysis show a cost advantage for additive manufacturing at the production level with a substantial edge given to CLIP in three of four scenarios examined. Based on our methodology and findings, we recommend that the Marine Corps build a data repository of (blockchained) printable files as quickly as accuracy allows. Once complete, the Marine Corps can continue to use the Fortus 250mc and other previously purchased models. When the repository outgrows the capability of the Fortus machines, it can move to Carbon 3D or a similar technology and expand the capability across the Marine Corps.

Technical
Report

119 null

This document has been prepared to provide information on the USAF research, Development, Test and Evaluation (RDT&E) Program to congressional committees during the FY 1992/1993 hearings. The Descriptive Summaries provide narrative information on all RDT&E Program Elements and projects. Pages 845-854 are presented in response to the Senate Appropriations Committee requirement contained on page 78 of the Senate Appropriations Committee report (98-292, 1 November 1983). Descriptive Summaries entitled 'Facilities Exhibits' (pages 866-897) contains information on major improvements to, and construction of, government owned facilities funded by RDT&E. A direct comparison of FY 1990 and FY 1991 data in the Program Element descriptive Summaries dated January 1991, will reveal significant differences.

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911 null

The Federal Technology Transfer Act of 1986 imposed legislative requirements on federal labs to take certain actions to facilitate the transfer of federally developed technology to the commercial sector. This study examined the requirements of the 1986 Act and had the following three specific objectives: 1) to examine opportunities and barriers, as perceived by federal laboratory personnel, to the commercial application of federally developed technology to the private sector, 2) to examine the perceptions of federal laboratory personnel regarding the 1986 Act, and 3) to use the information from the first two objectives to suggest ways to ease and enhance the ever challenging process of technology transfer. A survey of 479 federal lab personnel including both managers and scientists/engineers was conducted in support of the above objectives. Overall, the results of the study support the findings of previous research. Recommendations are offered to help make technology transfer and the implementation of the 1986 Act a success.

Master's thesis,

AFIT/GLM/LS
154 P/87S-52

This Annex discusses a unique technology transition program in one of the Department of Defense's separate operating organizations-the Ballistic Missile Defense Organization (BMDO). BMDO is not a laboratory, nor does it direct any Department of Defense Laboratories. It does, however, use many of the Federal Laboratories, including those in the Department of Defense, in the pursuit of designing and developing a missile defense system. Because it uses all the Department of Defense Services and many of its agencies as technology agents in its defense mission, BMDO has a unique position in the transition of technology from the Defense and other Federal Laboratories. The BMDO technology transition program is also one of the most active and innovative of any Federal technology transition program. The following Annex will describe the BMDO technology transition program through, not only Defense Laboratories, but also the other Federal Laboratories and research organizations in the BMDO research team. It will also briefly document the types of success stories that a pro- active Federal technology transition program can anticipate when applied as we believe the Congress intended. Data included in this Annex is correct as of October 1993.

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My budget supports a major new National Nanotechnology Initiative, worth \$500 million. the ability to manipulate matter at the atomic and molecular level. Imagine the possibilities: materials with ten times the strength of steel and only a small fraction of the weight -- shrinking all the information housed at the Library of Congress into a device the size of a sugar cube -- detecting cancerous tumors when they are only a few cells in size. Some of our research goals may take 20 or more years to achieve, but that is precisely why there is an important role for the federal government.

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Briefing charts

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Vayrynen's book is a comprehensive and detailed discussion of thick ethical concepts, utilizing the toolkit of philosophy of language and linguistics to argue that these concepts do not have the philosophical significance normally attributed to them (e.g. regarding ethical objectivity and the fact-value distinction). When ethicists argue for substantive conclusions involving thick terms and concepts (e.g. 'courageous' and 'kind'), their arguments often assume the Semantic View--that the truth-conditional meanings of thick terms are evaluative. Vayrynen challenges this assumption in three ways. (i) He argues that various phenomena commonly taken to support the Semantic View (e.g. underdetermination and shapelessness) don't actually support. (ii) He advances three arguments against the Semantic View which I shall discuss below. And (iii) he proposes that thick terms are associated with evaluations by way of a pragmatic relation rather than a semantic one.

Journal Article -
Open Access

USAFA-DF-PA-
9 026

This report contains project summaries of the research undertaken at the Naval Postgraduate School. A list of recent publications is also included which consists of conference presentations, books, contributions to books, published journal papers, and technical reports. The research was conducted in the areas of National Security Affairs, Computer Science, Defense Analysis, Information Science, Operations Research, Aeronautics and Astronautics, Electrical and Computer Engineering, Mathematics, Mechanical Engineering, Meteorology, Oceanography, Physics and Business and Public Policy. This also includes research by the Space Systems Academic Group, Institute for Information Innovation and Superiority (I2SI), The Wayne E. Meyer Institute, formerly the Institute for Defense Systems Engineering and Analysis (IDSEA), The Modeling, Virtual Environments and Simulation (MOVES) Institute, School of Aviation Safety and Center for Interdisciplinary Remotely Piloted Aircraft Studies (CIRPAS).

Summary rept.
1 Oct 2001-30
Sep 2002

NPS-09-03-
571 002

This report explores planning, prioritization, and assessment of facilities and infrastructure (F&I) at a set of Federal laboratories from the Department of Defense, Department of Energy, and Department of Homeland Security that conduct national security research and development. As the average age of Federal laboratory buildings increases, topping 34 and 57 years at Sandia National Laboratories and the Naval Research Laboratory, respectively, there is concern over the future health and sufficiency of the U.S. national security research enterprise. The study team reviewed relevant government documents; had discussions with F&I staff from laboratories, Federal agencies, and architecture and engineering firms; and convened a workshop with national security and F&I experts. This report identifies a number of barriers, such as the difficulty in capturing the impact of facilities and infrastructure on mission, and strategies, such as engaging in benchmarking or other data sharing activities.

Final rept. Sep
2011-Nov 2012

IDA-P-
4916,IDA/HQ-
180 12-001176

Program (SERDP) is the Department of Defense's (DoD) corporate environmental science and technology program. To fulfill its mission to address environmental problems through innovative research and share that information across federal and private organizations, SERDP executes the program in partnership with the Department of Energy and the Environmental Protection Agency. Further, SERDP fully leverages complementary programs within the DoD and solicits interest from other public and private research organizations. The organization and management of SERDP is described in Section I. SERDP conducts basic research through advanced technology development in the following five Technology Thrust Areas: Cleanup, Compliance, Conservation, Pollution Prevention, and Unexploded Ordnance (UXO). Section II describes significant accomplishments achieved during FY 2002 within each of the Thrust Areas. Highlights of these accomplishments include: (1) new technologies to remediate and/or contain groundwater contaminated with explosives and ammonium perchlorate; (2) new technologies capable of detecting UXO with high detection rates to significantly reduce the cost of DoD site characterization and cleanup; (3) advances to achieve the long-term sustainability of DoD testing and training ranges, including techniques to assess the risk posed by residues from live munitions on military ranges; (4) innovative monitoring techniques to ensure that Navy operations do not adversely impact marine mammals; and (5) new steel alloys that eliminate the need for toxic corrosion protection coatings on weapons platforms. Section III provides

Annual rept. 355 null

A ballistic coefficient (BC) can be determined by using two chronographs a measured distance away from each other and shooting a bullet so the velocity is measured by the two devices. Ballistic modeling software requires accurate measurement of ballistic coefficients to accurately predict downrange trajectories; wind drift, and retained energy.

Technical Report USAFA-DF-PA-7 24

On April 29, 2011, the Vice Chairman of the Joint Chiefs of Staff requested the Defense Business Board conduct a study on Linking and Streamlining the Defense Requirements, Acquisition, and Budget Processes. The overarching goal outlined in the Terms of Reference was to streamline and link the three processes that together provide the capabilities required by the warfighter on time, at a reasonable cost, and in the quantities needed to accomplish the mission. A copy of the Terms of Reference (TOR) is provided at Tab A.

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The seventh topical meeting on Lasers and Applications to Chemical and Environmental Analysis continued the tradition of state-of-the-art research and applications and was presented in an informal atmosphere designed to foster communication among researchers and practitioners in the field. New developments in optical sources, instrumentation, and spectroscopic techniques are principal driving forces for the increased use of lasers in chemical analysis and environmental monitoring. Topics that were covered include: Application of new laser sources to analytical spectroscopy; Diode laser applications in combustion, industrial, and atmospheric measurements; Laser diagnostics for combustion; Laser based detection coupled to microanalytical separations; Microoptical systems for chemical analysis; Laser based detection for high density chemical sensing arrays; Development and applications of single-molecule spectroscopy; Fluorescence based methods for detection of individual biomolecules (including imaging).

Final rept. 15
Dec 1999-14
Dec 2000

ARO-41043.1-
229 EV-CF

Congress, industry, the media, the public ... that's because aviation touches our lives in so many ways. People rightly demand the safest, most reliable system possible. They expect the planes to be safe, their flights to be on time, and their luggage to be on the carousel. And they expect peak performance around the clock, day after day, year in, year out. The United States President, Congress, and the American public hold the Federal Aviation Administration responsible for providing a safe, secure, and efficient National Airspace System (NAS). Furthermore, they expect FAA actions and regulations to be effective in improving aviation safety and security while still mitigating the impacts of aircraft noise and emissions upon the environment. Better research and the implementation of effective new solutions increasingly hold the key to meeting the rising expectations of the American people and their Government. The significance of the FAA's research and development (R&D) will grow in proportion with the demands placed upon it. The FAA's R&D program finds and prepares to field technologies, systems, designs, and procedures that directly support the agency's principal operational and regulatory responsibilities: air traffic services, certification of aircraft and aviation personnel, operation and certification of airports, civil aviation security, and environmental standards for civil aviation. Safety remains the agency's top priority. While the FAA, NASA, and other R&D sources have introduced many new technologies and procedures over the past 20 years-and the accident rate has dropped dramatically as a result expectations are constantly

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221 null

Several nanocrystalline reactive sorbents, of varied particle size and surface area, were examined as decontaminating sorbents. The reaction kinetics of VX, GD, and HD were determined in addition to efficacy for surface decontamination of Chemical Agent Resistant Coating (CARC) paint. The Sorbent Decon System (SDS) A-200 sorbent was utilized as a control. The best sorbent for VX was nTiO₂, which enabled a half-life of <2 min. Comparable half-lives for GD (tens-of minutes) were observed on nTiO₂, nMgO, and the commercial FAST-ACT sorbent. Half-lives of a few to many hours were observed for HD on nAl:O_t

Final rept. May -
Oct 2008

64 ECBC-TR-830

In August 1998, the Chairman of the Senate Committee on Governmental Affairs requested that the Inspectors General from the Departments of Commerce, Defense, Energy, State, and the Treasury and the Central Intelligence Agency conduct an interagency review of the export licensing processes for dual-use commodities and munitions. The objective of the review was to determine whether current practices and procedures were consistent with national security and foreign policy objectives. An interagency Offices of the Inspectors General (OIG) Report No. 99-187, Interagency Review of the Export Licensing Processes for Dual-Use Commodities and Munitions

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IG/DOD-D-
59 2001-092

Composite materials have been demonstrated to be effective in high-performance applications where traditional materials fail, especially in aggressively corrosive environments. Many corrosion-resistant applications are industrial load-bearing elements, but the construction industry has mainly used composites in nonstructural applications. Most fiber-reinforced polymer (FRP) composites have not been optimized for civil engineering applications, and conventional civil engineering design procedures may not effectively exploit the unique mechanical properties of FRP composites or adequately define potential failure mechanisms. The objective of this work was to develop, test, and demonstrate optimized, advanced-design composite structural components for civil engineering applications. First, new glass FRP fiber architectures were developed, tested, and optimized. Next, using the optimized fiber architecture, a pultruded interlocking hexagonal structural system called the H-Deck was designed, tested, and compared with performance standards published by the American Association of State Highway and Transportation Officials (AASHTO). Finally, two short-span FRP composite H-deck demonstration bridges were successfully constructed. Detailed results from the testing and optimization phases of the study are documented, and economic analysis suggests that life-cycle costs for properly selected FRP composite H-Deck applications will be lower than for comparable reinforced concrete applications. Information on the commercial availability of the composite H-Deck system is also provided.

Final rept.,

CERL-TR-
78 98/99

protect military and civilian populations against a chemical, biological, radiological, and nuclear (CBRN) attack and naturally occurring outbreaks of emerging infectious diseases. However, the United States Government (USG) does not have the capability to rapidly develop, license, and manufacture MCMs and many USG requirements for MCMs remain unmet. Ensuring the rapid development, licensure, and cost-effective production of MCMs especially biologics-based vaccines and therapeutics, is crucial to building a balanced portfolio of MCMs at the Department of Defense (DoD) and the Department of Health and Human Services (HHS) to protect national security and public health. Consequently, the Defense Advanced Research Projects Agency (DARPA) entered into a cooperative agreement with the University of Pittsburgh Medical Center (UPMC) to study the best means for creating and sustaining this critical capability. At the request of DoD and in coordination with HHS, the UPMC study examined the scientific advantages, technical feasibility, and economic savings related to building a centralized capability for advanced development and manufacture of MCMs to support the approximately 80 biodefense innovators (biotechnology companies, academia, and research & development [R&D] labs) currently funded by DoD and HHS. To this end, the study first determined current USG demand for biologics manufacturing and identified the collective strengths and weaknesses of the current MCM development and acquisition model as articulated in interviews with multiple interagency and industry experts. The study then examined ways in which to leverage advances in

Final rept.

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Engineering Institute (SEI) strategy and one-year implementation plan for calendar year (CY) 1996, together with the SEI five-year program plan. It is submitted in response to the Contract Data Requirements List item AOOI. Volume I (this volume) describes the five-year strategic plan, and Volume II describes the one-year tactical plan. This document is, in essence, a proposal. It describes the strategic directions and offers detailed options for the coming year. Until the proposed options are selected and budget allocations are approved by the sponsor, the SEI cannot commit to specific work or supporting schedules. In Chapter 1 of Volume I, we set the strategic context by discussing the SEI charter, mission, vision, strategy, orientation, and customers. The SEI mission is to provide leadership in advancing the state of the practice of software engineering to improve the quality of systems that depend on software. In Chapter 2, we describe the factors that determine SEI plans and set the context for their implementation in support of the SEI mission and strategy. The SEI strategy is to improve software engineering practice by maturing the skills of the software engineering practitioners who develop and maintain software, the managers who organize and lead these activities, and the infrastructure that supports these software professionals (Maturing the Profession). Our approach to improving the skills of these software engineering professionals is to mature the organizational and managerial processes through which software is acquired, developed, and maintained (Maturing the Process) and to mature the technology used to develop and maintain software (Maturing the

Final rept.

