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My Research for: NETE\_UU

Title	Accession Number	Corporate Author	Personal Authors	Report Date
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DRY CORROSION AND PROTECTION OF NI/CR 80/20 HEAT RESISTANT ALLOYS. RELATION TO CREEP AND FATIGUE PHENOMENA (Corrosion Seche et Protection des Alliages Refractaires NI-Cr 80/20)	AD0204305	ADVISORY GROUP FOR AERONAUTICA L RESEARCH AND DEVELOPMEN T PARIS (FRANCE)	MATHIEU, M.	11/1/1957

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Highest Possible Sensitivity of Information is CONTROLLED UNCLASSIFIED INFORMATION

Abstract	Descriptive Note	Pagination	Report Numbers
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Dr. Bekker reports on his in-depth study of the evolution of Russian research on terrain-vehicle systems. After reviewing some 3000 references to literature on the subject in the past 35 years, he selected about 450 books and papers for further study. He traces the evolution of Russian work, analyzes the methods and results, and discusses the influence that research in other countries had on these Russian efforts. He informs the reader of the current status of Russian research in this field, and compares it with the status of U. S. research. Dr. Bekker concludes that though plagued with approach to research in terrain-vehicle systems that is exemplary for its 'persistent and dynamic continuity.

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The symposium emphasis and theme -- impact of the preliminary design process on the development, production, and operational cost of aircraft systems -- were woven into all sessions of the Symposium through discussions of technical approaches, methods and experiences relating to cost reductions, means of improving aircraft quality, and orderly introduction of new technology. Case histories of actual aircraft preliminary design and hardware developments were included to provide retrospective insight into the role and adequacy of the design process. Authors were requested to consider the implications of cost and the extent to which cost was used as a design parameter or as a special objective. A technical approach, with discussion of actual design experiences, analysis methods, and concepts, was emphasized in order to avoid excessive generalization in discussing cost and design process questions and to provide engineering data of value along with insight into the role and impact of the preliminary design process.

Conference  
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This report is a six-part statistical summary of surface weather observations for Pease AFB, Portsmouth, New Hampshire. It contains the following parts: (A) Weather Conditions; Atmospheric Phenomena; (B) Precipitation, Snowfall and Snow Depth (daily amounts and extreme values); (C) Surface winds; (D) Ceiling Versus Visibility; Sky Cover; (E) Psychrometric Summaries (daily maximum and minimum temperatures, extreme maximum and minimum temperatures, psychrometric summary of wet-bulb temperature depression versus dry-bulb temperature, means and standard deviations of dry-bulb, wet-bulb and dew-point temperatures and relative humidity); and (F) Pressure Summary (means, standard, deviations, and observation counts of station pressure and sea-level pressure). Data in this report are presented in tabular form, in most cases in percentage frequency of occurrence or cumulative percentage frequency of occurrence tables. (Author)

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The report describes research aimed at furthering understanding of the nature and mechanism of development of the bond in RBSN. The project formed a part of an overall programme aimed at securing control of the microstructure of RBSN and, in consequence, over the mechanical properties of the ceramic. The study embraced three grades of starting silicon powder: a specially prepared high purity powder (99.99% Si), a similar powder contaminated with Fe (approx. 10 ppm Fe), and a commercial powder (approx. 98% Si; 0.5% Fe; 1.5% AL). Sonic Young's modulus was determined at stages throughout the nitriding reaction for all three powders and the data correlated with microstructural observations. In the case of the high-purity silicon powder it was concluded that the bond forms as a result of the deposition of massive, vapour-formed,  $\text{Si}_3\text{N}_4$ , and that  $\text{Si}_3\text{N}_4$  'whisker' formation played no part in the bonding process. It was also observed that RBSN made from the two higher purity powders had Young's modulus values significantly higher than commonly encountered. A 3-phase composite model developed by Cohen and Ishai satisfactorily described the rate of development of Young's modulus with extent of reaction.

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high-temperature composites, led by Dr. Benjamin A. Wilcox of ARPA's Materials Sciences Division, conducted a three-week visit to Japanese industry. The purpose of the TAT visit to Japan was threefold: (1) to assess Japanese technology in high-temperature structural composites and reinforcing fibers in order to identify opportunities for improving the performance and durability of U.S. defense hardware; (2) to communicate the observations to U.S. government and industry; and (3) to foster cooperation/coordination in the translation and coupling of such technology in the production of U.S. defense hardware. Technical details of interest included: precursor materials; processing techniques and equipment; availability, applications, cost and performance of fibers and composites; and standards and procedures for nondestructive inspections. Particular emphasis was focused on present and future applications, manufacturing procedures, and production capability. In Section II a report of each visit to a Japanese company is provided, with full technical detail. In Section III the technical information is reviewed on discussed by subject matter. In Section IV, various technical and nontechnical findings are summarized. A discussion of the

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The optical properties of many substances in the region of radiation wavelengths less than 2000 Å are unknown because experimental difficulties are encountered due to the opacity of most solids and phases in the extreme ultraviolet. The theory of optical constants of absorbing substances from measurements of reflectivity is discussed. The generalized Fresnel equations were used to construct graphs of reflectivity as a function of refractive index and extinction coefficient for four angles of incidence and five values of polarization of the incident light. The specular reflectivity of aluminum, silver, gold, magnesium fluoride, silicon monoxide, and zinc sulfide films was measured for wavelengths of 1216 Å, 1048 Å, 920 Å, 584 Å, and 304 Å using an ultraviolet monochromator and a vacuum reflectometer. Samples were vacuum evaporated into glass and measured in situ. The transmission of an aluminum film at 584 Å and 304 Å was also measured. The optical constants of these substances were obtained.

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and somatic mutation, and undoubtedly evolves in the host through increasingly malignant states by changes in the genome. Many of these changes can be seen by making gene copy number measurements, wherein increased copies of genes are associated with oncogenes and decreased copy numbers are associated with tumor suppressor genes. It is our hypothesis that these copy number changes, if measured with sufficient accuracy and resolution, can be used for two important purposes: to define precisely the mutant genes that cause cancer, and to define molecular markers that correlate with malignant potential and response to therapy. The technique we have developed, ROMA (representational oligonucleotide microarray analysis), accomplished this. We have completed data acquisition of approximately 200 breast cancer biopsies and cell lines. We discern many loci that are commonly deleted or amplified in breast cancer but not in normal genomes. Many of these loci confirm previous knowledge, but many are as yet unexplained. Our studies further suggests that genome instability, the presence of amplifications and deletions, is a marker for poor survival, and we have developed mathematical measures of copy number profiles that accurately predict.

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This document collects and primarily summarizes aircraft advanced composite material electromagnetic properties, and secondarily, summarizes composite material mechanical, thermal, environmental, fabrication properties noting their ramifications on electromagnetic performance. It, then, overviews the electromagnetic sub-disciplines of threats, external to internal aircraft coupling, component and subsystems susceptibility protective methods as well as test and evaluation of small sample to total aircraft composite material electromagnetic performance. The sub-disciplines constitute a partitioned set of independent variables which allow the reader to locate his area of interest in one section of the book. The sub-discipline are then combined to perform total aircraft electromagnetic system performance noting the protective methods, advantages and penalties.

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The National Training Center (NTC) provides realistic training conditions for heavy battalion task forces. In addition to this primary mission, however, NTC also serves a research purpose. For this reason, the Army Research Institute (ARI) has undertaken a research program in support of the Combined Arms Training Activity, Ntc's parent organization. The program supports the Training Activity's mission of developing lessons learned from past experience. The present research note presents a framework for issue identification which is specifically tailored to the needs of the NTC, i.e., the issues identified are able to be researched at the NTC. The utility of this framework is three fold: it demonstrates and organizes the wide range of issues suitable for investigation at the NTC, it provides input on selection of issues and setting of priorities which can be of use to policy makers, it permits the formulation and categorization of new issues.

Keywords: Countermobility, Command and control, Issues identification, Operating systems, Doctrine, Organization, Maneuver, Fire Support, Intelligence, Air defense, Mobility, Combat Service Support, Nuclear/Biological/Chemical(NBC).

Final rept. for  
period ending  
May 1986

BDM/ARI-TR-  
0039-86,ARI-  
52 RN-87-06

Procedures to relate Net Explosive Weights (NEWS) to combinations of intervening 12-inch Substantial Dividing Walls (SDWs) to provide protection to personnel from remote operations has been developed. Protection is IAW DoD and Army policy: 2.3 psi maximum overpressure exposure and no hazardous fragments. The procedures are reported in a two-volume guide: Volume I is a how to" guide for installation use

Conference  
paper

17 null

boundary value problems for the Landau Fokker-Planck equation is developed and applied to calculating the electron velocity distribution function in model solar transition regions. Numerical results illustrating the speed, pitch angle and spatial dependence of the distribution function are presented. From these it is concluded that the widely-invoked assumption that in weakly inhomogeneous collisional plasma the angle-averaged distribution function remains close to local-Maxwellian distribution is incorrect. Instead, the distribution function forms an anisotropic, high velocity tail in the lower temperature regions due to the diffusion of fast electrons anti-parallel to the temperature gradient. It is shown that as a result of there being an excess of fast electrons in the low transition region ( $T < \text{or about } 3 \times 10^5 \text{ to } 5 \times 10^5 \text{ K}$ , say), inelastic electron-ion collision rates are significantly enhanced over the Maxwellian values. Attendant effects on the ionization balance of a typical metal (magnesium) are shown to be significant. Implications of the breakdown of the local-Maxwellian approximation for several outstanding questions related to the solar transition region are discussed, including: energy balance in low transition region and upper

null



TORCH, a computer code which calculates the spectrum arising from the radiation of a metallic plasma, is described. The population of each ionic species is determined from a time-dependent corona model which includes three-body recombination. Both time-resolved and time-integrated spectra are obtained, showing the contributions from bremsstrahlung, recombination radiation, and line radiation. Ion and electron temperatures are allowed to differ, with radiative losses causing continuous electron cooling. Energy may be added to the electrons and/or ions at arbitrary rates, for arbitrary times, and TORCH will compute the temperatures based on the rates of radiation, ionization, and electron-ion energy exchange. Calculations are included for aluminum plasmas with electron densities of  $10^{18}$  to  $10^{21}$ /cc and electron temperatures of 10 eV to several KeV.

Also included are calculations of radiation from a deuterium plasma with 5% aluminum impurities.