CMU/SEI-95-
366 SR-027

ingredient in solid propellant for most large rocket motors. High-pressure water washout is the currently accepted process of AP removal for component and ingredient recovery in remanufacture or demilitarization programs. In addition to manufacturing and testing activities, the AP recovery process generates significant quantities of wastewaters that contain various concentrations of perchlorate, salts, corrosion inhibitors, metals, and other propellant ingredients. These waste streams must be treated as a hazardous waste at a cost in excess of \$1.00 per gallon. The Minuteman III propulsion remanufacture program will remove over 35 million pounds of propellant from 1200 first and second stage motors in order to recover and reuse the cases. Increased regulatory constraints have curtailed the ability of the Air Force to dispose of rocket propellant by open-burning, open-detonation (OB/OD), or static firing. All of the major DoD propulsion contractors currently have either an AP disposal problem or a groundwater contamination problem that could delay, add unnecessary costs to, or otherwise jeopardize major production programs. In the early 1990s, the Air Force Research Laboratory (AFRL) developed an anaerobic biodegradation process to treat aqueous perchlorate waste streams. Following successful laboratory work, this Environmental Security Technology Certification Program (ESTCP) project demonstrated the operation of a prototype biodegradation system in 1997, first at Tyndall Air Force Base (AFB), and later at the Thiokol Corporation (Cordent Technologies) production facility near Brigham City, Utah. The

Cost and performance rept.

48 null

Human Effectiveness Directorate: Networked-Enabled Image Generators in a Distributed Interactive Simulation and High Level Architecture Environment. Information Directorate: Methods for Detecting Tampering in Digital Images and Optical Redundant Array of Inexpensive Drives. Materials and Manufacturing: Waterjet Technology Used in Green Munitions Program. Air Force Office of Scientific Research: Dip-Pen Nanolithography, Perfect" Mirror Design Technology

Final rept.

AFRL-WS-WP-54 TR-2000-9001

When you look through the lens of a kaleidoscope, the mirrors, colors, and angles collide in reveal hundreds of new images- shedding new light on the way we see the world. Just like the kaleidoscope, the sponsored research program at the United States Air Force Academy (USAFA) reveals new experiences and scientific discoveries with each of its facets mirroring the diversity, strengths, innovation. and commitment of the cadets who call USAFA home. This ever evolving arena offers cadets a chance to develop depth and dimension as future officers and leaders of character.

Technical
Report

34 null

This handbook has been put together to help you, the Laboratory Project Manager, do your job. You will manage significant amounts of research and development funds. Moreover, the results of the research will enable the Air Force to achieve its environmental objectives. An understanding of the environmental research and development process, from planning through technology transfer, will ensure successful accomplishment of your duties as a Project Manager. The Armstrong Laboratory, Environics Directorate, executes its mission by conducting environmental research and development and by providing guidance and assistance to the Air Staff, Major Commands and bases in environmental quality areas that affect Air Force weapon systems and industrial complexes. These areas include site remediation, environmental compliance and pollution prevention. To accomplish our mission, research and development must be planned based on customer needs, contracted effectively, and then executed in a timely manner. Technologies must then be transitioned for implementation.

Handbook

AL/EQ-HBK-
173 61-2

This study assesses whether the capabilities of the US defense industrial base are being negatively affected by export control policy and its implementation. In particular, it assesses whether export controls as currently conceived and implemented result in economic impacts detrimental to US defense industrial base, particularly on suppliers of dual use technologies, without a concomitant benefit to US national security. This report presents analysis of whether and to what extent the US defense industrial base has been negatively affected by export control policy and its implementation in four major areas: satellite manufacturing, semiconductors, machine tools and advanced materials.

Final rept.

IDA-D-
3363,IDA/HQ-
420 07-000388

The NRL Fact Book is prepared every two years as a reference source for information about the Naval Research Laboratory (NRL). To provide additional information to the reader, a point of contact is listed for each activity.

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136 null

The Institute for Manufacturing and Sustainment Technologies (iMAST) is a Department of the Navy Manufacturing Technology (ManTech) Center of Excellence located at The Pennsylvania State University's Applied Research Laboratory in State College, Pennsylvania. Formally established in 1995, the institute is comprised of seven technical thrust areas: Mechanical Drive Transmission Technologies * Materials Processing Technologies * Laser Processing Technologies * Advanced Composites Technologies * Manufacturing Systems * Complex Systems Monitoring * Repair Technology. iMAST provides a focal point for the development and transfer of new manufacturing processes and equipment in a cooperative environment with industry, academia, other Navy acquisition, and in-service use. The Institute leverages the resources of The Pennsylvania State University to develop technology and business practices that enhance the industrial sector's ability to address advanced weapon systems issues and challenges for the Department of Defense. Sponsored under Navy contract N00039-97-D-0042, iMAST provides manufacturing technology support to the systems command of the U.S. Navy and Marine Corps.

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49 null

The Phillips Laboratory (PL) develops and transitions war-fighting technologies in three primary areas: space and missile systems, geophysics, and advanced weapons. This Technology Area Plan (TAP) addresses the third of these three responsibilities, Advanced Weapons. This Technology Area encompasses the development, demonstration, and transition of advanced weapons; the determination of the susceptibility of USAF systems to similar foreign threats; and the development of protection technology to enhance the survivability of USAF systems. On-going and planned R&D will lead to advanced weapon systems using high energy lasers, high power microwaves, high energy plasmas, and related capabilities such as high resolution optical imaging. Efforts in survivability assessment and protection technology involve the development of both hardening technology and the criteria for protecting USAF systems against directed energy weapons, space debris, and natural and enhanced space radiation.

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31 null

FY 1993 Strategic Environmental Research and Development Program (SERDP) efforts continue to emphasize assessing the state of global atmospheric and ocean environments; the effectiveness of remediation technologies to address the Departments of Defense (DoD) and Energy (DOE) environmental obligations; approaches to minimize, treat, and dispose of hazardous waste; methods for assessing hazards in existing and restored sites; and alternative and clean energy options for use by DoD facilities and operations. BKA

Final rept.

534 null

the FY 2004 research and development (R&D) activities and FY 2005 plans of the multiagency Networking and Information Technology Research and Development (NITRD) Program. A collaborative effort of many Federal agencies (listed on pages 2-3), the NITRD Program is the Nation's principal source of long-term, fundamental information technology (IT) R&D, including advanced technologies in high-end computing systems and software, high-speed networking, software assurance and reliability, human-computer interaction, and information management, as well as research in the socioeconomic and workforce development implications of these new technologies. Each year, the NITRD Supplement to the President's Budget, also known as the Blue Book, seeks to illuminate the breadth of the NITRD portfolio and the impact of NITRD research advances on U.S. leadership in national defense and national security, cutting-edge science and technology, and economic prosperity, and on improving the quality of life for all Americans. This year's Blue Book highlights the technical domains, called Program Component Areas (PCAs), in which the NITRD agencies conduct IT research and collaborate to achieve common goals. The report, based on information provided by the agencies, is structured to serve as a detailed guide to the program, including both collaborative and agency-by-agency activities in FY 2004 and plans for FY 2005. The document begins with an overview of the NITRD Program, followed by sections on each NITRD PCA. The NITRD budget request for FY 2005, by agency and by PCA, appears on page 83, along with FY 2004 estimates.

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114 null

Simulation and Modeling for Acquisition, Requirements and Training (SMART) is a major initiative that is expected to substantially improve the development, fielding, and sustainment of Army materiel systems.

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DA-PB-70-01-64 3

The purpose of this project was to expand and enhance IDA's capabilities to estimate the future acquisition costs and schedules of space systems. This study accumulated information on launch systems, manned space systems, and interplanetary systems from NASA. Cost and schedule information was collected on representative programs, estimating methods, and supporting databases. The results of the effort include this document, which summarizes costs and schedules of representative space systems along with cost-estimating methods currently being applied, and also a library of over 500 documents that describe technical, schedule, and cost characteristics of U.S. space activities during the past 40 years. Preliminary findings of this study have been applied to estimate the costs of manned access to space.

..... , organizations and a cooperative Research and Development Agreement (CRADA) with the U.S. Research Development and Engineering Command, Army Research Laboratory (RDECOM-ARL) HyPerComp has significantly advanced the state of the art of time-domain, and broad band electromagnetic simulations. The TEMPUS (Time-Domain ElectroMagnetic Parallel Unstructured Simulator) environment is a complete self contained code suite that includes computer aided design (CAD) geometry creation and repair unstructured gridding for full-scale targets with general materials scalable parallel code architecture higher-order accurate discontinuous Galerkin solvers for Maxwell's equations and post processing utilities for solution visualization and extraction of final results like bistatic and monostatic radar cross section (RCS) synthetic aperture radar (SAR) images and high-range-resolution (HRR) profiles. The high-performance TEMPUS environment is well suited for modeling a variety of targets and electromagnetic problems of interest to the U.S. Army such as: 1) high-speed projectiles with subtle surface discontinuities ridges and/or fins 2) ground-based targets such as tanks and scud missile launchers and 3) foliage penetration and ground interaction for target under trees (TUT). Some of the physics-based phenomenological features that govern the electromagnetic response of general targets are: a) specular reflection b) creeping waves c) traveling waves d) slow moving surface waves e) edge diffraction f) singular currents at surface discontinuities g) resonating gaps and cavities and h) general material response.

Final rept. Apr
1991-Nov 1992

IDA-D-
1182,IDA/HQ-
181 92-41994

Conference
paper

7 null

Clinical data show that there is a strong correlation between the cosmetic outcome of women with early stage breast cancers treated with MSB applicator and the spacing between the MammoSite balloon surface and the skin. Many women are not able to take advantage of MSB because of inadequate balloon-to-skin distances. The implementation of a thin customizable shielding layer to the MammoSite procedure will allow dynamic control over the skin dose overlying the MammoSite balloon. Dose distribution may be monitored using a combination of methods that includes usage of a gamma camera detector system and scintillating fiber technology. Jefferson Labs upgraded gamma camera system for BSGI may be used for imaging and dosimetric studies during IB. The objective of this project is to develop innovative techniques and advanced technologies surround the IB methodology to facilitate more women taking advantage of APBI and therefore also of BCT to reduce breast cancer recurrence and increase survival expectancy. HU faculty and students will be integrally involved in research to advance breast cancer treatment and improve patient outcomes collaborating with a national lab and a medical school gaining hands-on experience in moving technology from bench to bedside while building capabilities at HU to successfully compete for and conduct breast cancer research.

Technical
Report,02 Mar
2009,01 Mar
2015

of the U.S. government and the Department of Defense (DoD) for advancing national security objectives vis- -vis allies and partner countries, including building critical relationships, securing peacetime and contingency access, and building partner capacity (BPC), the focus of this report. One of the key challenges for policymakers and combatant commands (CCMDs) is gaining a more complete understanding of the real value of BPC activities. Assessments of prior and ongoing BPC activities, in particular, have become increasingly important given the current fiscal climate and budgetary limitations and the need for decisionmakers to know precisely where to continue, cut, or change the allocation of security cooperation resources, and why. Moreover, the strategic rebalance to the Asia-Pacific region contained in the 2012 strategic guidance underlines the need to identify areas of greatest BPC opportunity in the region in ways that best serve U.S. interests,¹ and this requires an assessment of BPC utility for particular Asian partners. This is easier said than done. Assessing the value of what are essentially qualitative activities, and where the correlation among activities is not always apparent, is difficult. Data limitations, for example, severely hinder assessments. And it is not a straightforward endeavor to link BPC-related upgrades for indigenous forces to a reduced likelihood that U.S. combat forces would have to intervene in a conflict, a key goal of building those indigenous forces. Further, the CCMDs do not always know the results of their BPC activities in detail. As a longterm endeavor, results of BPC efforts often emerge over a relatively long period of time.

Research rept.

231 null

Numerous and complex regulations govern scientific and technical information (STI). To help you understand these regulations and how they impact your work, the Office of Naval Technology had this handbook prepared. STI regulations-both the Navy's and DoD's-have been explained in the context of how STI is managed within the Department of the Navy. The information in this handbook is based on the concept that scientific and technical information is part of the entire RDT and E process. You, as a Navy scientist or engineer, are involved with STI from the conceptual phase of your project until its transfer as an operational system. The Navy operates its scientific and technical information program (STIP) to: (1) Assist Navy scientists and engineers in their work; (2) Ensure that scientific and technical information provides the maximum contribution to advancing science and engineering; (3) Expeditiously, effectively, and efficiently conduct and manage Navy research, engineering, and studies; (4) Eliminate unnecessary duplication of resources and efforts; and (5) Encourage and expedite the exchange and use of STI.

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290 null

This instruction provides the guidance and procedures that personnel must use to plan, develop, use, maintain, or support Air Force software to effectively and efficiently complete their assigned missions. It applies to Air Force-procured COTS software and software developed for unique Air Force purposes (other than software internal to a weapon system; see AFPD 63-1). Maintain and dispose of records created as a result of the processes described in this instruction in accordance with AFMAN 37-139, Records Disposition Schedule (will convert to AFI 33-322 Volume 4 AFI 33-322V4).

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16 AFI33-114

All U.S. Naval Observatory (USNO) steering situations involve compromises to minimize the degradation of short-term stability of a steered clock while gaining maximal benefits from the long-term stability of the reference. In the case of steering UTC(USNO) to UTC, extra complications arise due to the 30-day data interval and the 15-day delay associated with the transfer of new information. A technique that minimizes the amount of control required to steer the USNO mean to UTC will be presented. Different strategies designed for optimal steering of UTC(USNO) and a backup master clock system located at the USNO will be described. Some of these strategies involve steering a maser to an intermediate mean that is steered to an extrapolation of UTC. Examples of optimal steering on real data will be reported.

Conference
paper

9 null

The purpose of this effort was to further develop, apply, and validate the Rome Laboratory Software Certification Framework for designating various levels of confidence in the quality of reusable software. This effort fine-tuned the Framework's ability to distinguish between reusable assets of differing quality. The effort resulted in a two volume final technical report. Volume I - the Project summary, describes the complete contractual effort. The report discusses how the quality assessment methodology, techniques, and metrics embodied within the Rome Laboratory Software Quality Framework (SQF) could be applicable to the certification of reusable assets. The report discusses potential upgrades and re-engineering the Rome Laboratory Software Quality Framework (SQF). In addition, it also overviews the application of the Certification Framework to a small set of software components (i.e., source code). Volume II - Certification Field Trial, fully details the procedures, collection forms, results, and lessons learned from the application of the certification process to the software components.

Final rept. Apr
94-Feb 97,

RL*-TR-97-92-
263 VOL-1

High-speed electronic circuits are needed for Army systems in communications, wireless sensors, imaging, and other systems. Gallium nitride (GaN) technology offers the highest power densities for radio frequency (RF) and wireless integrated circuits. Several GaN broadband high power efficient power amplifier designs for high frequency operation, such as satellite communications (SATCOM), were recently designed and submitted for fabrication using a proprietary 0.15-micrometer GaN process under development at TriQuint Semiconductor. These monolithic microwave integrated circuits (MMICs) are being fabricated by TriQuint as part of a recent cooperative research and development agreement (CRADA) with the U.S. Army Research Laboratory (ARL).

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18 ARL-TN-0496

The purpose of this study is to examine challenges and opportunities facing industry and the Department of Defense (DOD) in utilizing additive manufacturing (AM). This research focuses on the challenges and opportunities identified in a June 2015 Government Accountability Office report pertaining to supply chain issues and to advance research methods used to obtain intellectual property and patent rights. Specifically, this research examines supply chain and intellectual property rights methods used in government and private industry to maximize AM capabilities for the benefit of the DOD. Research was conducted by analyzing current technology and processes used in both cradle-to grave logistics of AM material and private sector approaches to obtaining intellectual property rights for continuous internal use. These methods are analyzed for compatibility with government operations. This report is the final result of our research. This report determined potential solutions the DOD can adopt to effectively resolve challenges faced in producing and obtaining intellectual property rights for DOD required material.

Technical Report

125 null

This report is a summary of the Innovative Technology/Technology Transfer Program projects managed by the Environmental Technology Division of the U.S. Army Environmental Center. The report describes the project, participants, results, and requirements of various ongoing innovative technology projects. Points of contact for additional information are given.

Annual rept. FY 96.

SFIM-AEC-ET-176 CR-97013

The DoD In-House RDT&E Activities Report and database project is the DDR&E's central source of information on laboratory status, and serves four essential purposes: (1) since inception, it has been the only compilation of statistics organized by location on DoD RDT&E Activities; (2) it provides the basis for prompt responses to many general queries about DoD RDT&E Activities, without recourse to special surveys, etc.; (3) it provides a historical database which can be utilized for tracing consolidations and organizational changes, and for special analyses and trend studies; and (4) it provides insight into the technical and organizational environment of the DoD Laboratories and the financial, manpower, and facility investments made in them.

Final rept. 1
Oct 98-30 Sep
99

449 null

This paper is a survey of various issues regarding the efficacy and applicability of dual-use concepts to promote greater national security, both military and economic. It responds to five questions posed to the study team regarding the history, recent experience, and possible future of dual-use strategies to support and further the missions of the Department of Defense: (1) What are the potential benefits from dual-use for the military? (2) What are the motivation and rationales for commercial industry to pursue dual-use technologies? (3) What are the possible processes for choosing technology investment focus areas for dual-use projects, and are there associated advantages and disadvantages for each approach? (4) What are optimal strategies for integrating the four military services (Army, Navy, Air Force, Marines) into a single dual-use program under the Office of the Secretary of Defense (OSD)? (5) What are optimal strategies for conducting an OSD-level dual-use program? For the purposes of this paper we chose to consider these questions in two categories. Questions 1 and 2 clearly relate to the underlying bases for pursuing dual-use, including history, institutional motivations, and technical and political considerations; Questions 3, 4, and 5 are programmatic in nature.

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245 IDA-P-3176

This report contains information concerning the Army's research, development and acquisition. The following topics are included: (1) first digitized division implementation, (2) Army battle command system, (3) joint tactical radio system program, (4) Army enterprise 21, (5) taking digitization to our allies, (6) simulation based acquisition, (7) digitized cooperation with Canada, (8) Army materiel release process, (9) foreign language training, (10) MEMS, (11) battlefield awareness and data dissemination, (12) ground vehicle mobility, and (13) weapon effects.

null

DA-PB-70-98-
64 5

This report obtained information on the role of small business in the federal government's technology transfer and research and development (R&D) programs. In particular, you asked whether (1) large federal laboratories have developed and implemented plans to transfer technology to small businesses, as required by the Federal Technology Transfer Act of 1986 and Executive Order 12591, Facilitating Access to Science and Technology; (2) two large R&D efforts funded in part by the federal government--Sematech and the National Science Foundation's Engineering Research Centers--are detrimental to small business' potential share of federal R&D funding by excluding them from participating in these efforts; and (3) the more rapid growth of federal R&D funding for defense/space, as opposed to civilian, research since 1982 has been detrimental to small business.

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GAO/RCED-88-
22 90BR

Managing land and water resources has become an increasingly difficult and challenging task for the Department of Defense (DoD). Although current and emerging technologies can help managers address the demands of environmental management, these technologies have limited linkage with modeling and decision support tools and they lack the full interoperability needed to support DoD land management decisionmakers. This report describes a system that will provide a framework to bring together relevant science and technology, maximize synergism between technology initiatives, and improve the timeliness and effectiveness of technology delivery to managers. The system is the Land Management System (LMS). LMS is an initiative of the U.S. Army Corps of Engineers and the Engineer Research and Development Center to design, develop, support, and apply an integrated capability for modeling and decision support technologies relevant to the management of DoD lands, seas, and airspace.

Final rept.,

CERL-TR-
56 99/86

Program Manager is intended to be a vehicle for the transmission of information on policies, trends, events and current thinking affecting program management and defense systems acquisition.

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African American women than it is among caucasian women in the United States, but the reasons for these difference are not known. To devise effective methods for preventing breast cancer, we must understand which factors alone or in combination raise the risk of triggering a tumor, and which factors protect against the disease. Specific goals for the proposed research are to: (1) identify and validate the risk factors that can be modified to reduce breast cancer risk, and (2) achieve a better understanding of how various genetic and environmental factors interact to affect the risk of breast cancer. To reach these goals, we need a multidisciplinary training program and greater collaboration among investigators from diverse disciplines and institutions. The goal of the current proposal is to obtain the necessary training needed to create an atmosphere at the Cancer Center at Howard University as a leading breast cancer training institute it is also critical that multidisciplinary training take place so that individuals can participate effectively in multi-investigator collaborations that bring basic research discoveries to the bedside. Breast cancer research is increasingly becoming a multidisciplinary endeavor that requires a strong training program and better communication among investigators. Appropriate animal models and models of human mammary cell and organ culture are urgently needed to accelerate progress in breast cancer research. This realm of research will require resources for necessary training, the development of animal models, technology development and access, and collaboration between

Annual rept.

139 null

The cost and limited location of air combat maneuvering instrumentation (ACMI) ranges make aerial combat training with accurate postflight reconstruction tools an expensive and infrequent opportunity. The Squadron Air Combat Training System (SACTS) was designed to capitalize on portable, lightweight Global Positioning System (GPS) equipment using the commercially available coarse acquisition code to provide fighter training squadrons with a low cost, limited ACMI capability. The device was carried into the cockpit where a time history of aircraft position was recorded and, after postprocessing, the flight was viewed in a three-dimensional playback tool running on a laptop computer. The test program was designed to evaluate the suitability of the SACTS for use in a USAF fighter squadron training environment. Eighteen sorties totaling 20.8 hours were flown from 4 April to 1 May 1996 at the Air Force Flight Test Center, Edwards AFB, California. Testing was conducted by the Test Pilot School Class 95B.

Final rept. 9 Jan-
1 May 1996

AFFTC-TR-96-
107 23

This document reports status and achievements for the fiscal year (FY) 2001 Navy In-House Laboratory Independent Research (ILIR) program at Space and Naval Warfare Systems Center, San Diego (SSC San Diego). ILIR enables SSC San Diego to perform innovative, promising research consistent with its mission and with the policies of the Chief of Naval Research and the Department of the Navy. Three team projects were funded in FY 2001: Knowledge Mining for Command and Control Systems; Chaos Control and Nonlinear Dynamics in Antenna Arrays; and Robust Waveform Design for Tactical Communication Channels. In terms of productivity statistics, the FY 2001 ILIR program was highly successful, with a total of 85 papers/proceedings/books/dissertations published or submitted and 57 presentations made by SSC San Diego ILIR investigators. There were also 4 ILIR-related patents, 13 patent applications, and 24 patent disclosures produced during FY 01. The Project Summaries contained in this Annual Report cover the following research topics: Command and Control; Communications; Intelligence, Surveillance, and Reconnaissance; Navigation and Applied Sciences.

Annual rept.

SSC/SD-TR-
133 3125

We devised a set of sensors for the vital signs of troops with each sensor providing radio transmission to a personal receiver unit. The project is part of an overall program with the sensor development at the University of Tennessee and other work done under separate contract at Oak Ridge National Laboratory. Device prototypes were constructed as application-specific integrated circuits (ASICs), each containing a radio transmitter of 1-2 meter range. These are termed telesensors". A telesensor chip for body temperature was fabricated and demonstrated to transmit temperature with an accuracy of 0.1 deg C using spread-spectrum radio transmission. Wireless pulse-rate signals were also demonstrated. The body-temperature telesensor is sufficiently small (3 mm X 3 mm) to fit within the ear canal. The chip developed needed external components which could only be eliminated with further work. Benchtop systems for blood-pressure and respiration were demonstrated with wireless radio transmission. The receiver unit is composed of discrete components and interfaced to a laptop computer. A receiver with long-range transmission was unfinished."

Final rept. 22
Sep 95-14 MAY
99

77 null

This report contains project summaries of the research undertaken at the Naval Postgraduate School. A list of recent publications is also included which consists of conference presentations, books, contributions to books, published journal papers, and technical reports. The research was conducted in the areas of National Security Affairs, Computer Science, Defense Analysis, Information Science, Operations Research, Aeronautics and Astronautics, Electrical and Computer Engineering, Mathematics, Mechanical Engineering, Meteorology, Oceanography, Physics and Business and Public Policy . This also includes research by the Space Systems Academic Group, the Cebrowski Institute, (formerly the Institute for Information Innovation and Superiority, I2S1), the Wayne Meyer Institute (formerly the Institute for Defense Systems Engineering and Analysis, IDSEA), The Modeling, Virtual Environments, and Simulation (MOVES) Institute, School of Aviation Safety and Center for Interdisciplinary Remotely Piloted Aircraft Studies (CIRPAS).

Summary rept.
1 Oct 2002-30
Sep 2003

NPS-09-05-
586 003

The Hypoxia Monitoring, Alert and Mitigation System (HAMS) program is progressing as expected. The program consists of two baseline tasks and three optional task. Work has been started on Task 1. Task 2 will begin in May. Optional Tasks 3, 4 and 5 have not been exercised. Although performance of the initial arm mounted prototype was below expectations on initial testing, a mitigation strategy has been initiated that includes a multi-site approach. This approach has the potential to add redundancy to the sensor network that will further enhance the system. We recommend that the program continue as scheduled assuming the remaining funding is obligated to the contract.

Quarterly rept.
1 Jan-31 Mar
2015

48 CDRL-A001-2

Research, Development and Engineering Command (RDECOM) is the Army's corporate, or central, laboratory. The mission of ARL is to Provide the underpinning science, technology, and analysis that enable full-spectrum operations. Within ARL we have teams working in partnership with the RDECs, Rapid Equip Force (REF), Joint Improvised Explosive Device Defeat Organization (JIEDDO), and others on the following tasks: current operational technical challenges facing Soldiers in Iraq (OND Operation New Dawn) and Afghanistan (OEF Operation Enduring Freedom), maturing and transitioning technologies in the two- to five-year timeframe for existing systems, and generating scientific discoveries that will provide the foundation for Soldier capabilities 15-20 years in the future. This publication briefly describes who we are and highlights some of our significant scientific and technical achievements of the last year. The size of this organization seven distinct laboratories and offices with over two thousand military and civilian members and the scope of research and analysis - limits us to select only a few items to present as a representative sample. We organize our research and analysis efforts within nine Major Laboratory Programs (MLPs); Extramural Basic Research, Networks, Human Dimension, Lethality, Protection, Mobility, Power and Energy, Sensors, and Survivability/Lethality Analysis. With the addition of the Simulation and Training Technology Center, the list of MLPs will expand to include an appropriately named MLP: Simulation and Training Technology. This review begins with an introduction that includes an overview of our organization, personnel, infrastructure, and

Annual rept.

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This paper discusses a research project that employs Gaming Technologies to improve the ability of military planners to more effectively locate and engage Time-Sensitive Targets (TST's). The battlespace is modeled and simulated through the use of Artificial Intelligence, Physics Modeling and Visualization capabilities employed in modern commercial computer games. This not only supports the ability to understand the spatial relationships of weapons, sensors, targets, and threats within the context of a mission but, also provides the ability to predict changes in these relationships through the mission's timeline. The rationale behind the selection of the specific technologies, as well as progress being made to develop a prototype workstation for future incorporation into the Tactical Tomahawk, is also detailed.