Master's  
thesis

89 GEP/PH/72-1

In Vitro Cellular and Developmental Biology- Plant publishes peer-reviewed original research and reviews concerned with the latest developments and state-of-the-art research in plant cell and tissue culture and biotechnology from around the globe. Four issues cover cellular, molecular and developmental biology research using in vitro grown or maintained organs, tissues or cells derived from plants. Two special IAFCT&B issues deal with plant tissue culture, and molecular and cellular aspects of plant biotechnology. The IAFCT&B and SIVB maintain completely separate and independent International boards for their issues. Topics covered by the Journal include: 1) biotechnology/genetic transformation; 2) metabolic engineering; 3) developmental biology/morphogenesis; 4) plant physiology; 5) micropropagation; 6) cell biology; 7) functional genomics; 8) somatic cell genetics; 9) molecular farming; 10) secondary metabolism.

Final  
proceedings

98 null

The Joint Planning and Development Office (JPDO) Fiscal Year 2011 (FY11) Program Plan provides an executive-level overview and project schedule for the major activities the JPDO plans to execute in FY11. This is a top-level planning document, which will feed into more detailed plans and schedules to support each activity's day-to-day execution and tracking. In this document, the key activities for FY11 are organized under the three JPDO priority areas introduced in the following section. The activities defined within each of these priority areas are addressed at a high level with information on how each one interacts with or feeds other JPDO activities, either past, present, or future. The Program Plan also includes a consolidated Gantt chart that details the high-level project schedule of all the activities. This collective view provides a working knowledge of the JPDO's priorities and the key activities that have been selected to help further them.

null

24 null

A complete waste anesthetic gas management program includes application of a well designed waste anesthetic gas scavenging system, anesthesiologists using work practices which minimize gas leakage, and application of a routine equipment maintenance program so gas leaks are minimized. Work practices of the anesthesiologist may contribute from 94% to 99% of all waste anesthetic gases in an operating room equipped with properly designed and maintained scavenging components. Improper practices, such as poor choice of the face mask, insufficiently inflated endotracheal tubes, and spillage of volatile anesthetic agents when filling vaporizers, are the chief contributors. Once the proper equipment has been installed, and proper work practices have been established, the Environmental Health Section should initiate a periodic monitoring program geared to detect leaks and the Medical Equipment Section should initiate a compatible preventive maintenance program. This report provides anesthesia-oriented personnel with information necessary to minimize occupational exposure to inhalational anesthetics. Technical (Author) rept.,

25 OEHL-TP-78-1

Higher throughput general-purpose processors have traditionally been the domain of Schottky-bipolar or CMOS-SOS integrated circuit technology with attendant multi-component packaging logistics and support software problems. In addition, the modular operational software has proven difficult to achieve in practice. To combat these deficiencies, a super-federated high-speed, multi-processor architecture has been explored using standard industry 16-bit microprocessors. The resulting design evolved in this study employs a time-phased ring approach to high throughput with single processor programming simplicity. Further, modular software has been achieved by assigning one microcomputer to each major algorithm. (Author)

Final rept. 1  
Jan-31 Oct 79  
on Phase 6,

BR-11856,ONR-  
63 CR233-052-6

One of the two tasks that the Extreme Ultraviolet Spectrophotometers (EUVS) onboard the Atmosphere Explorer Satellites perform is absorption analysis of the thermosphere. The optical depth is derived from observations during parts of orbits including conditions of nearly negligible attenuation as reference. Details of two different approaches are described. The first one, used by the program LMC80, deals with certain standard optical depths only; the second one, used by the program LMC85, deals with time-ordered records of optical depths for input-controlled fixed steps in time. (Author)

Environmental  
research  
papers,

AFGL-TR-79-  
0191,AFGL-  
49 ERP-672

To enable autonomous operations in future Reusable Launch Vehicles (RLVs), reconfigurable control and adaptive guidance will often be required to facilitate recovery of the mission following a major anomalous event such as an effector failure. An adaptive guidance system that works in conjunction with a reconfigurable controller and an autonomous trajectory command reshaping algorithm is presented. The guidance law utilizes a backstepping architecture to generate pitch rate commands that drive the inner-loop control system. Under extreme failure conditions the control surfaces can saturate in an attempt to meet commanded moments. In these cases, the guidance feedback gains are reduced to preserve stability margins in the guidance loops. A case study is presented that shows the benefits of the guidance gain adaptation. Without adjusting the gains, the guidance loops go unstable, whereas stability is maintained with gain reduction.

Conference  
paper

AFRL-VA-WP-  
18 TP-2004-304

Since 1960 the drive toward independence broke over Africa like tidal waves after many years marked by the penetration of European powers in the continent and took part in the great commercial and political adventure called colonialism seeking resources, markets, settlement, and religious conversion. The objective of this essay is to explain how Zairian natives handled the heavy responsibilities that came with freedom in spite of any policy of preparation by colonial power, especially in the domain of the army. The build-up of Zairian armed forces, as explained in the essay was one of the problems not previously faced by natives who never before have been assigned to the key position in the army. Regardless of all obstacles, the change has been so drastic that after a few years a respectable army was given to the country with all services needed for its stability.

Student essay,

25 null

This report was prepared under the National Program of Inspection of Non-Federal Dams. This report assesses the general condition of the dam with respect to safety, based on available data and on visual inspection, to determine if the dam poses hazards to human life or property. (Author)

Final rept.

88 null

A four-month study involving 2000 man-hours of library research, computation, laboratory study and field testing, was set up to prove the feasibility or nonfeasibility of the concept: the marking and detection of individuals with air disseminated encapsulated reagents which remained inactive until released by the activity of the insurgents themselves. The program was divided into several task areas concerning the manufacture and characteristics of the capsules, the environmental and micrometeorological factors which would affect capsule life and behavior of released reagents, the airborne disseminating mechanism, and the various methods of reagent detection. Results of studies, computations, laboratory tests, and field tests are presented.

Final rept.

163 ATL-TR-65-29

In October 1986, the Naval Postgraduate School was directed to centralize the accounting and control of minor property (approximately 60,000 items) and to locate that function in the Supply Department. The magnitude of this undertaking suggested that some sort of automated system be employed to assist in the task. The objective of this study was to implement a prototype automated system to support the control and accounting of both plant and minor property at the Naval Postgraduate School. The effort was based on a Requirements Definition and System Specification set forth in a thesis by Ross and Smith in March 1987. The study includes a description of the implementation effort, prototype code written in dBase III Plus, and a User's Quick Reference. The basic structure of the code and data base design should be applicable throughout the U.S. Navy Supply system. Keywords: Thesis; Inventory data base systems.

Master's thesis,

235 null

null

Final rept.

502 null

The state-of-the-art of off-road vehicle design, especially of military vehicles, is surveyed with particular reference to those design elements which especially distinguish off-road vehicles from related equipment. The procedures by which off-road military vehicles advance from concept and/or requirement to field issue are also reviewed, and some relations between apparent technical weaknesses and the administrative procedures are pointed out. It is concluded that to provide the more mobile vehicles needed by the Army in the field in Southeast Asia a complete second family of off-road military vehicles is required--an integrated, compatible system of vehicles optimized for operations in Southeast Asia rather than in Europe, as is our present standard fleet. Organizational changes which would speed such an approach are suggested.

Final rept.

AEWES-CR-3-  
336 162

null

Research and  
development  
rept.

27 DTMB-1783

Contents: In Situ Rock Modulus Testing; and A Unified Method for Describing Vehicle Ride Dynamics.

Miscellaneous  
paper.

WES-MP-0-73-  
4 9

Elementary Derivation of the Saturation of Optical Scintillation; Computations of the Effect of Atmospheric Turbulence on Laser Beam Propagation; Two-Frequency Scintillation: Two Color Correlation of Scintillations; Imaging and Scintillation: Speckle Interferometry and Speckle Imaging; Scintillation on High- and Low-Elevation Satellite Propagation Paths; Coherence Theory: Classical Radiometry: a Short Wavelength Limit for a General Mapping of Cross-Spectral Densities in Second- Order Coherence Theory; Lidar: Remote Sensing of Meteorological Parameters: Effects of Atmospheric Transmission and Scattering Properties on Dial Measurements; Surface Scattering: Measurements on Multipath Propagation at 94 GHz over Snow Covered Terrain; Nonlinear Effects: Nonlinear Optics of Atmospheric Aerosol; Interferometric Detection of Convective Instabilities Induced in Air by Energetic Beams; Scintillation: Coupled Mode theory of Propagation through the Turbulent Atmosphere; Transmission: The Role of Tropospheric Propagation in the Earth Space Telecommunication Systems at Millimeter Waves; Remote Sensing: Optical Remote Wind Measurement Using Speckle- Turbulence Interaction; Remote Sensing of Wind by

Conference paper

R/D-5314-EN-385 02

This report describes a wind site survey to locate potential high energy sites at the USAF Academy for future wind machine installation. Surveying techniques developed during the project are described and illustrated. Site-specific results, including wind characteristics and economic analyses, are presented. Three wind site surveying methodologies are presented. (Author)

Final rept. May 77-Dec 80,

AFESC/ESL-TR-171 81-02



The research performed under this program has focused on studying optical properties of non-spherical particles in the laboratory. It required the development of techniques for routinely generating and collecting artificial aerosols of known chemical composition, for performing light scattering measurements, and for interpreting light scattering data. Progress on each technique has been achieved, and the principal results for each of these three basic activities are discussed in this report.

Final rept. 1  
May 74-30 Apr  
83,

ARO-16462.1-  
81 GS

...few decades have fueled the continual and rapid development of an information-based world. Network Centric Warfare (NCW) has become the buzzword of the young millennium within the Department of Defense (DoD) and is quickly becoming a popularly shared vision and rallying cry for force transformation among United States military leaders. An essential element in fully implementing this network-centric way of thinking is to develop useful measures to help gauge the effectiveness and efficiency of both our military networks and our strategic NCW doctrine. The goal of this research is first to provide a comprehensive summary of the key literary works that have forged a foundational basis for defining NCW. Second, this work will utilize a System Effectiveness Analysis Simulation (SEAS) combat model, which represents a Kosovo-like engagement (provided by the Space and Missile Center), to serve as a tool in exploring the use of NCW metrics in military worth analysis. Third and last, this effort selects measures for the physical, information, and cognitive domains of NCW and analyzes the outputs from the Kosovo scenario that are pertinent to each domain in order to assess the usefulness of each metric. In the final analysis, the average target detection distance

Master's  
thesis

AFIT/GOR/ENS  
108 /06-11

This is an interdisciplinary conference. Topics include: (1) Detection, Estimation, and Classification Theory, Time-Frequency signal analysis; (2) Non-stationary signal processing, Multirate processing and wavelets; (3) Signal and system modeling; (4) Non-Gaussian and non-linear signal processing; (5) Sensor array processing; (6) Signal processing for communications; (7) Space-time coding and modulation; (8) Computer-based statistical methods for signal processing; and (9) Applications in areas including communications, GPS, radar, sonar, biomedicine, machine diagnostics, etc.