Conference paper

39 null

This report documents the results of one FIS technology transfer initiative: the demonstration of nondestructive pavement evaluation technology (NDT) to cooperating Federal and non-federal partners. The demonstrations utilized Falling Weight Deflectometer (FWD) technology, a commercially available nondestructive procedure for determining the structural adequacy of a pavement system. Data obtained from FWD tests were combined with pavement material properties and estimated future traffic volumes to design rehabilitation strategies for the existing streets and roadways of three communities. The specific objectives of the study were to: (1) Evaluate and develop improvements to the initial guide specification used for contracting FWD technology; (2) Evaluate the three analytical methods used by each contractor to develop the pavement repair strategies; (3) Document and explain the differences in the results of the pavement evaluation methods; (4) Document the benefits of FWD technology over other conventional techniques; and (5) Transfer nondestructive testing of pavements technology to non-federal partners, and demonstrate how analysis of the test results can be used to develop rehabilitation strategies for roadway pavements. (MM)

Final rept.,

115 IWR-94-FIS-11

The experiment reported in this article addresses manufacturer claims of fluorocarbon leader material strength versus experimental tests of leaders strength. Breaking strength of fishing line is the most common specification when marketing fishing line. In this study, eight leaders rated near 15 ponds by their manufacturers were tested. Each leader was tested with a knot in the line and without a knot in the line. The strongest leader tested without a knot was Cabela's Seaguar fluorocarbon and the weakest leader tested without a knot was Cabela's Premier leader. The highest strength of leaders with a knot was the Ande Monofilament Fluorocarbon and the lowest breaking strength of leaders with a knot was the Seaguar Grand Max Fluorocarbon. Few published studies actually test the breaking strength of a leader to determine the accuracy of manufacturers' claims. Tensile strengths are also reported.

Technical Report

6 null

Technology transfer has become an increasingly important mission of federal laboratories over the past decade, with results that benefit the government, private companies, and the nation's economy. Cooperative Research and Development Agreements (CRDAs) are the most used mechanism to perform technology transfer from our nation's federal laboratories to the private sector. The main objective of this research is to determine important CRDA elements that are associated with higher benefits to the government. Recommendations are provided for technology transfer managers to improve CRDAs by identifying the CRDA elements that are associated with higher or lower benefits to the government. Key findings include that CRDAs, in general, provide many types of important benefits to the government. Some of the CRDA elements that are associated with significantly higher government benefits include quantified manpower requirements, the commercial partner's ability to commercialize CRDA technology, market information for the CRDA technology, quantified copyright royalty rates, and quantified sales royalty rates. CRDA elements associated with significantly lower government benefits include detailed facilities requirements and the CRDA technology's stage of development.

Master's thesis,

AFIT/GSM/LA
169 S/97S-1

A North Atlantic Treaty Organization (NATO) Advanced Studies Institute (ASI) on Defense Conversion Strategies was held at the Atholl Palace Hotel, Pitlochry, Perthshire, Scotland; from July 2 through July 14, 1995. The specific aim of the ASI was to identify and study the elements of successful defense conversion strategies through a systematic analysis of the factors influencing them and the common features of specific national efforts. It was to be a combination of theory and practical experience which would explore specific international strategies. The recommendations of the ASI address current approaches to defense conversion in the United States and other NATO countries, the conversion process in Russia and other former Soviet Union republics, and the establishment of a special international committee to deal with the problems of conversion.

Final rept. 1 Jul
95-30 Jun 96,

ARO-34932.1-
615 CH

This report contains summaries of research projects in the Department of Systems Management. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts.

Summary rept.
1 Jan-31 Dec
98

NPS-09-99-
151 015

The conference on the Risk Assessment Paradigm After Ten Years covered a large number of topics of interest to toxicologists, risk assessors, and environmental managers. Leading scientists presented a range of topics in six sessions. These included introductions to the past, present, and future of the basics of risk assessment and a case study on new approaches to the risk assessment of a Halon replacement (HCFC-123). Possibilities for advancing the science of risk assessment were considered, including the use of physiologically based pharmacokinetic modeling for noncancer risk assessment dermal exposure, and lactational transfer. Other mathematical approaches were considered for cancer and noncancer risk assessment. Mechanisms of biological action responsible for injury were considered for their implications. Finally, critical issues in risk communication were discussed. A poster session presenting research in risk assessment and toxicology supplemented the platform presentations. This conference was supported by the Air Force, Army, Navy, and Environmental Protection Agency and was attended by representatives of government, industry, and academia.

Final rept. 5-8
Apr 93,

4300-94-
04,AL/OE-TR-
1994-
0073,NMRI-
94-
113,WRAIR-
453 TR-1994-0005

The Office of Technology Transition (OTT) was established by the Secretary of Defense in response to 10 U.S.C. 2515 to serve as a focal point for the domestic technology transfer activities of the Department of Defense. This report required by Section 2515 (See Appendix A) summarizes the accomplishments and highlights key technology transfer efforts throughout the Department for FY 2002 and FY 2003. This tenth report discusses our major successes in transferring technology using methods discussed in Section B of this report. Appendix B provides the number of reported active technology transfer mechanisms by laboratory centers for FY 1998 through FY 2003. Appendix C displays specific data elements showing the trends in Cooperative Research and Development Agreements (CRADA) and Patent License Agreements (PLA) and the increase in royalty income as a result of licensing DoD developed technologies. Appendix D highlights some of the technology transfers such as the "Vein Viewer" which is a system and method for enhancing visualization of veins, arteries and other subcutaneous natural or foreign structure in the body. Appendices E and F provide the details of the Federal Laboratory Consortium (FLC) awards to DoD activities for FY 2002 and FY 2003 respectively."

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85 null

threat that dominated every aspect of military force planning and strategic thinking. During this era we relied upon technologically superior systems to offset the Soviet Bloc's numerically larger forces. Today, this single overarching threat has been replaced by new dangers, such as the proliferation of weapons of mass destruction, regional conflict, and ethnic violence. Our strategy for managing these post-Cold War dangers to our security rests on three basic lines of defense. The first line of defense is to prevent threats from emerging; the second is to deter threats that do emerge; and the third, if prevention and deterrence fail, is to defeat the threat to our security by using military force. Executing this strategy requires us to maintain strong, ready military forces equipped with a well-integrated, flexible mix of the most advanced technologies. With today's smaller force structure, readiness and modernization become even more critical to our overall military capabilities. However, we do not seek mere technological superiority. Instead, we seek a force that is capable of dominating any potential foe across the full spectrum of military operations -- dominance allows us to win quickly, decisively and with minimal casualties. We saw this kind of dominance in action during Desert Storm, using stealth, smart weapons and advanced sensors -- technologies developed primarily during the Cold War. In future conflicts, information technologies will play a critical role in achieving the dominance we seek. That presents several challenges. We must develop the communications, sensors and computing systems to capture, synthesize and distribute near-real time information to all levels

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48 null

This report responds to your request that we provide a summary of information on the evolution and progress of the Strategic Defense Initiative program and the current issues that the Congress faces in funding ballistic missile defense research and development. You asked that we trace the evolution of the program, the role of the Department of Defense oversight boards, the investments in major projects, and the progress relevant to systems proposed for theater missile defense and national missile defense. You also asked for information on technology spin-offs, suborbital and orbital launches to support testing, and nuclear power for space uses.

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GAO/NSIAD-
86 93-229

This report highlights 50 examples of BMDO-funded technologies that have been or are being commercialized in areas such as communications energy, manufacturing, and medicine.

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99 null

The Cooperative Research and Development Agreement (CRDA) document was signed to undertake development of a portable innovative contaminated sediment dredge. Three major problems are associated with dredging of contaminated sediments: (1) The contaminated sediment are mostly fine and highly compacted, and specialized devices are needed for cutting and loosening them before transporting, (2) the dredged fine sediments are vertically resuspended and dispersed easily within the entire water column and adversely affect the aquatic plants and water quality, and (3) the sediments have a very low rate of deposition, and they may be transported over great distances from the point of origin even under a very weak current. Laboratory tests were conducted at WES in which different mixtures of clays, sand and water were pumped through a pipe, and pressure in the pipe was measured. The effectiveness of a positive displacement pump for pumping sediments with a very low water content was established, and the extent of the addition of clays and water for improving the relative ease of pumping was determined. The dredge was then used in a field trial for removing bottom sediments from a lake at WES. The new dredge removes sediments at near in situ water content with the use of a clamshell bucket. The sediments are placed in a hopper and are pumped by a positive displacement pump to the required disposal site.

Final rept.

CPAR-CHL-97-
69 2

including ships, shoreside facilities, municipal outfalls, spills, and non point-source runoff. Sediments are typically considered a primary sink for these contaminants. Sediments in many bays, harbors and coastal waters used by DoD are contaminated with potentially harmful metal and organic compounds. The DoD is required by the Comprehensive Environmental Resource Conservation and Liability Act, as amended by the Superfund Amendment and Reauthorization Act of 1986 (CERCLA/SARA), to assess and if necessary remove and remediate these sites and discharges in order to protect the public health or welfare of the environment. To determine whether contaminants are moving into, out of, or remaining immobilized within the sediments, a determination of contaminant flux must be made. Variations in sediment chemical and physical properties make it impossible to rely on bulk sediment contaminant concentrations alone to predict contaminant flux, bioavailability, and therefore toxicity. Diagenetic reactions in surface sediments control contaminant pore water gradients, and the direction and magnitude of these gradients control the diffusive flux across the sediment-water interface. These fluxes can be calculated from measurements of contaminant pore water gradients and sediment physical properties. However, in some coastal areas pore water gradients are very steep and therefore difficult to measure. In addition, flux calculations based on pore water gradients only provide the diffusive component of a contaminant flux. An additional concern in coastal areas is that biological irrigation by infauna and wave or current induced flushing may provide a larger

Final rept. 386 null

This report of the SERDP Council provides a summary of SERDP's activities and most significant accomplishments during fiscal year 1996, its plans for fiscal year 1997, and new initiatives to be addressed in fiscal year 1998.

Annual rept. FY1996 328 null

The broad objective of the proposed study is to empirically evaluate the efficacy of a cognitive behavioral intervention, titled, Post Admission Cognitive Therapy (PACT), for military personnel psychiatrically hospitalized due to a suicide-related event with either a recent or a lifetime suicide attempt. The primary outcomes will be incidence of repeat suicide attempt(s) and number of days until a repeat suicide attempt. Secondary outcomes include psychiatric symptoms, repeat number of psychiatric hospitalization(s), hope for one's future, and acceptability of treatment. A multi-site, single-blind, randomized controlled trial will be the research design. A total of 218 individuals will be recruited from the inpatient psychiatric and traumatic brain injury (TBI) units at the Walter Reed National Military Medical Center and Fort Belvoir Community Hospital. Participants will be randomized into one of two conditions: (1) PACT + Enhanced Usual Care (EUC) or (2) EUC. The PACT+EUC condition will consist of six 60-90 minute individual cognitive behavioral therapy sessions administered over preferably three days during the inpatient stay and up to four telephone booster sessions. The EUC condition will consist of usual psychiatric care patients receive during their hospitalization, the assessment services provided by MA and/or PhD level clinicians, and case management services provided for one year by Bachelor's level research personnel. Follow-up assessments will be conducted at 1, 3, 6, and 12-month post discharge by blind PhD level clinicians.

Annual rept. 1
Feb 2011-31
Jan 2012

27 null

This publication, Military Strategies for Sustainment of Nutrition and Immune Function in the Field, is the latest in a series of reports based on workshops sponsored by the Committee on Military Nutrition Research (CMNR) of the Food and Nutrition Board (FNB), Institute of Medicine, National Academy of Sciences. Other workshops or symposia have included such topics as food components to enhance performance; nutritional needs in hot, cold, and high-altitude environments; body composition and physical performance; nutrition and physical performance; cognitive testing methodology; and fluid replacement and heat stress. These workshops form part of the response that the CMNR provides to the Commander, U.S. Army Medical Research and Materiel Command (USAMRMC), regarding issues brought to the committee through the Military Nutrition Division (currently the Military Nutrition and Biochemical Division) of the U.S. Army Research Institute of Environmental Medicine (USARIEM) at Natick, Massachusetts.

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705 null

The Institute for Manufacturing and Sustainment Technologies (iMAST) is a nonprofit Department of the Navy Manufacturing Technology (ManTech) Center of Excellence located at The Pennsylvania State University's Applied Research Laboratory in State College, Pennsylvania. Formally established in 1995, the institute is comprised of four technical thrust areas: Mechanical Drive Transmission Technologies * Materials Science Technologies * High Energy Processing Technologies * Repair Technology. iMAST provides a focal point for the development and transfer of new manufacturing processes and equipment in a cooperative environment with industry, academia, other Navy acquisition, and in-service use. The Institute leverages the resources of The Pennsylvania State University to develop technology and business practices that enhance the industrial sector's ability to address advanced weapon systems issues and challenges for the Department of Defense. Sponsored under Navy contract N00039-97-D-0042, iMAST provides manufacturing technology support to the systems command of the U.S. Navy and Marine Corps.

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39 null

Research for the Renewable Energy Testing Center is intended to provide validation of advanced processes that generate renewable energy and reduce energy usage compared to conventional processes. This report covers the work performed under Task #5 of contract W15QKN-05-D-0030. Specific areas covered includes the evaluation of three alternative energy technologies on the conversion of biomass to synthetic gas and liquid fuels. This includes a Red Lion gasifier, ACTI gasification and liquid fuel system, and Pacific Renewable Fuels diesel production system.

Final technical
rept.

FTR-1602-460
74 NA

This document summarizes the critical elements of the USAF STINFO program, covering the topics and materials in the STINFO Program Manager training course. The purpose of this document and the course is to impart an in- depth understanding of what the STINFO Program Management duties are and to give instruction in carrying out the STINFO function. The overall objective is to support the DoD Scientific and Technical Information (STI) Program, in order to increase the effectiveness of the scientific and technical efforts in the DoD community. Keywords: USAF, Management, STINFO Program management.

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USAF-STINFO
MANAGEMENT
T-
90/1,SAF/AQT-
199 SR-90-001

An Exclusive interview with LTG Paul J. Kern, Military Deputy to the Assistant Secretary of the Army (RDA) and Director of the Army Acquisition Corps.

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65 PB-70-98-1

This document presents the Software Engineering Institute (SEI) strategy and one-year implementation plan for calendar year (CY) 1995, together with the SEI five-year program plan. This document is, in essence, a proposal. It describes the strategic directions and offers detailed options for the coming year. Until the proposed options are selected and budget allocations are approved by the sponsor, the SEI cannot commit to specific work or supporting schedules.

Final rept.

CMU/SEI-94-
241 SR-19

NRaD and all our other federal laboratories believe that building strong partnerships with U.S. industry and transferring federally developed technologies and expertise to our private sector will strengthen the U.S. economy...assuring an ongoing competitive edge in the global marketplace. For further information about the many state-of-the-art technologies available at NRaD and the transferal mechanisms needed to acquire them. p. 14

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18 null

This manual provides guidance for the preparation of project-specific sampling and analysis plans (SAP) for the collection of environmental data. In addition, default sampling and analytical protocols are included which may be used verbatim or modified based upon project-specific data quality objectives (DQOs). The goal of this manual is to promote consistency in the generation and execution of sampling and analysis plans and thus to help generate chemical data of known quality for its intended purpose.

Engineer
manual

377 EM-200-1-3

On behalf of the HEPAP Composite Subpanel for the Assessment of the Status of Accelerator Physics and Technology, I am pleased to transmit our report. This subpanel has carried out a broad assessment of the status and promise of accelerator physics and technology with respect to all five DOE Office of Energy Research (OER) programs. The subpanel drew its members from the scientific communities supported by the OER programs and included a liaison from each OER advisory committee as a full member. In meetings over a period of eight months we addressed the charge, and in doing so, sought input from all OER program offices, the accelerator physics community, representatives of those scientific communities supported by the OER programs, DOE laboratories and universities that host major accelerator facilities, and other DOE offices and federal agencies. After extensive deliberations, the subpanel has concluded that the DOE and its predecessor agencies-primarily through their long-standing and sustained investments in accelerator science and technology development-have de facto held a national trust for the stewardship of accelerator science and accelerator-based technology development. This role has provided the foundation for essential capabilities needed both to fulfill the DOE mission and to address broader national interests.

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156 null

Research during the contract dealt with several areas related to the processing of advanced aerospace materials: fracture and cavitation, microstructure evolution, texture evolution, and constitutive equations. Materials studied were alpha 2, gamma, and near gamma TiAl's, an orthorhombic TiAl alloy, Ti-6Al-4V, 2024 Al, a nanophase Al alloy, and a tungsten heavy alloy. Tensile and uniaxial compression tests were used, as was the ring test for interface friction and heat transfer tests. In addition to conventional processes, emerging processes such as ECAE and friction stir welding were used and modeled. Finite element modeling was employed to predict states of stress, strain, strain rate, and temperature as well as material flow and loads. New models were developed for crack and cavitation prediction. Microstructure evolution was modeled using analytical methods, and a CA model was developed for heterogeneous static and dynamic recrystallization. AFRL resources were united with private industry, DoD contractors, and other Federal facilities using CTeC, MAI, and various CRADA tasks involving 13 DoD and DOE contractors. MPL technicians conducted 3072 processing operations and tests, and designed, fabricated or installed the following tooling or equipment; salt pot, ECAE tooling, rapid heat treat stand, 1000-ton load cell, DS unit, 55 kip and 200 kip MTS tooling, spin mold casting device, and mothballed the isothermal chamber.

Final rept. 23
Aug 1996-23
Jan 2001

AFRL-ML-WP-
152 TR-2001-4177

Why are beneficial software engineering practices not being used effectively in the development of software systems? This question has intrigued researchers in software engineering for many years. Billions of dollars per year are spent, and a large proportion wasted, on building and maintaining software systems that are either never completed or, if completed, are of poor quality. This state of software development has led to the introduction of innovative tools and techniques to support the software development process. Initial evidence from use of these tools and techniques shows significant improvements in development productivity and software quality. However, many of these potentially beneficial tools and techniques have not been widely adopted or diffused. This research seeks to examine the reason why this is so: What factors explain the successful diffusion of new software development techniques into practice? Special rept.,

CMU-SEI-98-
130 SR-013

This report contains project summaries of the research projects in the Department of Operations Research. A list of recent publications is also included, which consists of conference presentations and publications, books, contributions to books, published journal papers, and technical reports. Thesis abstracts of students advised by faculty in the Department are also included. The research program at the Naval Postgraduate School exists to support the graduate education of our students. It does so by providing military relevant thesis topics that address issues from the current needs of the Fleet and Joint Forces to the science and technology that is required to sustain the long-term superiority of the Navy/DoD. It keeps our faculty current on Navy/DoD issues, to maintain the content of the upper division courses at the cutting edge of their disciplines. At the same time, the students and faculty together provide a very unique capability within the DoD for addressing warfighting problems. Our officers must be able to think innovatively and have the knowledge and skills that will let them apply technologies that are being rapidly developed in both the commercial and military sectors. Their unique knowledge of the operational Navy, when combined with a challenging thesis project that requires them to apply their focused graduate education, is one of the most effective methods for both solving Fleet problems and instilling the life-long capability for applying basic principles to the creative solution of complex problems.

Summary rept.
1 Oct 1999-30
Sep 2000

NPS-09-02-
81 008

The Zero Discharge Organic Coatings (ZDOC) R&D project will substantially advance coatings technology through the development of high performance zero-discharge coating systems. Development efforts are proceeding on three coating technologies, powder paint, Ultraviolet (UV) curable paint and electro-coating (E-coat) paint. These three paint technologies offer the potential of high performance coatings with no volatile organic compound (VOC) emissions or hazardous waste generation. These three technologies and their associated application processes will be applicable to a wide variety of military equipment and structures, thereby eliminating volatile organic compound (VOC's) and toxic heavy metals from coatings and painting operations. The ZDOC team of Hughes Aircraft Company, Lehigh University, University of Arizona, and the Naval Air Warfare Center Aircraft Division Warminster offers a blend of experience, expertise, and capabilities in all aspects of organic coatings technology. This quarterly report reviews the team's technical activities and results during the period October 1994 - December 1994. jg

Quarterly
technical rept.
Oct-Dec 94,

54 ZDOC/9404

The RTO HFM-162 Rotary-Wing Brownout Mitigation Task Group was formed to examine the effects of Rotary-Wing Brownout (RWB) and whiteout on pilots during operations. Brownout is the condition developed by recirculating rotor downwash as a helicopter lands or takes off in an arid or a snowy (whiteout) environment. The dust, dirt, or snow that is developed by the downwash renders out-the-cockpit visibility severely degraded or non-existent. The resultant mishaps due to the Degraded Visual Environment (DVE) are a serious problem and partner nations report losses of aircraft and personnel. This study was undertaken to investigate the incidence and severity of the problem in partner nations, to examine and document current and planned technology developments, and to evaluate and document the brownout training procedures within NATO. To provide a true, multi-purpose helicopter sensor, the TG members envision laser radar technology integrated with a navigation forward looking infrared radar. Intuitive hovering and landing cockpit display symbology, such as that described in this report, must also be an integral part of an effective system for DVE landings.

Technical rept.

AC/323(HFM-
162)TP/400,R
TO-TR-HFM-
182 162

The Naval Surface Warfare Center Dahlgren Division (NSWCDD) collaborated with the technical staff at CMS Inc through a Cooperative Research and Development Agreement (CRADA) between the parties to complete an improved version of the Shoulder-Launched Multipurpose Assault Weapon (SMAW) launcher. The CRADA provided the necessary background cooperation to allow the parties to negotiate the patent license that was signed in March 1997. This document presents the process used to realize a return on the government's investment in the SMAW CRADA and licenses. This document provides a historical description of the events and provide 'lessons learned' for anyone seeking to follow a similar course of action.

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NSWCDD/MP-45 97/121

Department of Operations Research. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts. The research program at NPS consists of both reimbursable (sponsored) and institutionally funded research. The research varies from very fundamental to very applied, from unclassified to all levels of classification. Reimbursable (Sponsored) Program: This program includes those projects externally funded on the basis of proposals submitted to outside sponsors by the School's faculty. These finds allow the faculty to interact closely with RDT&E program managers and high-level policymakers throughout the Navy, DoD, and other government agencies as well as with the private sector in defense-related technologies. The sponsored program utilizes Cooperative Research and Development Agreements (CRADAs) with private industry, participates in consortia with other government laboratories and universities, provides off-campus courses either on-site at the recipient command or by VTC, and provides short courses for technology updates. * NPS Institutionally Funded Research Program (NIFR): The institutionally funded research program has several purposes: (1) to provide the initial support required for new faculty to establish a Navy/DoD relevant research area, (2) to provide support for major new initiatives that address near-term Fleet and OPNAV needs, (3) to enhance productive research that is reimbursable sponsored, (4) to contribute to the recapitalization of major scientific equipment, and (5) to cost-

Summary rept.
1 Jan 97-31
Dec 97.

NPS-09-98-65 011

This document examines the current landscape of research partnerships between Department of Defense (DOD) laboratories and universities, with the goal of recommending steps to reduce barriers faced in these undertakings and to increase the number of collaborations between the two entities. The work was informed by structured discussions with members of the research community as well as research leaders, both at universities and at DOD laboratories. The factors contributing to the barriers are delineated and recommendations for policy actions to change the status quo are made.

Technical
Report,01 Jul
2013,31 May
2014

73 OSTP

Helicopter Multisensor Towed Array Detection System (MTADS) Magnetometry (HeliMag) technology was demonstrated as part of the ESTCP Wide Area Assessment Pilot Program. This report documents the acquisition, processing, analysis, and interpretation of Helicopter Multisensor Towed Array Detection System Magnetometry data for unexploded ordnance related sites at nearly 5,000 acres at former Camp Beale, California. The performance criteria for positioning accuracy, system noise, data density, MEC parameter estimates, and operating parameters (altitude, speed, overlap, production levels) were met except for the production levels which averaged 259 acres per day compared to the objective of 300 acres per day. Results were inconclusive for many of the areas of interest due to the presence of challenging geology at the site. Because of the geologic masking effects on the results, targets were picked manually.

Final rept. May
2005-Oct 2008

94 MM-0535

The Bionetics Corporation staffed and maintained facilities to manufacture a hemoglobin based blood substitute and to support red blood cell preservation and pathogen inactivation research for the Blood Research Detachment and Department, Walter Reed Army Institute of Research, at 1413 Research Boulevard, Rockville MD 20850 and later at Building 503, Walter Reed Forest Glen Annex, Silver Spring, MD 20910. During the operation of the hemoglobin production facility, 106.04 L of hemoglobin solution containing 11.32 kg of hemoglobin was manufactured, which met or exceeded contract specifications. Three specialty products were produced and the facility was prepared for indefinite shut down. Contract staff completed a series of in vitro experiments and clinical trials, which led to the development of red cell preservation systems extending the shelf life of refrigerated blood from 6 to 12 weeks and a US patent. Data from the laboratory resulted in the publication of 12 manuscripts and six abstracts in the peer- reviewed literature. Evaluation of two pathogen-inactivation technologies for eradication of infectious agents in blood products are in progress. The work done under this contract by the Bionetics Corporation helped advanced the WRAIR Blood Research mission.

Final rept. 21
 Sep 1994-20
 Sep 2002 130 null

The mission of the Naval Research Laboratory is to conduct a broadly based, multidisciplinary program of scientific research and advanced technological development directed toward new and improved materials, equipment, techniques, systems, and related operational procedures for the Navy.

null 141 null

This report was prepared for the U.S. Army Corps of Engineers Institute for Water Resources (IWR) as part of a 3-year program to explore the development of an integrated federal infrastructure strategy. This program, The Federal Infrastructure Strategy, was initiated as one of the President's budget items for Fiscal Year (FY) 1991 and approved by Congress. The U.S. Army Corps of Engineers (USACE) was selected to act as program facilitator; other government departments and agencies are also participating. Program oversight is accomplished by the USACE Directorate of Civil Works; the Institute for Water Resources (IWR) has detailed management responsibility.

Technical rept. CERF-TR-92-
 F1003,IWR-93-
 91 FIS-5

This report contains summaries of research projects in the Department of Electrical and Computer Engineering. A list of recent publications is also included which consists of conference presentations and publications, books, contributions to books, published journal papers, technical reports, and thesis abstracts.

Summary rept.
1 Jan-31 Dec
96

NPS-09-97-
117 005

systems through the defense acquisition system, a process that is highly tailorable but still built around the assumption that the DoD will compensate suppliers for product development, contract through Defense Federal Acquisition Regulations and be heavily involved in all aspects of the product life cycle. A number of organizations including the Defense Business Board, some think tanks and some in Congress have encouraged or recommended greater use of commercial practices. There are indeed times when using more commercial practices makes sense, and we should be alert to those opportunities in any aspect of defense procurement. There are three aspects of going commercial that I would like to address first, purchases based on the fact that an item is offered as a commercial product; next, the need to access cutting-edge commercial technologies; and, finally, those cases where we can take advantage of private investments to develop products we might traditionally have purchased through the normal multi-milestone acquisition system. Our policies and regulations try to strike the right balance between taking the steps needed to protect the taxpayer from overpaying while simultaneously avoiding discouraging commercial firms from doing business with DoD by asking for more information than they are willing to provide. For purely commercial items widely and competitively sold on the open market, this is easy. For thousands of items, from office furniture to cleaning supplies to laptop computers, the DoD pays commercial prices (subject to negotiated adjustments for quantity-based discounts, etc.) without inquiring as to the costs

Journal Article -
Open Access

60 null

Implementation of the Vietnam Head Injury Study Phase III (VHIS - PIII) has begun. By November 2003 all study staff had been hired, and underwent subsequent training to administer the battery of tests. By April 2004 we had received all the required protocol approvals and inter-agency cooperative agreements, and began testing subjects. To date, 28 head-injured subjects and 6 non-head injured control subjects have been assessed, and these data have been entered into the VHIS - Phase III computer database. Of those who were examined in Phase II, 320 head-injured subjects and 31 control subjects have agreed to further participation. We have publicized the study in both veteran, military and the national press, and are in the process of recruiting additional control subjects. The assessments have already identified four cases with significant undetected medical pathology.