Conference proceedings rept.

AOARD-CSP-640 011024

understanding of the 2D plasma expansion and detachment on a magnetic nozzle. An advanced fluid model and code have been built. Key clarifications of main processes have been unveiled, which dispute some previous theories. The subject will benefit greatly from continuing the research along the following lines: 1. Analysis of the effect of an adiabatic model for electrons. The issue is whether the vanishing of pressure can modify qualitatively the far beam behaviour. 2. Extension of the study to more general conditions on ion flow at the entrance, such as ion swirl and hot ions, of interest for plasma sources. 3. Completion of the study of plasma detachment via demagnetization. The aim is to confirm present results, to solve the issue of formation of magnetic singularities, and to match with nonzero-beta plasma from the source. 4. Extension of plasma model beyond turning point of the magnetic nozzle. It is needed to analyze the far beam. It requires a more sophisticated integration technique. 5. Plasma detachment via non-neutral separation. This is a proposed mechanism whose analysis requires completing the previous task. 6. Development of the hybrid code, which, beyond supporting the fluid code, will allow consideration of new aspects and effects, such as plasma

Final rept. 25 Aug 2010-25 Aug 2011

AFRL/AFOSRU K-TR-2011-0057,EOARD-98 10-3085

The following report describes a computer solution to help predict the heave and roll response of free floating bodies of cylindrical shape when excited by random seas with known spectra. The basic concepts of harmonic analysis and statistics used in the method are first briefly reviewed. The report then presents a detailed derivation of the linear heave and roll response amplitude operators that is the expressions of the vertical and angular displacements produced by a simple harmonic wave of one foot amplitude. The second part of the report reviews the computation procedure and the program's logic. It gives a detailed set of instructions for the program users, reviews the program's capabilities and limitations, and presents three case studies. The heave and roll response programs are written for use with XEROX SIGMA 7 computers. Program listings are given in the appendix.

Technical rept.

150 WHOI-77-12

Contents: Feature extraction: a survey; Digital image processing for terrain pattern recognition; Multi-image clustering; The factors analysis technique applied to multi-spectral data; Mixture problems in pattern recognition; Analysis of geometrical moment features extracted from digitized tank photographs using an on line pattern analysis and recognition system; A family of cubic spline subroutines; Pattern identification; The elementary concept of the Kalman filtering techniques; Classification techniques for strip chart recordings; A computer model of the initial stages of mammalian pattern processing; and Resolution and noise limitations of night vision devices.

null

340 AROD-71-1

The Geographic Resources Analysis Support System (GRASS) is a geographic information and image-processing system originally designed to serve land managers and environmental planners at Army installations. GRASS is an integrated set of programs that provide digitizing, image processing, map production, and geographic information system capabilities to its users. GRASS is written in C and is ported to computers running the UNIX operating system. Since its initial development, GRASS has been developed for many applications on a number of different hardware configurations. GRASS Version 4.0 includes significant additions and modifications to system libraries and programming code. This manual contains a program-by-program description of each program's capabilities and uses; a summary of command-line options; and lists of associated or related programs. GRASS, geographic information, image processing, user manuals, Geographic Resources Analysis Support System.

Final rept.

CERL-ADP-N-  
533 87/22-REV

An analysis of the fluid mechanics of wakes behind bodies in hypersonic flow is presented. The models used for idealizing both the flow field and the chemistry of air are discussed first. The fluid mechanics of the wake itself is then shown to be describable in terms of transformed coordinates which are applicable to both laminar and turbulent wakes. The transformation to the physical plane requires description of the transport properties of the gas; these are therefore discussed next. In this connection a rational means for estimating the turbulence transport properties is described. Finally, there are presented the results of numerical analysis of four cases which appear to lead to the highest concentration of electrons in the wake and of the initial conditions for a boundary layer induced wake.

null

51 GASL-TR-145-A

The electrical and acoustical measurements described in this book are those required to calibrate, test, or evaluate an underwater electroacoustic transducer and to enable one, indirectly, to produce or detect and measure an underwater acoustic signal, usually in terms of its acoustic pressure. These measurements will be referred to collectively as underwater electroacoustic measurements.

null

341 null

A spherical acrylic pressure hull of NEMO design has been designed for an operational depth of 8,000 feet. The design meets the requirements of the American Society of Mechanical Engineers (ASME) 'Safety Standard for Pressure Vessels for Human Occupancy.' The performance of the spherical acrylic hull has been experimentally evaluated by pressure testing 13 scale-model acrylic spheres under short-term, long-term, and cyclic conditions. The test results have shown that the NEMO-type acrylic spherical hull with  $t/D_i = 0.2$  thickness withstands > 1,000 pressure cycles of 4 hour's duration to design depths of 8,000 feet at ambient temperatures less than or equal 75 deg F. The acrylic hull withstood without catastrophic failure a 150-percent overpressurization (20,000 feet depth) of 150 hour's duration. Acrylic plastic, External pressure housing, Ocean engineering.

Final technical  
rept.

NCCOSC/RDT/  
102 E-TR-1606

null

null

212 FTD-MT-64-15

The purpose of this project was twofold: first, to document the evolution of atomic clouds during the TEAPOT series in order to define the rate of rise, maximum height, vertical depth of mushroom, dimensions of stem and volume, for a period up to 20 min after burst when photographically feasible; second, to correlate the meteorological data with the available cloud data on past Nevada test series as well as the TEAPOT series. Photographic and theodolite data were collected on 14 shots. Analysis of weather parameters affecting cloud heights attained does not suggest any clear-cut definitions with the exception of the tropopause dampening effect. Application of curf3- theories has been investigated and the results compared. (Author) null

139 DASA-WT1152

This report details the results of Mini Study 1. This mini study was conducted at the Federal Aviation Administration (FAA) Technical Center utilizing the Data Link testbed. Initial Data Link air traffic control services were evaluated under part task simulation conditions in order to identify service delivery methods which optimize controller acceptance, performance, and workload. This report delineates the results for the first of two mini studies and a research and development operational evaluation which comprise the Phase I Data Link services package. Final rept.

DOT/FAA/CT-  
38 88/25-VOL-1

Partial Contents: Historical Setting--The peopling of Tanzania, and The coming of the Europeans and the partitioning of East Africa; The Political System--Political geography, Government and politics, and Foreign relations; Physical and Social Setting--Population and geography, Ethnic groups, Traditional elements of the social system, and A society in flux; The Economy-- Income distribution and gross domestic product (Agriculture, Livestock, forestry, and fisheries, Manufacturing, Mining, and Internal trade), Foreign trade, and Balance of payments; and National Security. null

DA-PAM-550-  
354 62

A high performance VLSI chip for executing Prolog programs is designed and fabricated using a 1.4 micron CMOS technology with two layers of metal. This chip implements a tagged architecture with hardware support for five stacks. The 32-bit data path of the chip contains a fast ALU, 64 registers in four groups, five counters, and six non-master/slave registers. The control is microprogrammed and uses a 512 x 160 bit ROM with four pages for fast microbranching. The chip operates at a cycle time of 100 ns (worst case) and has a size of 10 mm x 9 mm. A semicustom design methodology employing Mentor and NCR tools has been used in this design. The challenges involved in the design, verification, routing, and fabrication of the chip are described. Keywords:

Very large scale integration; Integrated circuits; Complementary metal oxide semiconducting; Arithmetic logic unit.

Technical rept.  
7 Aug 1984-6  
Aug 1987

UCB/CSD-  
129 88/412

Request for Proposal for the purchase of 145 attack helicopters. Turkey has chosen Bell Helicopter's KingCobra as its attack helicopter. The major difference between the USMC version of AH-1Z and the Turkish version KingCobra is the Targeting and Fire Control System. Bell Helicopter Textron has chosen Lockheed Martin to develop and build a new targeting system, the Target Sight System (TSS). The TSS will contain Lockheed Martin's 3-5 micrometers midwave staring array FLIR. On the other hand, the Turkish Secretariat for Defense Industries (SSM) has chosen Aselsan ASELFLIR-300T that contains an 8-12 micrometers longwave scanning second-generation FLIR. A comparison of range performance for these two systems has been made using the TAWS Field Performance Model. Since the physical parameters on these specific FLIRs are proprietary, the FLIR92 Simulation Model is used to generate performance parameters. These parameters are expected to represent the general characteristics of the two systems. The resultant data is used in the TAWS Field Performance Model to predict the range performances. The results have showed that the staring array midwave FLIR has longer ranges in the scenarios given in this thesis. This may not represent the

Master's  
thesis



Contents: Computer Programs--Multiple Energy Domain Systems, Transfer Function Analysis, Dynamics of Spacecraft Structures, Torsional Systems, Crash Simulation, Highway Vehicle Simulation, Cable Systems, Offshore Structures Analysis, Frames, Nonlinear Transient Response of Solids, Time Dependent Materials, Prediction of Highway Noise, Liquid Propellant Dynamics Analysis, Optimum Design of Dynamic Mechanical Systems, Mechanical and Thermal Shock Analysis, Random Vibration of Structures, Beams, Piping Systems, Dynamic Buckling of Structures, Limiting Performance of Structural Systems, Grillages, Kinematic and Dynamic Design of Mechanism, Seismic Analysis, Simulation of Human Body Response to Crash Loads, Test Data Reduction and Processing, Fluid Structure Interaction, Rotating Machinery, Aircraft Noise Prediction, and Shell Analysis; Capabilities and Routines within Programs--Summary of General Purpose Programs, Nonlinear Analysis Descriptions and Numerical Stability, Fracture and Fragmentation Under Shock Loading, Eigenvalue Extraction, Damping, and Inertia Matrices for Finite Elements; and Indexes--Subject Index of Shock and Vibration Computer Programs, and Alphabetical Index of Shock and Vibration Computer Programs.

null

660 SVM-10

This document contains expanded abstracts from the Air Force basic research program on rocket propulsion. The document contains the agenda for the Rocket Research Meeting held at Lancaster, CA on 18-21 March 1985. Major topics include: Energetic material combustion; Metal combustion; Diagnostics of reacting flow; Chemical kinetics; Thermal properties; Propellants; Synthesis of new ingredients; combustion stability; Acoustic interaction plumes; Beamed energy; Solar propulsion; and Electrical Propulsion.