Annual rept. 24
 Sep 2003-23
 Sep 2004

5 null

The STERIS Vaporous Hydrogen Peroxide (VHP) technology has been used for more than a decade to sterilize pharmaceutical processing equipment and clean rooms. Through a joint partnership, the U.S. Army Edgewood Chemical Biological Center (ECBC), and STERIS Corporation, Inc., a subsidiary of Strategic Technology Enterprises, began the process to co-develop a modified VHP (mVHP) capable of biological and chemical decontamination. Significant improvements have been made through a series of laboratory, chamber-scale, and large-scale efforts. The primary objective of this test was to determine the mVHP system's ability to decontaminate chemical-warfare agent contamination on operationally relevant materials. The decontamination efficacy was compared to the Key Performance Parameters (KPPs) stated in the Operational Requirements Document (ORD) for Joint Platform Interior Decontamination. In addition, tests were conducted at higher challenges, and cross-comparison tests were conducted to enable comparison to the KPPs stated in the ORD for Joint Service Sensitive Equipment Decontamination. The tests were performed between October 2005 and March 2006 in the Engineering Directorate large-scale chambers at the ECBC, APG, MD. The results for the chemical agent studies are presented in this report.

Final rept. Oct
 2005-Aug 2006

194 ECBC-TR-731

Management Regulation' is issued under the authority of DoD Instruction 7000.14, 'DoD Financial Management Policy and Procedures,' dated November 15, 1992. It governs financial management by establishing and enforcing requirements, principles, standards, systems, procedures, and practices necessary to comply with financial management statutory and regulatory requirements applicable to the Department of Defense. It directs financial management requirements, systems, and functions for all appropriated, working capital, revolving, and trust fund activities. In addition, it directs statutory and regulatory financial reporting requirements. Volume 12 of the 'DoD Financial Management Regulation' establishes policies and procedures for 'Special Accounts Funds and Programs.' This Volume of the Regulation applies to the Office of the Secretary of Defense, the Military Departments, the Chairman of the Joint Chiefs of Staff, the Unified Combatant Commands, the Inspector General of the Department of Defense, the Defense Agencies, and the DoD Field Activities (hereafter referred to collectively as 'DoD Components'). This Volume of the Regulation is effective immediately and is mandatory for use by all DoD Components. Heads of DoD Components shall ensure that the provisions of this Volume are adhered to in day-to-day operations and in the design, modification, and maintenance of their Component's financial management and reporting system or systems. The Heads of DoD Components shall not issue supplementary directives and/or regulations without the prior written approval of the Office of the Under Secretary of Defense (Comptroller). null

DOD-7000.14-
275 R-VOL-12

Secretary of the Army and the Army Chief of Staff have articulated a vision for the Army of the 21st century that involves transforming it into an Objective Force that is responsive, deployable, agile, versatile, lethal, survivable, and sustainable. Achieving the Objective Force will require the Army to maintain its superior science and technology (S&T) capability through its research and development (R&D) and procurement efforts. For example, a cornerstone of the Objective Force is the advanced technology Future Combat System, highlighting how essential it is for the Army to maintain its top-notch S&T capability. A number of trends over the past decade have made it especially challenging for the Army to maintain the critical S&T element of its transformation. First, the R&D budget has been declining for the past 15 years, and this trend is likely to continue. Second, the Army's civilian workforce, many of whom are the scientists and engineers (S&Es) integral to the Army's R&D capability, has declined in numbers because of acquisition workforce reductions. In addition, increased competition with private industry for highly qualified technical staff has made it difficult for the Army to attract and retain the talented S&Es it needs to ensure a continued superior S&T capability for the coming decades. Faced with these shortfalls, how should the Army sustain superior S&T capabilities to support the Army transformation? During the past five years, RAND Arroyo Center has worked with the Army to address this question. Arroyo research has shown that a strategy built on a foundation of three integrated building blocks will enable the Army to be the

Issue paper

21 null

Program Manager is intended to be a vehicle for the transmission of information on policies, trends, events and current thinking affecting program management and defense systems acquisition. (AN)

Journal rept.,

51 null

Detection of nuclear weapons and special nuclear material (SNM, plutonium, and certain types of uranium) is crucial to thwarting nuclear proliferation and terrorism and to securing weapons and materials worldwide. Congress has funded a portfolio of detection R&D and acquisition programs, and has mandated inspection at foreign ports of all U.S.-bound cargo containers using two types of detection equipment. Nuclear weapons contain SNM, which produces suspect signatures that can be detected. It emits radiation, notably gamma rays (high-energy photons) and neutrons. SNM is dense, so it produces a bright image on a radiograph (a picture like a medical x-ray) when x-rays or gamma rays are beamed through a container in which it is hidden. Using lead or other shielding to attenuate gamma rays would make that image larger. Nuclear weapons produce detectable signatures, such as radiation or a noticeable image on a radiograph. Other detection techniques are also available.

Congressional
rept.

113 CRS-R40154

(TSWG) was born out of three key principles. First was the idea that many agencies had similar requirements for combating terrorism, thus allowing the pooling of resources. Second was the focus on near-term requirements; emphasizing a quick turnaround to allow an overburdened acquisition system to move closer to the speed of its opponents. And the final key was to go to the hero and ask for help. This final key principle makes TSWG rare. Even as the Combating Terrorism Technology Support Office (CTTSO) grew to encompass TSWG, Explosives Ordnance Disposal/Low-Intensity Conflict & Interdependent Capabilities (EOD/LIC & IC), and the Irregular Warfare Support (IWS) program, the focus has always been on the user - the technician who disarms bombs, the crime lab researcher using forensic evidence to break a case, the Special Forces warrior who is hunting al Qaeda, and the law-enforcement officer or first responder. You will find in these pages that this process works. Firefighters worked to assess the Next-Generation Fire Fighter Protective Ensemble, which provides protection against fires as well as against chemical, biological, radiological, and nuclear threats. Police officers helped to develop the Digital Automotive Image System, which now provides a means of quickly searching data to reveal pictures of vehicles related to a terrorist investigation. Those tasked with protecting VIPs are helping to develop the Field-Installable Inconspicuous Vehicle Armor Kit, which provides security while not advertising that a protectee is traveling in an armored vehicle. As a program office under the Assistant Secretary of Defense (ASD) for Special Operations and

Annual rept.

122 null

The purpose of this report is to provide an addendum to the final report of a study to investigate and address enlisted women's needs for basic gynecological and reproductive health education in order to enhance military readiness and general well-being. In the first phase of the study, a needs assessment was conducted in which the methods included: 1) a mail survey of knowledge, attitudes, and practices (KAP) from a random sample of Army and Navy clinicians and chiefs of military medical departments; 2) focus groups with enlisted Army and Navy women and with their health care providers; and 3) a secondary analysis of a national survey of military personnel health related behaviors. Based on the results of these needs assessment data, we have determined implications for enlisted women's reproductive health. These data were used in the fourth year to design and begin development of a culturally appropriate, multimedia CD-ROM and accompanying materials. This intervention was to be tested in military medical clinics in an extension year to determine its ability to change knowledge, attitude, and behavioral intent regarding female reproductive health This report describes the progress and challenges in the efficacy portion of this study.

Final
addendum
rept. 15 Aug
2001-15 Aug
2002

15 null

This paper summarizes recent testing conducted as part of a collaborative research program among the Air Force Research Laboratory (AFRL), the Portland Cement Association (PCA), and the National Concrete Masonry Association (NCMA). The stated objective of the broader cooperative research program is to develop blast protection data for concrete building products typically used in construction and to develop improvements to these designs as needed to improve blast resistance." The most recent component of the program focused on the blast impulse load response of partially grouted concrete masonry unit (CMU) walls that minimally comply with the standards of the Department of Defense Unified Facilities Criteria (UFC) and other relevant non-DoD specifications. Three design sections were evaluated: (1) a 6-inch standard block masonry wall reinforced with #3 rebar at 32-inch nominal spacing

Conference
paper

AFRL-RX-TY-
10 TP-2011-0007

The U.S. Army Research, Development and Engineering Command (RDECOM) became an official U.S. Army Materiel Command (AMC) major subordinate command on March 1, 2004. Established as a provisional command in October 2002, RDECOM was conceived to provide a single AMC command consisting of interdependent materiel research and development organizations with an improved focus on integrated and innovative science, technology, engineering, and analysis programs for the Soldier. RDECOM, headquartered at Aberdeen Proving Ground, Md., promotes and facilitates coordination and agility to stay ahead of ever-changing technological advances. RDECOM has expanded working relationships with other Army elements, industry, academia, other military services, other government agencies and international partners, by focusing on improving coordination and integration of cutting edge technological research, development and engineering in response to Warfighter requirements. RDECOM manages seven research, development and engineering centers, plus the U.S. Army Research Laboratory, the U.S. Army Materiel Systems Analysis Activity, international technology centers, and several technology-focused integrated process teams. RDECOM has more than 17,000 military, civilian and direct contractor personnel, a multi-billion dollar annual budget and is responsible for 75 percent of the Army's science and technology objectives. RDECOM ensures the Army has the technology it needs for the 21st century and beyond.

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103 null

A six-month study of the implementation of OMB Circular A-130 in the Federal scientific and technical information community was conducted by a team of information managers and experts from 15 Federal information organizations. The study showed that A-130 has been a useful tool in assisting these Federal managers with the responsibility of managing scientific and technical information. The report offers 6 recommendations to the Office of Information and Regulatory Affairs, OMB, for clarifying the Circular's guidance to facilitate more effective information management: clarify life-cycle planning" for information useability; develop guidelines to ensure information integrity for the public good; clarify guidance concerning public access to agency information; resolve conflicts between A-130 objectives and those of other Government initiatives; sponsor an effort to develop a selected mode of operation for Government information services; and institutionalize interagency cooperative efforts for information sharing. The report also includes a summary of agency practices and a template which Federal agencies can use to measure their progress toward the objectives of the Circular."

Final rept.,

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65 11686

The Materials and Processes Technology Area part of the Air Force Science and Technology (AF S&T) program responsible for developing materials, cost effective processes, nondestructive evaluation technology and repair maintenance techniques of advanced materials to support the entire Air Force mission. Over the years many outstanding contributions have been made by this are including superalloys for high temperature turbine engines; ultra high purity silicon for infrared detectors; permanent magnets for microwave sources, power generation and conditioning applications; advanced composites for aerostructures; carbon carbon nozzles and nosetips for missiles; high temperature lubricants and thermal control coatings for spacecraft.

Final rept. 1
Oct 97-30 Sep
98

AFRL-ML-WP-
34 TR-1998-4000

The work detailed in this report was carried out in FY 98 as part of the Office of Naval Research In-house Laboratory Independent Research (ILIR) program. Summaries of the projects are presented, and three projects are described in detail: Development of Ultramicroelectrode (UME) Arrays for Use in a Remote Probe; Underwater Acoustic Array Processing in High-Slope Shallow-Water Environments; and A New Sparse Complete Orthogonal Factorization Method as Applied to Bistatic Target-Strength Prediction.

Final rept Oct
97-Sep 98

162 null

The purpose of the Best Manufacturing Practices (BMP) survey conducted at the Department of Energy (DOE)-Oak Ridge Facilities operated by Martin Marietta Energy Systems, Inc. (MMES) in Oak Ridge, Tennessee was to identify best practices, review manufacturing problems, and document the results. The intent is to extend the use of progressive management techniques as well as high technology equipment and processes throughout industry and government facilities. The ultimate goal of the BMP program is to strengthen the U.S. industrial base and reduce the cost of defense systems by solving manufacturing problems and improving quality and reliability. A team of engineers accepted an invitation from DOE-Oak Ridge to review the processes and techniques used in its facilities located in Oak Ridge, TN. Potential industry-wide problems were also reviewed and documented. The review was conducted at DOE-Oak Ridge on 29 March-2 April 1993 by the team identified in Appendix B of this report. The results of BMP surveys are entered into a database for dissemination through a central computer network. The actual exchange of detailed data will be between companies at their discretion. The results of this survey should not be used to rate DOE- Oak Ridge with other government activities, defense contractors, or commercial companies. The survey results have no bearing on one facility's performance over another's. The documentation in BMP reports is not intended to be all inclusive of the activity's best practices. Only selected non-proprietary practices are reviewed and documented by the BMP survey team.

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Since World War II, owning the technology advantage has been a cornerstone of our national military strategy. Technologies like radar, jet engines, nuclear weapons, night vision, Global Positioning System, smart weapons, and stealth have changed warfare dramatically. Today's technological edge allows us to prevail across the broad spectrum of conflict decisively and with relatively low casualties. Maintaining this technological edge has become even more important as the size of U.S. Forces decreases and high technology weapons are now readily available on the world market. In this new environment, it is imperative that U.S. forces possess technological superiority to prevail. The technological advantage we enjoyed in Desert Storm and still enjoy today is a legacy of decades of investment in Science and Technology (S&T). Likewise, our future warfighting capabilities will be substantially determined by today's investment in S&T. In peace, technological superiority is a key element of deterrence. In crisis, it provides a wide spectrum of options to the National Command Authorities and Commanders in Chief, while providing confidence to our allies. In war, it enhances combat effectiveness, reduces casualties and minimizes equipment loss. In view of declining defense budgets and manpower reductions, advancing military technology is a national security obligation of ever greater importance.

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398 null

for Fiscal Year 2006, Public Law 109-163, provides that the Secretary of Defense shall submit a report on the efforts and programs of the Department of Defense (DoD) relating to the prevention, mitigation, and treatment of blast injuries. The report is to include the following elements of information: 1. A description of the activities undertaken under this section during the 2 years preceding the report to improve the prevention, mitigation, and treatment of blast injuries. 2. A consolidated budget presentation for DoD biomedical research efforts and studies related to blast injury for the 2 fiscal years (FY) following the year of the report. 3. A description of any gaps in the capabilities of the Department and any plans to address such gaps within biomedical research related to blast injury, blast injury diagnostic and treatment programs, and blast injury tracking and monitoring activities. 4. A description of collaboration, if any, with other departments and agencies of the federal government and with other countries during the 2 years preceding the report in efforts for the prevention, mitigation, and treatment of blast injuries. 5. A description of any efforts during the 2 years preceding the report to disseminate findings on the diagnosis and treatment of blast injuries through civilian and military research and medical communities. 6. A description of the status of efforts during the 2 years preceding the report to incorporate blast injury effects data into appropriate programs of the DoD and into the development of comprehensive force protection systems that are effective in confronting blast, ballistic, and fire threats.

Annual rept.