Interim rept.  
Mar 84-Feb 85

AFOSR-TR-85-  
251 0560

This volume contains six invited papers and ninety two contributed papers presented at the XIII International Symposium on Shock Tubes and Waves, which was held in Niagara Falls, NY, July 6-9, 1981. Professor I. I. Glass of the University of Toronto presented the Paul Vieille Memorial Lecture. This paper and five other invited papers form Part I of the Proceedings. The contributed papers are presented in Parts II through VII, divided according to subject matter. The typical broad range of interests associated with shock waves is demonstrated in both the invited and contributed papers, with subject material covering viscous aerodynamics, explosions, chemistry, optics, and energy-related processes. It is intended that this volume provide an up-to-date accounting of international progress in these fields insofar as shock-wave phenomena are involved. (Author)

Final rept.,

AFOSR-TR-82-  
864 1031

The United States Navy is currently implementing a plan to consolidate the wholesale supply functions of the Naval Air Station at Alameda and the Naval Supply Center at Oakland. Improving supply support of the Naval Air Rework Facility Alameda in general and stock availability in particular is a vital part of the plan. Demand forecasting by workload driven material requirements planning (MRP) is being considered as a means to improve stock availability. This thesis begins with an overview of the MRP technique and the current supply support of NARF Alameda. It proceeds with the description and evaluation of a temporary MRP system that is currently implemented and uses it as a background for development of an MRP system that is designed to operate in a maintenance oriented environment in general and at NARF Alameda in particular. Finally, suggestions are made for transition from the temporary to the proposed system. (Author)

Master's  
thesis,

175 null

The Jedburghs consisted of three man allied teams trained to conduct guerilla warfare in conjunction with the French Resistance in support of the allied invasion of France. These teams consisting of French, British, and American men comprised of two officers, one always being French, and an enlisted wireless telegraph radio operator, were uniformed soldiers who volunteered in 1943 for this hazardous work behind enemy lines. Jedburgh or 'Jed' teams were but one weapon available to the Supreme Headquarters Allied Expeditionary Force (SHAEF) and its Commander, General Dwight D. Eisenhower for this covert mission. This study examines the origins, purpose, and training of the special operations personnel in England. Additionally, the actual operations conducted by these six teams in the western most corner of the Brittany peninsula are discussed. As a forerunner to Special Forces, this paper also examines the validity of the Jedburg concept and its actual application and utility in the summer of 1944, as well as, the lessons to be learned from those campaigns which are still applicable to warfare today. Keywords: Special forces; France; United States; Theses.

Master's  
thesis Aug  
1989-Jun 1990

135 null

This document provides summary and tutorial information on research and development carried out by the DoD on the interconnection and use of packet communication networks. Topics covered include TCP-IP, fault isolation and gateway connections between dissimilar networks. Guidelines are provided for implementing the Internetwork protocols, along with background papers on the Internetwork protocols and protocols in general. Additional keywords: Interactive computers; Message processing; Electronic mail; Internetworks; TCP(Transmission Control Protocol); IP(Internet Protocol); Data communications networks. (Author)

null

148 null

null

null

60 NASA-L-1126

relationship between vegetation and the structural integrity of river levees. A specific objective was to determine the distribution of roots within levee embankments, and how these roots alter properties of levee embankments and affect their resistance to mass wasting, surficial erosion, piping, etc. With this information, engineering criteria can be developed in the future that may allow additional vegetation to remain on levee embankments where sufficient effort can be made for levee inspection. Current Corps of Engineers guidelines for levee maintenance and operation limit vegetation on the embankment to sod-forming grasses 2 to 12 in. in height to provide for structural integrity, visual inspection, and unhindered flood fight access to levees. Root concentrations and distributions were determined using the profile-wall method in which root cross sections were exposed in the vertical wall of an excavated trench. Transects were excavated running both parallel and perpendicular to the crest of the levee through areas dominated by different woody plant species typical of riparian vegetation. Plant roots reinforce the levee soil and increase shear strength in a measureable manner. A shear strength increase or root cohesion can be

Final rept.,

WES/TR/REMR-  
150 EI-5

...the purpose of the project was to develop materials for modelling the performance of engine mounts, several oil resistant alternative materials were prepared, and compared to conventional materials from mounts that are currently in service on the Canadian Patrol Frigate (CPF). This report describes the preparation and characterization of these elastomers, including two that were prepared at Platform Sciences Laboratory (PSL) in Melbourne, Australia under the Canada/ Australia MOU on Defence Science and Technology, Subsidiary Arrangement No. 16, Vibration Isolation Materials For Naval Vessels. The dynamic mechanical properties of the elastomers were determined as a function of frequency and strain amplitude. At strain amplitudes > 400 micrometers the storage moduli were generally independent of amplitude, once the moduli were corrected for changes in sample cross-sectional area resulting from tensile pre-strain. The storage moduli at 1 Hz, 20 deg C were in the range 3-7 MPa. The loss factors of the elastomers at 1 Hz, 20 deg C varied considerably, from 0.02 for natural rubber to 0.27 for ethylene acrylic elastomer. Swelling experiments of the elastomers in diesel fuel and lubricating oil demonstrated that the two elastomers prepared by PSL were in fact quite resistant to

Technical  
memo.

DRDC-TM-  
52 2004-275

null

null

DAFD-OTT-  
17 72B014

Research was concerned with the feasibility of drilling a hole on the moon. The preliminary feasibility study showed that of every known proven drilling method and many untried methods, percussion drilling will be the most suitable for Lunar drilling, where the weight and space requirements are limited for the first drillequipped Lunar craft. Study indicated that the mechanical simplicity of the rotary system should give it a reliability advantage for small diameter (1/2 in.) holes which are less than 5 feet deep. Conversely, deeper holes and holes of 3/4 to 4 in. diameter can best be made by a percussor. For heavier space craft of the future where deep holes larger than 4 in. diameter are desirable, it is almost certain that rotary drilling with rolling cutter bits will have many advantages.

null

305 60-507

This report summarizes embankment features, design data, construction control data, and record test results. Construction equipment, construction procedures, significant construction modifications and changes, and notes are presented. The embankments were also re-evaluated using the design parameters developed from laboratory test results of record samples obtained during construction. The report can be used to provide information about the design and construction of the embankments for engineers unfamiliar with the project, for re-evaluation of the embankment in the future, if required, and for background data for design and construction of similar projects. Includes 45 plates.

Final rept.

209 null

influences of birth weight and growth during childhood and adolescence on risk of breast cancer. Information on birth weight, yearly measurements of weight and height during the school years, and age at menarche was obtained for 161,000 girls born from 1930 to 1975 who attended school in Copenhagen, Denmark. This information was computerized and linked to the Danish Civil Registration System (CRS) using an algorithm that matched on birth date and name. The CRS includes information about name, place of birth, and parental identity on all Danish residents and is updated daily with respect to vital information and migration status. This resulted in the identification of CRS numbers for 141,481 girls (88%). Using the CRS number, information on the incidence of pre- and post-menopausal breast cancer was obtained from the Danish Cancer Registry. Followup for breast cancer began April 1, 1968, or the date of birth, whichever came last, and continued until a diagnosis of cancer, death, emigration, or 31 August 2000, whichever came first. During the years of followup, 3,340 cases of breast cancer were diagnosed. High birth weight, early age at peak growth, greater height, and low BMI at 14 years of age were found to be independent risk factors for breast cancer. Height

Final rept. 1  
Jul 2000-31 Jul  
2004

132 null

Two technical notes related to network capability and design. One compares mean values of short-period seismic noise measured during the GSE Technical Test with published values of Ring-dal for stable and tectonically active regions. A second compares depth determinations during the 1980 Common Data Base Experiment with theoretical detection thresholds. The third considers the significance of local and regional data in a global monitoring system. Two reports on research to improve analysis of regional seismic data. One is based on a consideration of particle motion of regional phases, and recommends ways to implement automated or interactive particle-motion analysis of regional seismic waveforms. The other focuses on event characterization of 95 earthquakes, mine blasts and offshore events recorded at NORESS. Miscellaneous topics deal with azimuth determination using polarization parameters of P and LR waves; reanalysis fo sub b bias between a recording site in eastern Kazakh and a station on and a new database containing waveforms from stations being operated in eastern Kazakh under an agreement between the Soviet Academy of Sciences and the Natural Resources Council.

null

SAIC-  
87/1131,TR-  
3 C87-03



The overall objective of the project was to explore technologically cost-effective ways to train personnel who are geographically remote from training resources. An empirical study was conducted to compare (1) training effectiveness and (2) user acceptance of live instruction and six different alternative Video Teletraining (VTT) technologies: multi-channel 2-way video with 2-way audio, single-channel 2-way video with 2-way audio, 1-way video with 2-way audio, 1-way video with 1-way audio, 1-way video with intermittent 2-way audio, and audiographics. Findings were that VTT in several different forms was effective both in terms of student performance and student and instructor acceptance. The most successful VTT technologies were those allowing continuous 2-way audio communication between classrooms with either 2-way or 1-way video. Using 2-way video does not appear to improve student performance as compared to 1-way video, but instructors prefer 2-way video and students expressed the desire to see their cohorts in other classes, which requires 2-way video. Student test performance was poorer with VTT systems that restricted remote students' ability to converse with or see the instructor and the performance decrement was evident in both local and remote classrooms. Evidence suggests that student

Interim rept.

NPRDC-TR-92-

66 3

This is one of a series of five publications containing statistics on the commercial movement of foreign and domestic cargo. WCUS, Part 1, presents detailed data by commodity and traffic for the waterways and harbors on the Atlantic Coast. The statistics include commodities given in short tons (2000 lbs) and vessel trips for the harbors and waterways.

Annual  
 publication for  
 CY 1982.

WRSC-WCUS-

198 82-1

This report presents a language, called QA4, designed to facilitate the construction of problem-solving systems used for robot planning, theorem proving, and automatic program synthesis and verification. QA4 integrates an omega-order logic language with canonical composition, associative retrieval, and pattern matching of expressions; process structure programming; goal-directed searching; and demons. Thus it provides many useful programming aids. More importantly, however, it provides a semantic framework for common sense reasoning about these problem domains. The interpreter for the language is extraordinarily general, and is therefore an adaptable tool for developing the specialized techniques of intuitive, symbolic reasoning used by the intelligent systems.

Technical  
note,

354 TN-73

The Final Proceedings for Perspectives of MHD and Plasma Technologies in Aerospace Applications, 24 March 1999 - 25 March 1999. This is an interdisciplinary conference. Topics include MHD Super- and Hypersonic Flow Control; Plasma Aerodynamics (Drag and Flow/Flight Control); Shock Wave Structure and Propagation in Gas-Plasma Mixture; On-board MHD Systems and Plasma Generators; MHD/EM Accelerators and Thrusters, etc...

Conference  
proceedings

EOARD-CSP-99-  
168 5070

The feasibility of building thermal batteries with cells composed of an anode of LiAl alloy, a cathode with a heavy metal chloride, and a tetrachloroaluminate alkali metal salt electrolyte has been demonstrated. During the further investigation of this system some interesting problems have developed and had to be studied. (Author)

Final rept. Sep  
77-Nov 80,

AFWAL-TR-81-  
298 2044

The list of books from the U.S.S.R. is arranged in broad subject groups, approximately in U.D.C. order, sub-divided by authors in the order of the Cyrillic alphabet. Translated Russian books are sometimes included as a separate section following the main part of the list, also in subject groups, sub-divided by authors in the order of the Roman alphabet.

null

51 NLL-134

This report presents the results of a one year monitoring program of the impacts associated with the thin-layer disposal of 50,000 cubic yards of new work dredged material in Mississippi Sound. The object of thin-layer disposal is two fold: (1) the placement of dredged material in open water in a layer 12 inches thick or less and (2) reduction of short term impacts to the aquatic ecosystem. Results of this monitoring program indicate that: (1) It is possible to control lift-thickness during open water disposal. (2) Recovery of benthos following a December disposal operation begins as early as 6-weeks post disposal abundances within the disposal area are similar to non-disposal areas. (3) Recruitment to the disposal area, following the December disposal, was mediated by adult migration, followed by spring larval settlement. (jhd)

Final rept.

COESAM/PDFC-  
221 89/08

null

Operational  
rept. for  
quarterly  
period ending  
31 Jul 1968

OACSFOR-OT-  
94 RD-683289

The language of partial order time expresses the issues central to many problems in asynchronous distributed systems. A secure partial order time service would provide a general method to develop secure protocols for these problems. In this paper, we sketch out these issues and develop one such protocol: signed vector timestamps. The majority of this paper is drawn verbatim from the first author's October 1991 thesis proposal, the first research into security issues for non-scalar time services and the original presentation of the SVT protocol.

Research rept.

CMU-CS-93-  
17 116

multi-fidelity Modeling and Simulation (M and S) capability targeted at the fundamental studies of the physical characteristics of Field Reversed Configuration (FRC) plasma for advanced space propulsion. The work consists of numerical method development, physical model development, and systematic studies of the non-linear plasma dynamics and chemical processes governing FRC formation, acceleration, stability and interaction with the environment. FRC thrusters are a new class of advanced, mission-enabling spacecraft electric propulsion (EP) technology. They operate at high efficiency, relatively high thrust, and have the potential for hybrid chemical/electric operation. Further development and optimization of this technology requires a more complete and fundamental understanding of the dynamic physical properties of FRC plasma thruster at multiple scales and multiple levels of fidelity. This also requires the development and validation of the corresponding M and S tools for predictive capability of future designs and on-orbit operation. The specific challenges of the research can all be found in the complex non-linearities and dynamic multi-scale aspects of the plasma as it evolves during the various characteristic time scales of the typical

Technical  
Report, 28 Jan  
2014, 18 Jan  
2017

AFRL/RQR-  
AFRL-RQ-ED-  
167 TR-2017-0002

The . U. Auditory Test No. 4 is composed of two lists of 50 CNC monosyllabic words each that conform to the phonemic balance advocated by Lehiste and Peterson. The lists were given twice to three different groups of 16 subjects -- those with normal hearing, those with conductive losses, and those with sensorineural losses. During each test, six presentation levels of ascending intensities were used, the total range being from -4 db to +40 db sensation level. The three types of subjects evidenced articulation functions of the same shape, but the functions for sensorineurals were of gentler slope than for the other two groups. The discrimination scores for list I were slightly higher than for list II. During the retest, the discrimination scores improved slightly. Scores between lists as well as those from test to retest showed relatively high positive correlation. Therefore, the N. U. Auditory Test No. 4 seems to be a valuable tool for the measurement of phonemic discrimination.

Technical  
documentary  
rept.

SAM-TDR-62-  
28 135

Active combustion control has received increasing attention for the suppression of pressure oscillations and the extension of flammability limits in dump combustors and premixed combustors with flameholders. In order to accelerate progress in this emerging area, a research program was initiated to improve the physical understanding of combustion dynamics, develop new actuators, and explore new control strategies. This paper describes progress made in the program. The role of shear-flow dynamics in combustion control through experiments and numerical large-eddy simulation has been clarified. New actuators to manipulate the shear layer and increase acoustic level by utilizing periodic chemical energy release have been demonstrated. New control strategies based on neural network, adaptive filter, and modern control synthesis procedures have been implemented

Professional  
paper

14 null

wastewater was studied on an outdoor, prototype overland flow land treatment system. The removal for each of these substances was greater than 94% at an application rate of 0.4 cm/hr. The percent removals declined as application rates were increased. The rate of removal from solution was described by the sum of two mass-transport-limited, first-order rate coefficients representing volatilization and sorption. A model based on the two-film theory was developed; the observed removal rate coefficients were regressed against three properties of each substance: the Henry's constant, the octanol-water partition coefficient and the molecular weight. The dependence of the removal process on temperature was studied and is included along with average water depth in the model. The decrease in removal rate as temperature declined is supported by the known dependence of Henry's constant and diffusivity on temperature. The model was validated on a second overland flow system. The surface soil concentrations of the trace organics determined at the end of the experiment suggest that a secondary mechanism renews the surface rapidly enough so that contaminants do not build up on the surface, with the possible exception of PCB. Biodegradation is suggested as the predominant

null

58 CRREL-83-3

Twelve articles, followed by extensive appendices and bibliographical information, comprise this look into the career paths of military university graduates in the fields of economics and administration, the last seven articles dealing directly with empirical results culled from the class of 2001. The background" topics include: the increasing relevance of the inquiry; a comparison of military graduates to part-time officers with degrees from civilian universities; and the analysis of the careers of past military officers. The 2001 data

Publication

335 null

The structural properties and electrical activity of impurities (indium, arsenic, antimony) and self-interstitials (mercury, cadmium, tellurium) in CdTe and HgCdTe alloys have been studied by theoretical and computer calculations, The problems addressed included: - the source of the midgap tunneling levels in Hg-rich HgCdTe, - the cause of electrical inactivity in In- doped CdTe grown by non-photoassisted molecular beam epitaxy (MBE), - identification of paths for impurity and self-diffusion, - the effects of lattice distortion on defect properties and interaction.

Final rept. 15  
Jun 1987-30  
Nov 1990

ARO-24837.11-  
71 MS

The three computer simulation models described in this user's manual simulate the use of material handling equipment (MHE) at three distinct types of U.S. Navy installations (Main Supply, Ship Overhaul, and Weapons Supply). Input consists of data describing operational characteristics of the MHE, materials delivery for cargo arrivals, and issue document specifications. Model output is composed of computer generated data describing MHE utilization and throughput data which tabulates the movement of cargo within this system as a function of time. The model output is designed to assist an analyst in the determination of specific MHE utilization requirements for any given U.S. Navy installation. An analysis of sample simulation run results is also included in this report. Keywords: Pallets; Forklifts; Cranes; Sideloaders; Straddle trucks.

Final rept. Oct  
84-Jun 87,

134 DTRC-88/008

The appendix contains the supplemental findings of water turbidity, light extinction profile, and ice thickness (when present) at several St. Marys River sites prior to and during the season of commercial navigation. The results are arranged chronologically, and all site locations are described in Appendix A.

Final rept.

234 null

This report is a six-part statistical summary of surface weather observations for Incirlik AB, Adana, Turkey. It contains the following parts: (A) Weather Conditions; Atmospheric Phenomena; (B) Precipitation, Snowfall and Snow Depth (daily amounts and extreme values); (C) Surface winds; (D) Ceiling Versus Visibility; Sky Cover; (E) Psychrometric Summaries (daily maximum and minimum temperatures, extreme maximum and minimum temperatures, psychrometric summary of wet-bulb temperature depression versus dry-bulb temperature, means and standard deviations of dry-bulb, wet-bulb and dew-point temperatures and relative humidity); and (F) Pressure Summary (means, standard, deviations, and observation counts of station pressure and sea-level pressure). Data in this report are presented in tabular form, in most cases in percentage frequency of occurrence or cumulative percentage frequency of occurrence tables. (Author)

Final rept.

USAFETAC/DS-  
465 80/023



...the development of the mixing

mechanisms in heterojunction transistors is leading to improved devices. Installation of an MBE system will allow production of the first samples in December 1983. Bipolar transistors have been fabricated on recrystallized silicon films for the first time. These are designed to study the properties of the film. A fully self-aligned JCMOS device has been fabricated with partial success. Another three-dimensional device structure, the staggered CMOS device, has been plagued by leaks in the oxide under the recrystallized layer. A high-performance FIR filter has been designed at the logic level, as test bed for retiming and size optimization algorithms. In a related effort, progress has been made on a technique for automatically testing adherence to a design methodology. Among the things checked are threshold drop limits, pullup network topology, information sources and sinks, charge-sharing faults and races. Several improvements to the PI placement and interconnect program have been made, including automatic power/ground routing. The program will receive study at an industrial test site. About a dozen systolic-array transformations have been identified as potentially important to designers. One, retiming, has shown to be computationally feasible.

Semiannual  
technical rept.  
1 Apr-30 Sep  
1983

128 null

Compliance testing for particulate and visible emissions was conducted on coal-fired boiler No. 3 in the Eielson AFB Central Heat and Power Plant on 12-22 July 88. The survey was conducted as a requirement for renewal of Alaska Department of Environmental conservation Air Quality Control permit to operate 8331-AA001. Boiler No. 3 was tested at capacities of 100,000 lbs steam/ hr and 90,000 lbs stream/hr. Results indicate that boiler No. 3 passed the visible emissions standard, but failed the particulate emission standard.

Keywords: Air pollution, Emission control, Smoke stacks, Sampling.