37 null

The Annual Progress Report documents all research protocols, both new and continuing, reviewed during FY 03 by the Clinical Investigation Committee (CIC) and the Human Use Committee/Institutional Review Board (HUCIRB) of Walter Reed Army Medical Center (WRAMC). Continuing research review is administered by the Research Review Service (RRS), Department of Clinical Investigation (DCI), WRAMC. A detailed summary sheet of each protocol giving the objective, technical approach, and progress is presented. Personnel rosters, DCI accomplishments, funding information, and known publications and presentations by the WRAMC professional staff are listed for FY 03.

Annual rept. 1
Oct 2002-30
Sep 2003

WRAMC-RCS-
1029 MED-300(R)

This report contains a five-year plan to perform research of human factors issues and topics related to Data Link implementations in general aviation and transport category aircraft. Elements such as resource allocation and management and coordinated cooperative research efforts are considered to be critical and are carefully developed. Avionics, Data link, Human factors.

Technical note
Oct 91-Oct 92,

DOT/FAA/CT-
53 TN93/5

This paper examines the USAF role in managing space and makes recommendations for the future of space in the United States military. Though it echoes specific recommendations made elsewhere by previous authors, the main purpose of this paper is to consider a legislative framework required to sever space from Air Force oversight, and to establish a separate United States Space Force (USSF) under the Department of Defense. The paper begins by examining the historical evolution and fractured history of space in the United States governments bureaucratic machine. Next, this paper looks at multiple reports calling for changes in space leadership and oversight, and the inability to effect meaningful change, evaluating the need for an independent Space Force. It then discusses the various roles and missions an independent space force would assume. Finally, it discusses the legal framework necessary to establish a USSF and analyzes a legislative proposal. Though this paper advocates for standing up a separate USSF, the true value of this paper is the legislation proposed in Appendix 2, and the analysis of that proposal herein. Simply considering the specific recommendations in that enabling legislation is beneficial should the United States move toward establishing a USSF.

Technical
Report

78 null

This report summarizes General Dynamics Advanced Information Systems (GDAIS), (formerly Veridian) activities under the U.S. Air Force In-Flight Simulation and Research Investigations Contract No. F33615-99-C-3000, which became effective in February 1999. The contract was sponsored by the Air Vehicles Directorate of Air Force Research Laboratory (AFRL). The objective of this contract was to conduct in-flight simulation investigations and tests using the U.S. Air Force in-flight simulator aircraft--the NF-16D Variable Stability In-Flight Simulator and Test Aircraft (VISTA), S/N 86-0048 and the NC-13H Total In-Fight Simulator (TIFS), S/N 53-7793. An additional study task, not directly using these aircraft, was also performed. Each investigation was independent, had a specific objective, and was reported separately.

Final rept. 1
Feb 1999-1 Feb
2004

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37 3108

Despite turbulent world and economic conditions, some companies continue to thrive in the global marketplace while others struggle to avoid or emerge from bankruptcy. We believe their secret to success is the successful application and integration of Supply Chain Management (SCM) principles throughout the entire enterprise. Industry leaders effortlessly balanced the iron triangle of SCM, the people, processes, and technology that are key to fueling a high velocity supply chain. The Department of Defense (DoD) lags behind industry in application of SCM principles. We recommend the DoD redefine its SCM enterprise at the DoD level and provide recommendations to guide the department as it transitions from a state of awareness about SCM to building an adaptive supply network in the future.

Final rept.

26 null

The DoD-Global Emerging Infections System (DoD-GEIS) was established in 1997 in response to Presidential Decision Directive NSTC-7 on emerging infections. The directive expanded the mission of the DoD to include support of global surveillance

Annual rept.

22 null

Logistics (IC in AT&L)¹ is a complicated business. Acquisition personnel considering IC in AT&L for their technology projects and acquisition programs must take into account a series of complex national and international interrelationships. While the business is complex, the rewards are great. IC in AT&L has the potential to significantly improve interoperability for coalition warfare, to leverage scarce program resources, and to obtain the most advanced, state-of-the-art technology from the global technology and industrial base. The International Cooperation in Acquisition, Technology and Logistics (IC in AT&L) Handbook satisfies the need for a straightforward, explanatory road map through this complex business. This handbook is not in itself a policy document, but is based almost entirely upon laws, directives, instructions, manuals and other policy documents. It is an informed view of the current practices and procedures in this complex area. It was developed from inputs from many informed sources, primarily the Office of the Secretary of Defense: OUSD (Acquisition, Technology & Logistics)/International Cooperation and OUSD (Policy), Chief of Staff, Director, International Security Programs. A number of OUSD(AT&L) offices contributed: Defense Procurement & Acquisition Policy, Manufacturing & Industrial Base Policy, Research & Engineering, Logistics and Materiel Readiness and Nuclear & Chemical & Biological Programs. The Military Departments international program offices and the U.S. Mission NATO provided support for selected sections. Contract support with handbook integration, including checking and renewing links null

The technological superiority that we and our partners and allies have enjoyed for the past 50 years can no longer be assured, and recognition of this requires a new approach to research and engineering. We must open our science and technology aperture and employ much greater collaboration in making our technology investment decisions. Simply, the Department of Defense (DoD) Research and Engineering (R&E) Enterprise (Table 1) must deliver a more coordinated and coherent R&E program, across all components reaching beyond the DoD to include our National Laboratories, colleges and universities, our national industrial base and our global partners and allies. Data may move at the speed of light, but decisions move at the speed of trust. Guiding DoD's approach are three foundational documents designed to build the trust to enhance the speed and quality of our decisions, development and deployment, provide strategic direction to the DoD R&E Enterprise and outline the framework for achieving our objectives.

Journal article

7 null

This document summarizes the best practices and lessons learned in several decades of acquiring Non-Developmental Item (NDI) systems. These processes have been codified into a tailorable process and several subprocesses. This process has been reconciled with the Center's systems engineering processes and practices to ensure its practical applications. The process also introduces the concept of a system life-cycle management agent responsible for emerging the process application throughout the system life cycle. The heavy application of NDI to system acquisitions raises a variety of very significant issues that must be resolved across traditional organizational boundaries and that require the coordination of a variety of engineering expertise; the system life-cycle management concept provides for this technical coordination and ensures the appropriate expertise is applied to the resolution of these issues.

Final rept.,

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95 TD-2911

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SSC/SD	A - 01	null	U
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ARPA	A - 01	null	U
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NPS

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COE/DC	A - 01	Approved for public release; distribution is unlimited.	U
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USAF	A - 01	Approved for public release; distribution is unlimited.	U
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ESTCP	A - 01	Approved for public release; distribution is unlimited.	U
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XD	A - 01	null	U	we develop based upon and design which we
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TR-2002- 0169,AFRL-HE- WP	A - 01	null	U
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COE/DC	A - 01	null	U
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DAU/FB	A - 01	Approved for public release; distribution is unlimited.	U
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COE/DC	A - 01	null	U
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AFIT	A - 01	null	U
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NPS A - 01 Availability: This document is not available from DTIC in microfiche. U

COE/DC A - 01 Approved for public release; distribution is unlimited. U

TR-2006-0025,AFRL-HE-WP A - 01 Approved for public release; distribution is unlimited. U

NAVFAC	A - 01	Approved for public release; distribution is unlimited.	U
DOD	A - 01	null	U

ONREUR

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null

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VA	A - 01	Approved for public release; distribution is unlimited.	U
XD	A - 01	null	U

91-37230,AD-
E501
428,OASD/PA A - 01

Approved for public
release;
distribution is
unlimited. U

NSWCDD A - 01 null U

COE/DC A - 01 Approved for public
release;
distribution is
unlimited.
Document partially
illegible. U

NSWC A - 01 Approved for public
release;
distribution is
unlimited. U

TARDEC/NAC A - 01 Approved for public
release;
distribution is
unlimited. U

TR-97- 6005,WL*	A - 01	null	U
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TP-1997- 0030,AL/HR	A - 01	null	U
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EOP/NSTC/DC A - 01

Approved for public
release;
distribution is
unlimited. This
document is not
available from DTIC
in microfiche. U

USAF	A - 01	Approved for public release; distribution is unlimited.	U
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USAISEC	A - 01	Approved for public release; distribution is unlimited.	U
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null	A - 01	Approved For Public Release;	U
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AFRL	A - 01	Approved for public release; distribution is unlimited.	U
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USACE A - 01 null U

AMEDDCS A - 01 Approved for public
release;
distribution is
unlimited. U an overvie by COL Mi by COL Jan by MAJ (P)

NDU	A - 01	Approved for public release; distribution is unlimited.	U
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CR-13- 1,ERDC/CERL	A - 01	Approved for public release; distribution is unlimited.	U
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ONR	A - 01	Approved for public release; distribution is unlimited.	U
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USUHS	A - 01	Approved for public release; distribution is unlimited. This document is not available from DTIC in microfiche.	U
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DOD	A - 01	null	U
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94-45918,XD	A - 01	null	U
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XD	A - 01	null	U
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DHS	A - 01	Approved for public release; distribution is unlimited.	U
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AMSAM	A - 01	null	U
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NRL	A - 01	Availability: This document is not available from DTIC in microfiche.	U
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COE/DC	A - 01	null	U
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DOS	A - 01	Approved for public release; distribution is unlimited.	U
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AFMC	A - 01	null	U
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NRL	A - 01	Approved for public release; distribution is unlimited.	U
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AFRL-RI-RS-TR- 2017-042	A - 01	Approved For Public Release;	U
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ODDRE	A - 01	null	U
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ESTCP	A - 01	Approved for public release; distribution is unlimited.	U
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SERDP	A - 01	null	U
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NRL	A - 01	Approved for public release; distribution is unlimited.	U
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CRS/DC

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Approved for public
release;
distribution is
unlimited.

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BMDO	A - 01	null	U
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AU	A - 01	null	U
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TARDEC	A - 01	Approved for public release; distribution is unlimited.	U
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NPS-AA	A - 01	null	U
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SAFM	A - 01	Approved for public release; distribution is unlimited.	U
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NPS	A - 01	null	U
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HUD	A - 01	null	U
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ODDRE	A - 01	null	U
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CRS/DC	A - 01	Availability: Hard copy only.	U
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TR-2001-
2060,AFRL-PR-
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USAMRMC A - 01 null U

NDU/CTNSP A - 01 Approved for public
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distribution is
unlimited. U

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release;
distribution is
unlimited.
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NPS	A - 01	Approved for public release; distribution is unlimited.	U
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ESC/MA	A - 01	Availability: Hard copy only.	U	heart	and soul" & delivering	but with pi
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release;
distribution is
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USAMRMC A - 01 Approved for public
release;
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unlimited. U

21202,TARDE
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release;
distribution is
unlimited. U

USAMRDC A - 01 Approved for public
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DARPA A - 01 null U

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5,ERDC/CERL A - 01 Approved for public
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unlimited. U componen informatio assemblies and conne

USACE A - 01 null U

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USAMRMC A - 01 Approved for public
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NTSC	A - 01	Approved for public release; distribution is unlimited.	U
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ARPA	A - 01	null	U
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TP-2005-300,AFRL-VA-WP A - 01 Approved for public release; distribution is unlimited. This document is not available from DTIC in microfiche. U as predicted as the present including t and provid

ONR A - 01 null U

TARDEC	A - 01	Approved for public release; distribution is unlimited.	U
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TR-2011- 0038,AFRL/HP W-711	A - 01	Approved for public release; distribution is unlimited.	U
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SBIRPO

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release;
distribution is
unlimited.

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release;
distribution is
unlimited.

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TP-2013-0073,AFRL A - 01 Approved for public release; distribution is unlimited. U

TARDEC/GSS A - 01 Approved for public release; distribution is unlimited. U

USASSDC A - 01 Approved for public release; distribution is unlimited. Document partially illegible. U

USACE

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distribution is
unlimited.

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AFIT	A - 01	null	U
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GL	A - 01	Approved for public release; distribution is unlimited.	U
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CR-13- 2,ERDC/CERL	A - 01	Approved for public release; distribution is unlimited.	U
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CRREL	A - 01	null	U
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AFMC	A - 01	null	U
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OSD	A - 01	null	U
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XD	A - 01	Availability: Document partially illegible.	U
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TR-2003- 0142,AFRL-HE- WP	A - 01	null	U
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TARDEC	A - 01	Approved for public release; distribution is unlimited.	U
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ENAEC	A - 01	Approved for public release; distribution is unlimited.	U
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NGA	A - 01	Approved for public release; distribution is unlimited.	U
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CR-2002-14,ARI	A - 01	null	U
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USAMRMC	A - 01	null	U
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AFMC	A - 01	null	U
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NPS	A - 01	null	U
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SERDP	A - 01	null	U
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USAMRDC	A - 01	null	U
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USAMRMC	A - 01	Approved for public release; distribution is unlimited.	U
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AFRL-RB-WP	A - 01	Approved for public release; distribution is unlimited.	U
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AFRL-RV-PS- TR-2019-0006	A - 01	Approved For Public Release;	U
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TR-2002- 158,AFRL-IF- RS	A - 01	null	U
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DARPA	A - 01	Approved for public release; distribution is unlimited.	U
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CR-12-
6,ERDC/CERL A - 01 Approved for public
release;
distribution is
unlimited. U

DSMC A - 01 Approved for public
release;
distribution is
unlimited. U

CRS/DC	A - 01	Approved for public release; distribution is unlimited.	U
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NHRC/DODCD HR	A - 01	Approved for public release; distribution is unlimited.	U
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USAF	A - 01	Approved for public release; distribution is unlimited.	U
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XD	A - 01	null	U
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USARIEM	A - 01	null	U
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ERDC/CHL	A - 01	Approved for public release; distribution is unlimited.	U
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MUR,ARO

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release;
distribution is
unlimited.

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USAED/NY	A - 01	null	U
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USAMRMC A - 01 Approved for public
release;
distribution is
unlimited. U

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release;
distribution is
unlimited. U

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release;
distribution is
unlimited. This
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DA	A - 01	null	U
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NPS	A - 01	Approved for public release; distribution is unlimited.	U
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ARDEC A - 01 null U

ASA(ALT)FB A - 01 Approved for public
release;
distribution
unlimited. U

NPS-MISE A - 01 Availability: This
document is not
available from DTIC
in microfiche. U and remain the results fundamental changes

NPS A - 01 null U

TR-2011-
0021,AFRL-RX-
TY A - 01 Approved for public
release;
distribution is
unlimited. U a research shear ties and insulation."