Final rept. 12-  
22 Jul 1988

USAF OEH-88-  
149EQ0686ME

143 F

The method of Lagrange for finding extrema of functions subject to equality constraints was published in 1788 in the famous book *Mecanique Analytique*. The works of Karush, John, Kuhn and Tucker concerning optimization subject to inequality constraints appeared more than 150 years after that. The purpose of this paper is to call attention to important papers, published as contributions to mechanics, containing fundamental ideas concerning optimization theory. The most important works in this respect were done primarily by Fourier, Cournot, Farkas and further by Gauss, Ostrogradsky and Hamel. (Author)

Technical  
summary  
rept.,

39 MRC-TSR-1842

for modeling group decision making. The models are based on analysis of the options selected by members of the group working alone or with others in committees. The selection process is represented as exclusive, exhaustive category schemes (facets) to describe the options available and then the choice of alternatives using these facets. The analysis of these generation and selection processes is modeled using nonmetric multidimensional scaling procedures. A series of studies shows that facet analyses model effectively many aspects of group decision making when the choice criteria involved are essentially qualitative. The application of the facet framework therefore provides a theory of how groups make inference by combining the option selection of their individual members. Aspects such as dominance, alliance, opposition, and involvement, issue salience and relevance and can all be made operational within the facet models of a given group. Studies indicate that by feeding back to a group the results of this type of modeling committee effectiveness may be enhanced. The theory provided a basis for creating an online, interactive group decision support system. Applications of the modeling process to actual decision problems in relation to

Final rept. Jun  
88-Jun 90,

ARI-RN-91-  
68,R/D-6063-  
248 RB-01

Multipass Cooling Geometry; Pressure Drop and Heat Transfer Characteristics of Circular and Oblong Low Aspect Ratio Pin Fins; External Heat Transfer Study on a HP Turbine Rotor Blade; Effects of Wakes on the Heat Transfer in Gas Turbine Cascades; Effect of Hole Geometry, Wall Curvature and Pressure Gradient on Film Cooling Downstream of a Single Row; The Effect of Density Ratio on the Film-Cooling of a Flat Plate; Shroud Segments for Unshrouded Blade Turbines; Heat Transfer Test Evaluation of the Shell-Spar Blade Cooling Concept Applied to Industrial Gas Turbines; Heat-Flux Measurements and Analysis for a Rotating Turbine Stage; Calculation of Laminar-Turbulent Boundary Layer Transition on Turbine Blades; A Model for Correlating Flat Plate Film Cooling Effectiveness for Rows of Round Holes; Heat Transfer in Gas Turbine Combustors; Effectiveness Measurements for a Cooling Film Disrupted by a Single Jet with Wall Plunging; Full Coverage Impingement Heat Transfer: The Variation in Pitch to Diameter Ratio at a Constant Gap; The Measurement of Local Heat Transfer Coefficients in Blade Cooling Geometries; High Frequency Response Heat Flux Gauge for Metal Blading; Transient Thermal Behavior of a Compressor Rotor with Ventilation - Test Results

Conference  
proceedings

530 AGARD-CP-390

by Naval Research Laboratory (NRL) and Aerospace Corporation Bragg crystal spectrometers flown on an orbiting spacecraft (P78-1) are combined and analyzed. The instruments were launched on 1979 February 24 by the U.S. Air Force and the data discussed in this paper cover the wavelength ranges, 1.82-1.97 Å, 3.14-3.24 Å, and 18.4-23.0 Å. The NRL experiment (SOLFLEX) covers the two short wavelength ranges (highly ionized Fe and Ca lines) and the Aerospace experiment (SOLEX) covers the 18.4-23.0 Å range, which includes the Ly-alpha O VIII line and the resonance intercombination, and forbidden lines of O VII. We analyze the spectra of two flares which occurred on 1980 April 8 and May 9. Temporal coverage is fairly complete for both flares, including the rise and decay phases. Measurements of electron density Ne with rather high time resolution (about 1 minute) have been obtained throughout most of the lifetimes of the two flares. These measurements were obtained from the O VII lines and pertain to flare plasma at temperatures near 2,000,000 K. Peak density seems to occur slightly before the times of peak X-ray flux in the resonance lines of Fe XXV, Ca XIX, and O VII, and for both flares the peak density is about 10 to the 12th power/cc. Electron

Technical  
rept.,

TR-0081(6960-  
01)-4,SD-TR-81-  
35 52

null

null

SBI-AD-F400  
319 016

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. Based on the evaluation of the existing conditions, the condition of the Newtown-Hoffman Creeks Watershed Project - Floodwater Retarding Dam Site 1 is considered to be good. The examination of documents and visual observations did not reveal conditions which constitute a hazard to human life or property. The spillway capacity was evaluated according to the recommended procedure and was found to pass the required spillway design flood of 100 percent of the Probable Maximum Flood (PMF). Therefore, the spillway capacity is rated as adequate. (Author)

null

82 null

Implementation of a project on the scale of the proposed Lakefront Steel-making Facility will result in unavoidable environmental, social, and/or economic consequences that might be considered undesirable. The evaluation of undesirable or adverse effects, particularly in the social environment, depends on each individuals' perceptions and values: an undesirable effect to one group may be desirable to others. No significant unavoidable adverse impacts are expected in the areas of Government structure, employment, fire protection, sanitary wastewater, solid waste and energy. The following paragraphs discuss possible undesirable consequences of the construction and operation of the proposed facility in the areas of population, housing, and quality of life consisting of cost of living, income distribution, community character and cohesion, and local government.

null

817 null

This letter report describes the progression of a task aimed at conducting a series of single impact shock tests on a selection of shock mitigating seats that are or could be used on board Canadian Armed Forces (CAF) high speed craft (HSC). The R and D initiative is aimed at reducing the risk of acute and chronic injury to personnel serving in small high speed military crafts by seeking to improve the state of the art for modeling, simulation, testing, and evaluation of shock mitigation seat technologies. This report describes the work done to date in developing test capabilities and protocols, and includes the evolution of the test protocol from the initial concept to the final version.

Technical  
Report

DRDC-RDDC-  
80 2014-C89

An adaptation of a primitive variable, finite-difference computer program was made in order to predict the non-reacting flow fields in turbojet test cells. The study compares the predictions of the primitive variable computer model with an earlier stream function-vorticity computer model and empirical data. It was found that the model reasonably predicted the flow fields and allowed simulation of test cell flows up to full engine throttle conditions. (Author)

Final rept.,

70 NPS67-79-009

The U.S. Army operates and/or owns ammunition plants and depots involved in the manufacture, processing, loading and storage of pyrotechnic, explosives and propellant (PEP) materials. These operations involve permanent facilities and a variety of process and handling equipment. Many of these facilities are in an inactive or stand-by status and are candidates for excessing operations. In some cases, explosive contaminated structures have significant reuse potential for conversion to other industrial processes. In order to recover these valuable resources, non-destructive decontamination techniques are necessary to eliminate the explosive and toxic hazard of any munition processing wastes. The use of hot gas treatment (with or without caustic spray) appears to be a promising means of decontaminating explosive contaminated buildings. More importantly, this hot gas decontamination process appears to be non-destructive in nature and, therefore, has the potential for rendering treated buildings available for reuse or excessing operations.

Final rept. Sep  
85-Aug 87

ADL-  
54145,AMXTH-  
185 TE-CR-87112

The effects of snowfall on the transmittance of visible, infrared, and millimeter radiation are assessed on the basis of currently available information. From a tactical applications viewpoint, little information is available for millimeter wavelengths; and for the visible and infrared, results vary widely. This variance appears to be real and due to two effects: the variety of snow types and the coincidence of fog. Empirical formulae relating transmittance to snowfall intensity are found but are judged to be less useful for tactical purposes than relations to visual range. For the latter, results from different investigators must be combined. Such empirical formulae are thus derived for wavelengths 0.63, 3.5, and 10.6 micrometers; and while considerable uncertainty is evident, apparently practical boundaries can be established. Lines of approach for future experimental work are also identified. An increasing number of Army systems rely critically on the propagation of optical energy through the atmosphere. As a result the demand for reliable estimates of optical attenuation in low visibility aerosol conditions is steadily increasing. Among those attenuation least observed or measured is that of snowfall.

Technical rept.

ERADCOM/ASL-  
29 TR-0013



Partial contents: The Perturbed Flow Environment about Helicopters and its Effect on Free Rockets; Some Practical Aspects of Rotor Wake Effects on Rocket Accuracy; AH-1G Helicopter Field Flow Survey; Total QE Component Variation under Hover Downwash Conditions for Long Range Targets (3-6km); The Effects of Rotor-Wake on Rockets; Rotor-Wake Induced Flow along Helicopter Rocket Trajectories; Analysis of Effects of Calculated Downwash Distribution on Flight Performance of the 2.75-inch Rocket; Measurement of Helicopter Air Data Using Surveilling Pitot Static Pressure Probes; Correlation of Actual Induced Flow with Theory for Bell NUH-1M Helicopter Rotor Operating in Level Flight; Review of LORAS Characteristics; General Requirements for Omni Directional Low Range Airspeed System; LORAS Displays; Ultrasonic Wind Vector Sensor; Application of Remote Wind Sensors; Effects of Airflow on Jettison of Multi- Track Launchers from Helicopters; and VA 210-220 Series, Low Speed Indicator, 1 to 150k and Air Speed/Directional Sensor, 2 Axis, VT1003.

null

306 null

The Millipore Micro-Scan Contamination Monitor and the HIAC Analog Particle Counter (PC120) underwent laboratory and field test of their ability to measure particulate contamination. Two Aluminum Oxide Hygrometers were laboratory tested for their ability to measure water in MIL-H-5606 hydraulic fluid. The results of the testing formed the basis for a procurement specification for an in-line contamination monitor. (Author)

Final rept. Jan 75-Oct 76,

NAEC-GSED-123 105

This document serves as a guide to Version 4 of ATR (Air Transport of Radiation). This version of ATR contains a parametrization of a comprehensive transport data base for neutrons, secondary gamma rays, prompt gamma rays, x-rays and fission product radiation and provides a detailed description of weapon radiation environments in the atmosphere. This report contains pertinent parts from previous ATR reports as well as descriptions of the new features of the code. Thus it is a definitive user's guide for Version 4. (Author)

Final rept. 8  
Aug 73-30 Sep  
75,

SAI-76-561-  
LJ,DNA-  
3995F,SBI-AD-  
149 E300 010

A project was established to improve the performance of Military Specification MIL-G-10924C, Grease, Automotive and Artillery (GAA), since a survey of Department of Defense (DOD) user activities indicated that the lubricant performed marginally in military ground vehicles and equipment. The initial literature search and research indicated that the base-grease formulation did not provide the necessary high temperature capacity or the ability to impede corrosion by saltwater. In-house and commercially formulated mineral oil greases were found to be unable to meet the necessary performance criteria, when transitioned from laboratory to full production scale manufacturing. Interim rept.

75 BRDC-2399

A nonlocal kinetic formalism will study the electrostatic ion waves that can be excited in a magnetised plasma including a d.c. electric field such as a double layer. The d.c. electric field can have components parallel and perpendicular to the uniform ambient magnetic field. In a collisional plasma,  $E_{\parallel}$  can give rise to a magnetic field aligned drift  $V_{\parallel}$  of the electrons with respect to the ions, while  $E_{\perp}$  provides an  $E_{\perp} \times B$  drift to both the species. For  $V_{\parallel} = 0$ , our formalism recovers the ion cyclotron like modes, while for  $E_{\perp} = 0$ , the ion cyclotron modes. The electrostatic ion modes are studied for arbitrary values of  $V_{\parallel}$  and  $E_{\perp}$ . It is found the the real frequency is strongly affected by the transverse component of the d.c. electric field and can assume values much different from the harmonics and may even get below the first harmonic. The growth rate is influenced by the field aligned electron drift.

Keywords: Ion waves; Instability; Nonlocal; Electric field.

Interim rept.,

17 NRL-MR-6139

;Contents: History of loading of aircraft and examples of aircraft failure; The use of fracture mechanics principles in the design and analysis of damage tolerant aircraft structures; Basic concepts of fracture mechanics; Fail- safe design procedures; Experimental techniques for determining fracture toughness values; Flaw detection methods.

AGARDograph  
rept.

AGARD-AG-  
627 176

Shuttle orbiter are extremely sensitive to impact damage. Such impacts could be caused by ice particles dislodged from the outer surface of the external tank (ET) during the launch. The ET, which contains the cryogenic propellant tanks, is covered with a spray-on foam insulation (SOFI) to minimize ice formation. The objective of this investigation was to experimentally explore a range of environmental conditions for which significant icing potential exists for the ET. A significant finding, which became evident early in the experimental program, was that the computer models based upon the average SOFI thickness predicted panel surface temperatures that were considerably higher than those observed. Ice formation of a size beyond that specified as hazardous to the thermal protective tiles of the orbiter was observed in all tests having liquid water available on the surface. Polyethylene glycol was applied to the SOFI surface and tested as an approach to ice suppression. The three compounds tested were basically successful in this capacity except at the thinnest SOFI spots. Serious questions remain, however, concerning the longevity of the coating during high moisture availability conditions. A forced air flow on the panel was found to be an effective and fast-acting null

314 CRREL-82-25

Contents: In-house laboratory independent research; Communicable diseases and immunology; Research in biomedical sciences; Basic research in support of military medicine; Military preventive medicine; Military medical research program S. E. Asia; Combat surgery; Military internal medicine; Military psychiatry; Ionizing radiation injury, prevention and treatment; Malaria prophylaxis; Biosensor systems.

Annual  
progress rept.  
1 Jul 1970-30  
Jun 1971

RCS-MEDDH-  
571 288(R1)

The Loglisp Programming System (LPS) is a Common Lisp environment extended to provide logic programming capabilities. The system consists of an interpreter, a compiler, an editor interface, and a user interface targeted to a VAX 11/780. This User Manual describes the features of the Loglisp language and the LPS system facilities that comprise overall environment. Enhancements to the Common Lisp environment are also detailed. The Computer Operations manual describes the installation of the LPS on the VAX 780 system detailing system requirements and procedures. Keywords: Logic programming; Artificial intelligence.

Final technical  
rept. Jun 85-  
Jun 87,

RADC-TR-87-  
84 228

This publication contains the papers presented at the SMP Spring 1983 Specialists Meeting on Aeroelastic Consideration in the Preliminary Design of Aircraft. Current aerospace design trends which involve the increasing application of composite structures have forced the use of large-scale structural analysis at an early design stage; at the same time structural optimization and aeroelastic tailoring are becoming practical tools for shaping the initial project. Whilst the potential for designing minimum weight structures which deform beneficially under load exists, the hazards of extracting energy from the airstream and generating unfavorable deformations and aeroelastic instabilities must also be recognized. These papers review trends in aeroelastic analysis, aeroelastic tailoring, structural optimization and flutter optimization.

Conference  
proceedings

326 AGARD-CP-354

narrow terrace at the foot of a steep slope on the right bank of Columbia River 70 to 350 m upstream from River Mile 578. The site lies in an Upper Sonoran life zone. In 1979 and 1980 the University of Washington excavated 347 cu m of matrix volume for the U.S. Army Corps of Engineers, Seattle District, as part of a mitigation program associated with adding 10 ft to the operating pool level behind Chief Joseph Dam. Systematic random sampling using 1 x 1 x 0.1-m collection units in 1 x 1, 1 x 2, or 2 x 2 m cells disclosed three prehistoric occupations in overbank, colluvial and aeolian deposits. The first occupation is represented by diffuse cultural material and a few structured features found in overbank sand and silt deposits and in association with basal river gravel and alluvial fan deposits. The zone is dated by a single radiocarbon date, the age of the overlying zone and a small number of projectile points to pre-3500 B.P. It represents a mix of Hudnut and Kartar Phase elements. The second zone, dated from 3500 to 2000 B.P., by 17 radiocarbon dates, is contained in slope wash sediments with increasing aeolian modification toward the surface and locally variable colluvial contributions. It contains seven structures, six of them housepits.

Final technical  
 rept. Aug 78-  
 Oct 84,

343 null

The report contains the minutes presented by military and civilian personnel at an annual seminar relative to munitions handling, storage and disposal, with emphasis placed on the safety considerations thereof.

null

711 null

null

null

1231 null

This review consists of a brief assessment of the developments in dispersion strengthening of 21 metals and their alloys on both a commercial and experimental level with a special emphasis on the last 10 years. For purposes of this report, dispersion strengthening is defined as the process of strengthening a metal or alloy by incorporating a fine insoluble phase dispersed uniformly throughout the matrix of the parent metal. Precipitation hardening is not covered in this report although it is a form of dispersion strengthening in which the precipitated particles usually redissolve in the matrix at high temperatures. Because this has been a very active field of research and development, properties obtained recently (primarily within the past 10 years), or from difficult-to-obtain sources, have been given preference along with work not covered in previous reviews. This report also identifies the most recent reviews which have been prepared for each of these metals. Each section has its own reference list to assist the reader interested only in particular metals. For copper and nickel (which are two of the largest chapters), a bibliography of added references, not cited in the overview, has been provided as an additional information source.

null

172 MCIC-77-30

This report compares the quick-fire method of pistol training to the standard aimed-fire method to evaluate their relative effectiveness. The two methods were tested on Tables II and III of the Standard Firing Course and Tables I through V of the Combat Pistol Qualification Course. Information obtained provided a basis for evaluating the effectiveness of the quick-fire method and for conducting continuing research. (Author)

Consulting  
rept.,

52 null

null

null

661 null

The document contains abstracts and bibliographic data of reports issued or published during 1962 as a result of AFOSR sponsored research. The disciplines covered include physics, chemistry, engineering sciences (subsuming mechanics and propulsion), life sciences (both biological and behavioral, but exclusive of medical), mathematics, and information sciences. Contract, OSR control number, author and subject indexes are included. The entries are arranged by corporate author.

null

AFOSR-700-  
953 VOL-6

E.1 reproduces the information provided in Chapter 6.0 of the Final Environmental Impact Statement (FEIS) to allow the commentors to see overall comment response process in one volume. Table E-1, in particular, allows and individual to identify the number assigned to his/her original document and to go to that document number in Section E.1.4 to read the response. Section E.2 includes all documents received during the public comment period. These documents are assigned identification numbers in the order they were received and are presented four sheets to a page. A total of 124 document were received during or immediately after the comment period. These are assigned sequential numbers 1 through 124. In addition, all public hearing transcripts, as recorded by the court reporters, are presented at the end of Section E.2 as documents 125 through 130. One comment letter from the U.S. Department of the Interior was received too late for incorporation at the appropriate location. This has been assigned document number 131. All of these 131 documents represent the complete record of public and agency comments received on the Draft Environmental Impact Statement (DEIS) for the Small Intercontinental Ballistic Missile (ICBM) program at Malmstrom Air Force

Final rept.,

277 null

null

Contract  
summary rept.  
Aug 1988-Sep  
1989

625 null



The Hungarian Revolution exposed the contradictions in U.S. policy that had existed since the formation of the Psychological Warfare Campaign during the Truman Administration and its growth during the Eisenhower Administration. Because of leadership failures and organizational problems within the Eisenhower Administration, this psychological warfare effort encouraged the Hungarian people to rise up in rebellion, even though the Administration was unprepared to support such an uprising and the Department of State had opposed such agitation. Throughout the revolution, Radio Free Europe continued to broadcast messages of support to the fighters on the streets of Budapest. Exploration of the formation and organization of the Psychological Warfare Campaign presents insights into the thoughts of policy makers in the early days of the Cold War.

Master's  
thesis

112 null

The bibliography -- one in a series on Civil Defense Systems -- contains a compilation of references on Social Impact and Management Planning. References contained in this volume pertain to psychological factors related to recovery from nuclear attack; public response to community shelter planning; fallout shelter management responsibilities; emergency operations training; attitudes toward civil defense; requirements for local planning to cover hazards of fallout; food processing and distribution; and the roles of the dentist and pharmacists in national disasters. Other bibliographies in this series are: Preattack and Postattack (Nuclear Warfare), and Shelters. Corporate Author- Monitoring Agency, Subject, Title, Contract, and Report Number Indexes are included.

Report  
bibliography  
Aug 1960-Aug  
1971

DDC-TAS-72-  
197 11-1

This user's manual describes the mathematical model contained in the Combined Arms Tactical Training Simulator (CATTS) from the viewpoint of providing the user with the necessary insight into the structure and performance of the CATTS mathematical model in support of its operational use and maintenance. CATTS is a computer-supported, two-sided training simulator that is used to provide effective training for battalion field commanders and staff officers by realistically simulating ground combat operations between red and blue forces. The CATTS mathematical model is a large, detailed computer time-step simulation of the tactical battlefield environment, including detections, engagements, weapon firings, casualties movement, and environmental effects for up to ninety-nine units. A complete understanding of the Operators system operation, structure, performance and the use of the CATTS software can be constituted by using this manual together with the CATTS Operators Manual (NAVTRAEQUIPCEN 73-C-0156-E001), the Programming Report (NAVTRAEQUIPCEN 73-C-0156-A008), and the superindex program listings (NAVTRAEQUIPCEN 73-C-0156-A008). (Author)

Final rept.,

NAVTRAEQUIP  
C-73-C-0156-  
689 E003-1

The US Air Force Statistical Digest summarizes the great volume of statistical information collected and published by the various offices in USAF Headquarters and certain Air Force Commands. The more important data on the many activities and operations of the USAF are brought together on a uniform basis to serve as an official and basic reference manual. The 1948 Statistical Digest is the third edition in the annual Series. Original editions- Army Air Forces Statistical Digest (World War II) and Supplement Number 1, 1945 were followed by AAF Statistical Digest, 1946 and USAF Statistical Digest, 1947. The 1946 and 1947 editions made available Air Force statistics in summarized form as far back as available, with the exception of Combat Operations. The latter data is found only in the 1945 editions. The present issue is the first strictly annual publication and historical continuity may be accomplished by referring to the previous publications. Many new tables have been added on data which has become available during the preparation of this issue. An effort has been made to cover all phases of the Air Force activities for which this publication is the official statistical yearbook.

null

420 null

As large scale conventional war with the Soviet Union and the Warsaw Pact has all but disappeared as a credible threat to the security of the United States, our nation is shifting its defense focus toward the lower end of the operational continuum where the indirect application of military force becomes dominant. As a result, security assistance is once again emerging as an important instrument for achieving our national security objectives. Recent studies have suggested that security assistance has become a blunted instrument and that it needs to be sharpened if it is to enhance our national security. This monograph offers a conceptual approach to strengthen the design and execution of this program, the application of operational art. This monograph first examines operational art; exploring the concepts of end state, center of gravity, and culmination point in the design of campaign plans. This is followed by a primer on security assistance. Security assistance is explained through a discussion of its ten component programs and the organization and responsibilities for execution.