TARDEC A - 01 Approved for public
release;
distribution is
unlimited. U

ONR A - 01 Approved for public
release;
distribution is
unlimited. U

NATICK/RDEC A - 01 Approved for public
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distribution is
unlimited. U

DA	A - 01	null	U
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DSMC	A - 01	null	U
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release;
distribution is
unlimited.

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operations and techni CTTSO was the organi:

GAO	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRMC	A - 01	Approved for public release; distribution is unlimited.	U
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USAEC	A - 01	null	U
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ICAF	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRMC	A - 01	Approved for public release; distribution is unlimited.	U
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SERDP	A - 01	null	U
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XD	A - 01	null	U
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AFIRM	A - 01	Approved for public release; distribution is unlimited.	U
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XD	A - 01	null	U
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NRL	A - 01	null	U
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XD	A - 01	null	U
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COE/DC	A - 01	Approved for public release; distribution is unlimited.	U
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ODDRE	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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NPS	A - 01	null	U
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USAMRDC	A - 01	null	U
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AMEDDCS	A - 01	Approved for public release; distribution is unlimited.	U
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TR-1999-
0019,AFRL-HE-
WP A - 01 null U

SERDP A - 01 null U

ASAALT/DC A - 01 Approved for public
release;
distribution is
unlimited. U Active and strength and resolv they will fa

21439,TARDE
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release;
distribution is
unlimited. U

OSD	A - 01	Approved for public release; distribution is unlimited.	U	the Under held on Nc	2006 to review €
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COE/DC	A - 01	Approved for public release; distribution is unlimited.	U		
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NAVAIR	A - 01	null	U		
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EOP

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release;
distribution is
unlimited.

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DSB	A - 01	null	U
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NPS	A - 01	Approved for public release; distribution is unlimited.	U
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TR-200- 067,AFMC	A - 01	null	U
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NPS

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Approved for public
release;
distribution is
unlimited.

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USAMRMC	A - 01	null	U
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TEC**	A - 01	Approved for public release; distribution is unlimited.	U
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NPS	A - 01	null	U
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NRL	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRMC A - 01 Approved for public
release;
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unlimited. U

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E501
558,OUSD/A A - 01 Approved for public
release;
distribution is
unlimited. U

NRL	A - 01	Approved for public release; distribution is unlimited.	U
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18095 A - 01	Approved For Public Release;	U
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ERDC

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release;
distribution is
unlimited.

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ONR	A - 01	Approved for public release; distribution is unlimited.	U
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NSWC-IH	A - 01	Approved for public release; distribution is unlimited.	U
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CIRO	A - 01	null	U
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OUSD(AT/L)	A - 01	Approved for public release; distribution is unlimited.	U	community programs and challenges where pos
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NRL	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U	
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USAWC	A - 01	null	U	
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COE/DC	A - 01	null	U	
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NISMC	A - 01	Approved for public release; distribution is unlimited.	U
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ESTCP	A - 01	Approved for public release; distribution is unlimited.	U
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NPS	A - 01	Availability: This document is not available from DTIC in microfiche.	U
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AFRL-RH-WP A - 01 Approved for public
release;
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unlimited. U there is no the coating it is recom the coating

USARIEM A - 01 Approved for public
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distribution is
unlimited. U

NPS A - 01 Approved for public
release;
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unlimited. U

NFESC	A - 01	Approved for public release; distribution is unlimited.	U
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AFHSO	A - 01	Approved for public release; distribution is unlimited.	U	as the herc in the Peni Alabama	expertly tr
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XD	A - 01	null	U
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ARL/APG	A - 01	Approved for public release; distribution is unlimited.	U
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NDU/CTNSP	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRMC	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRMC	A - 01	Approved for public release; distribution is unlimited.	U
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USAF	A - 01	Approved for public release; distribution is unlimited.	U
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AFRL	A - 01	Approved for public release; distribution is unlimited.	U
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ARL	A - 01	Approved for public release; distribution is unlimited.	U
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XD	A - 01	null	U
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XD	A - 01	null	U
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AFIT	A - 01	Approved for public release; distribution is unlimited.	U
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NPS	A - 01	Approved for public release; distribution is unlimited.	U
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NPS-AA A - 01 null U

NPS A - 01 Availability: This document is not available from DTIC in microfiche. U to reconsti Automater Composite Composite

DUSD/ST A - 01 null U

ODDRE A - 01 Approved for public release; distribution is unlimited. Document partially illegible. U

ARL/SED	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRMC A - 01 null U

USAMRMC

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release;
distribution is
unlimited.

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NPS-SSAG	A - 01	Approved for public release; distribution is unlimited.	U
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XD	A - 01	null	U
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AFIT

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release;
distribution is
unlimited.,
Availability: This
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in microfiche. U

SERDP

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release;
distribution is
unlimited. U

AFRL-SN-WP A - 01

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TR-2001- 4065,AFRL	A - 01	null	U
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USARIEM	A - 01	null	U
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SPAWAR/CA	A - 01	null	U
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USAF/SAB	A - 01	null	U
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TR-2010-
0033,AFRL-RX-
TY A - 01

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distribution is
unlimited. U

GAO A - 01

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distribution is
unlimited. U

USAMRMC	A - 01	Approved for public release; distribution is unlimited.	U
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ODDRE	A - 01	Approved for public release; distribution is unlimited.	U
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release;
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unlimited. U

ONR	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRMC	A - 01	Approved for public release; distribution is unlimited.	U
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TR-96- 2074,PL*	A - 01	null	U
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NAVAIR	A - 01	null	U
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NPS,SPAWAR	A - 01	Approved for public release; distribution is unlimited.	U
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COE/DC	A - 01	null	U
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ESTCP	A - 01	Approved for public release; distribution is unlimited.	U
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NPS	A - 01	null	U
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TARDEC	A - 01	Approved for public release; distribution is unlimited.	U
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ERDC/GSL	A - 01	Approved for public release; distribution is unlimited.	U
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TR-2009- 0086,AFRL-RH- WP	A - 01	Approved for public release; distribution is unlimited.	U
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Public Release;

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95-47308, XD	A - 01	null	U
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NRL	A - 01	Approved for public release; distribution is unlimited.	U
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AFRL-RQ-WP	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRDC	A - 01	null	U
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NSWC-IHD	A - 01	null	U
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AFRL-XP-WP	A - 01	Approved for public release; distribution is unlimited.	U
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HSC/XR	A - 01	null	U
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DOD

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NDU	A - 01	Approved for public release; distribution is unlimited.	U
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NPS	A - 01	null	U
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XD	A - 01	null	U
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SSC/SD	A - 01	null	U
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NPS A - 01 Availability: This document is not available from DTIC in microfiche. U

AFRL-PR-WP A - 01 null U

CECOM A - 01 Approved for public release; distribution is unlimited. U

NPS A - 01 Approved for public
release;
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unlimited.,
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0028,AFRL-RH-
WP A - 01 Approved for public
release;
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ODDRE	A - 01	null	U
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NRL	A - 01	unlimited.	U

USAMRDC	A - 01	Availability: Document partially illegible.	U
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USACE	A - 01	Approved for public release; distribution is unlimited.	U
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COE/DC

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USAMRMC	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRMC	A - 01	null	U
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TARDEC	A - 01	Approved for public release; distribution is unlimited.	U
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AFRL-RH-FS	A - 01	Approved for public release; distribution is unlimited.	U
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DSMC	A - 01	null	U
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AFOSR A - 01 null U

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SERDP	A - 01	null	U
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TR-97-15,RL*	A - 01	null	U
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USAMRMC	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRMC	A - 01	null	U
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USAMRMC	A - 01	null	U
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operative operations to collaborative development. CTTSO specifically works with other countries to co

per is to familiarize the reader with the methods that industry and US Government agencies use to share

mes and benefits resulting from CRADAs, one of the preferred and most widely used mechanisms in tech

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Technology and National Policy Studies (CTNSP) at the National Defense University (NDU) to develop a j

and perhaps the first participatory example in the discipline the Laboratory was able to work gradually to

San Diego. The design example uses the criteria and performance limits in the evaluation of a typical w

to include academia and state and local governments."

supporting and suggesting potential areas of automation in water system design."

onnel when compliance is exceeded. The system can generate reports to meet all regulatory requiremei

will provide vessels etc. that will directly benefit the warfighter."

and emerge including how the collaborators overcame the challenges they faced and practical implications

and civiliar Technolog and Logisti as well as 1 defense aę and other defense cc and compz the Manag

program n and advan and promote its development at the Naval Postgraduate School."

cs support experience. Industry field studies were carried out both domestically and internationally to al

the authors draw on a larger body of RAND research on the future of the defense industrial base."

ling like every other civilization in history."

Technology Transfer or Technical Achievement."

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irst principles, are the smallest human-made objects, and they exhibit novel physical, chemical, and biol

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resident to submit an annual report to Congress, beginning in the year 2000 and ending in the year 2007,

ircraft Structures. Propulsion Directorate: Additive Improvements Performance of Heating/Cooling System

and the re: three full-scale explosion arena tests were conducted; each experiment involved one each c

the five Dc and variou leadership and capacity building partnerships with regional CINCs and other gov

nd the future. But the world has changed dramatically since the Predator concept was first developed. T

uished technical innovation and scientific discoveries."

temporarily interrupted. We can, however, return to growth soon--and proceed on the path to a new er

and state a concern regarding technology or technical achievement."

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mplementation guidance from headquarters; establishment and staffing of Offices of Research and Tech

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ist seven years far into the future."

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map for the continued development and institutionalization' of the FnEPs Concept."

operatively share requirements and develop capabilities to leverage U.S. taxpayer dollars into projects t

e research and technology. During the course of the discussion the reader will become familiar with the

hology transfer within the Department of Defense, particularly at the NPS. The perspective chosen, in t

the U.S. Air Force's mission capabilities and structure, including its operations at U.S. Air Force Missions around the world."

pilot program "to find practical ways in which the defense information technology community can gain a

ward its goal of becoming a broadly based research facility."

harf structure. The procedures used in this example are presented in Chapter 3 of Volume of the Guide.

nts and to assist in the centralized management of all environmental issues at WVA."

ons for future PPC efforts. The paper ends with key observations and recommended next steps for furth

community programs and challenges where possible lists sources that can provide information about strategic

llow our students to conduct in-depth examinations of selected industrial sectors to assess each sector's

ogical properties and phenomena. The aim of nanotechnology is to learn to exploit these properties and

for the CARC paint is presumed responsible for this low efficacy. Smaller sorbent particle sizes (<5 μM) d

on the transfer of militarily sensitive technology to countries and entities of concern. The National Defe

ms. Sensors Directorate: Higher Operating Temperature for Ultra-High Density Optical and Optical Limiti

of the three test panel designs (nine total panels tested)."

vernmental and international agencies. Presidential Decision Directive NSTC-7 calls for implementing act

The previous well- defined Warsaw Pact threat has been superseded by an asymmetric threat that cover

ra of expansion. With that goal in mind, the budget places special priority on policies that will enhance A

Technology Applications (ORTAs); delegation of authority to laboratory directors to enter into cooperative r

ces."

hat work better and are developed faster."

basis in law that supports these regulations. the primary vehicles used to formalize cooperation. and se

:he direction from the nonfederal entity -- generally industry -- towards the federal partner, has not bee

a mutual understanding of defense needs and industry capabilities and identify opportunities to integrat

er research and reform."

es or approaches."

; ability to support the national security strategy within a global context. The resulting reports organized

efficiently manufacture and employ the structures. Control of matter on the nanoscale already plays a

id not increase surface decontamination efficacy."

nse Authorization Act further required that the Inspectors General of the Departments of Commerce (C

ing In Hydrothermal Zinc Oxide Crystals. Air Vehicle Directorate: Active Core Exhaust Control and First FI

tions in several areas relevant to DoD-GEIS."

's the entire span of military and other contingency operations."

merica's potential for long-term economic growth, and that will give individuals the power to take adva

research and development agreements (CRDAs); creation of royalty-sharing programs."

e examples of relevant programs. This presentation also lists various Internet sites that contain addition

n researched and reported in the specialized literature as extensively as in the opposite direction.

...the information technology innovations into the U.S. military strategy."''

here as chapters are offered as part of the continuing public policy debate over the health and future o

n important role in scientific disciplines as diverse as physics, chemistry, materials science, biology, med

ommerce), Defense (Defense), Energy (Energy), and State (State), in consultation with the Director, Cen

ight Test Demonstration of Neural Network Software. Space Vehicles Directorate: Treacherous High Gro

antage of the opportunity America uniquely offers. To this end, I am again proposing tax incentives to inc

ial information.

f the defense industrial base in particular and the total industrial and productive base in general. Additic

icine, engineering, and computer simulation. For example, it has been shown that carbon nanotubes are

tral Intelligence Agency, and the Director, Federal Bureau of Investigation, conduct an annual review of

und: The Near Earth Space Environment. Directed Energy Directorate: Biophotonics Applications Of Hig

increase savings and long-term investment. On the spending side of the budget, the existence of a cap on

onally this book is published in an effort to maintain an open dialogue with the many companies and age

⇒ ten times as strong as steel with one sixth of the weight, and that nanoparticles can target and kill can

policies and procedures of the U.S. Government with respect to their adequacy to prevent export of ser

h-Power Semiconductor Diode Laser Technology."

domestic discretionary outlays rightly creates a competition for resources. Priorities must be set.

encies we visit worldwide."

cer cells. Nanoscale systems have the potential to make supersonic transport cost- effective and to incre

ensitive technologies and technical information to countries and entities of concern. An amendment to se

ase computer efficiency by millions of times. As understanding develops of the way natural and living sy

ection 1402(b), found in section 1075 of the National Defense Authorization Act for FY 2001, further req

ystems are governed by molecular behavior at nanometer scale, and as this understanding begins to be

quires the Inspectors General to include in their annual report the status or disposition of recommendatic

felt in science and medicine, researchers seek

ons that have been set forth in previous annual reports under