Monograph  
rept. AY 1989/  
1990

52 null

Surface temperatures of 4-ply built-up roofs insulated with (1) 1 inch of perlite ( $R = 2.8$ ) and 2-1/2 inches of urethane ( $R = 19.2$ ) and (2) 1 inch of urethane ( $R = 7.1$ ) and 1-7/8 inches of glass fiber ( $R = 7.7$ ) are presented. Energy factors are shown in terms of temperature-time areas defined as solar heat response, cooling (heating) required, radiative cooling, and insulation efficiency. Results indicate that for a black surface, solar heat response is significantly higher in the roof portion with the higher R-value. Solar heat response is directly affected by color of surfacing; lowest to highest values were found with white, white gravel, gray gravel, aluminum-gray, and black.

Recommendations are given for reducing surface temperatures of insulated built-up roofs. (Author)

Technical note  
Jul 77-Jan 80,

84 CEL-TN-1600

The high costs for software for systems developed within the Department of Defense is receiving increased attention from the highest levels of management. The major part of these costs is for software for what are called 'embedded computer systems.' Such systems would include tactical weapon systems, command and control systems, avionics systems, etc. As part of the overall process of investigating the costs of software, in January 1975 a High Order Language Working Group (HOLWG) was chartered by the Department of Defense with representatives from the three services. The purpose of this group is to investigate the requirements and specifications for programming languages for embedded computer applications and to recommend the adoption or implementation of the necessary language or languages to achieve an appropriate degree of commonality of programming language usage in the services.

null

2398 null

null

null

1614 null

null

null

QE/C-64-  
782,MICRO-  
342 NOTES-9

This report is a complete compilation of the papers presented and the Proceedings of the 2nd Annual Conference on Atmospheric Contamination in Confined Spaces, sponsored by the Aerospace Medical Research Laboratories and held in Dayton, Ohio on 4 and 5 May 1966. Major technical areas discussed by the invited speakers, members of the Open Forum, and Conference attendees included toxicology of space cabin materials, comparative toxicology and pathology of oxygen, and the effects of oxygen on contaminant toxicity.

null

AMRL-TR-66-  
322 120

Lambert developed equations relating times of transit between two points in space and the semimajor axis of conics passing through these two points when the two radii and the chord are given. Special types of problems can often best be solved by alternate methods that have been developed, but for a general study of connecting two points in space with a conic section, with no special constraints other than time, Lambert's equations seem to be best suited. This paper represents an expository summary of the mathematical methods and techniques involved. null

TDR-169(3550-40)TN-3,SSD-SSD-TDR-63-37 177

This report encompasses a structural engineering analysis of aerospace safety design criteria. null

39 GDA-AZS-009

The 2000 IEEE1LEOS Summer Topical Meeting - Electronic Enhanced Optics was held 24-26 July 2000 at the Turnberry Isle Resort & Club, Aventura, Florida. The purpose of the meeting was to facilitate information exchange between the various technical communities impacted by the integration of electronic circuitry with optical devices and systems. The three-day meeting included the following topics: Devices, Structures, and Circuits; Architectures and Modeling; Integration and Packaging; and System Demonstrations and Applications. The format included both invited and submitted talks. The conference was highly relevant to a number of Army topics to include imaging, photonic interconnects, and communication systems. Final rept.

ISBN-0-7803-6252-7,ISSN-1099-4742,ARO-244 41491.1-PH-CF

Spectroscopic analysis of the cathode jet of a model coaxial magneto-plasma dynamic (MPD) thruster is conducted to determine electron density and temperature downstream from the cathode. H(Beta) line profiles were scanned from an argon-hydrogen plasma generated in the cathode test facility of the NASA Jet Propulsion Laboratory in Pasadena, CA. A computer program was written in IDL to determine the profile Doppler and Stark half widths, which were used to determine temperature and electron density, respectively. Three sets of data from the cathode test facility were taken, while varying operating voltage, current, hydrogen/argon ratio, and pressure. Radial profiles for electron density and temperature were determined within the cathode jet. Generated plasmas ranged in electron density and temperature from approximately  $n_e = 2 \times 10^{14} \text{ cm}^{-3}$  at 5000 K (0.43 eV) to  $4 \times 10^{14} \text{ cm}^{-3}$  at 15600 K (1.3 eV). It was determined that radial density and temperature distribution within the cathode jet are essentially uniform.

Master thesis,

101 null

The investment to acquire major Department of Defense (DOD) weapons makes a heavy impact on both short- and long-term allocations of the Nation's resources. Because of this impact and because of evidence that the weapon systems acquisition process has not, in many cases, been conducted efficiently, considerable Congressional and public attention has been focused on improving the process. This interest and attention continued during the past year. The authorizing and appropriations committees, as well as other committees of the Congress, continued to direct attention to major acquisitions and gave particular emphasis to major problem areas, including specific weapon systems. The Congress has called upon the General Accounting Office (GAO) to report periodically on the progress of various acquisition programs and to provide its committees and members with more reliable information on which to base judgments concerning issues involving its oversight and its legislative functions.

null

75 null

Tests were made to determine direction and velocity of air flow in a glass engine cylinder when cylinder heads similar to those on two radial engines were used. Air movements were made visible by mixing small feathers with the air. Motion pictures were taken of the feathers and of gasoline sprays injected into the cylinder. Velocities of feathers at various engine speeds are charted. Nature of air movement is discussed.

Technical note

19 NACA-TN-766



This report documents a portion of Rand work on the military, political, and economic balance in the Middle East. It considers how income and wealth disparities among Arab countries in the mid-1980s might affect the occurrence and course of any military conflicts. The range of possible conflicts being wide, the report examines only a limited set of cases. It concludes that general demands by the poor for federation with the rich are much less likely than bilateral projects of union not necessarily motivated by economic need. Because some of these unions could lead to inter-Arab military conflict, and because the contingencies are complex and fraught with uncertainties, the U.S. should proceed cautiously with any policy interventions. The report considers possible U.S. actions with respect to general policy considerations, U.S. force planning and deployment, and policies on security assistance and economic assistance.

Interim rept

RAND/R-2371-  
40 NA

The material evaluated in this study was subjected to a matrix of in vitro assays employing microbial cells, mammalian cells in culture and in vivo tests measuring potential germ cell effects in mice and rats. JP-4 was shown to induce nonspecific DNA damage in WI-38 cells and possibly preimplantation loss in rats. All other data from the test battery were negative. These results are not strong indications of human risk and could be considered as representing minimal genetic toxicity. Neither the unscheduled DNA synthesis or preimplantation loss are conclusive indicators of mutation. Their implications for potential carcinogenesis must also be considered weak in light of the majority of negative test data.

Final rept.

AMRL-TR-78-  
59 24

Fatigue initiation studies were performed on a potential hydrofoil material, HY130 steel, using a Tatnal-Krause type fatigue testing machine. The welded HY130 steel shows fatigue endurance properties of 480 MPa (70 Ksi) when in the ground and polished condition, the condition which would be present in the highly stressed areas of a foil. In the as-welded condition, the material shows an endurance limit of 240 MPa (35 Ksi) at a stress ratio of  $R = + 1/2$ . Local high residual tensile stresses, due to welding, have little, if any, effect on the fatigue initiation properties of the welded HY130 steel specimens. (Author)

Materials  
rept.,

30 DREP-77-A

Structures Conference was held to address the explosion in both theory and application of recent and ongoing developments in smart, intelligent, or adaptive structures. The many areas of intelligent systems and smart structures incorporating active materials are now emerging to include major areas of research and development. These include fiber-optic based devices; ferroelectric, shape memory, and electro-rheological- based sensors and actuators; hybrid composites incorporating inherent sensing and actuation; biomimetics; micromachines; adaptive optics; and many others. A wide variety of approaches to sensing and actuation are discussed that exploit the many recent developments in active materials. Such research and development activities are currently taking place in universities, industry, and government laboratories-all of which were substantially represented at the AMAS meeting. Many possible applications of these technologies are described that include already emerging applications in underwater vehicle technology, aircraft systems, smart munitions, civil engineering, biomedical, robotics, and space platforms. These technologies offer the potential of substantial advances in areas such as precision structures, damage

Proceedings  
rept.

928 null

The technical program for the Symposium was constructed around the core theme of 'the impact of hydrodynamics theory upon design practice with emphasis on high performance and/or energy saving ships,' and consisted of three sessions on Hull Form, two on Viscous Flow and one each on Propulsion, Cavitation and Wave Energy. The authors of the forty-five papers which were presented were drawn from the international community of ship hydrodynamics research scientists with fourteen nationalities represented on the technical program.

null

882 null

DREV initiated the Simulated Real-Time Environment (SRTE) project to investigate concepts and capture the real-time requirements of a decision support system that can provide enhanced capability within the Command and Control System to counter the current and anticipated future air and surface threat to the Canadian Patrol Frigate. Among its principal roles, this system will: continuously take in data from the ship's sensors and other information sources; support the formulation, maintenance and display of an accurate tactical picture derived by fusing all available data, and display of an accurate tactical picture derived by fusing all available data, and assist in the interpretation of this picture; and formulate and provide recommended courses of action for responding to anticipated or actual threats. This document describes both cognitive and technological aspects of the decision making approach that is a cornerstone of the SRTE project and gives a detailed technical description of the methodology and associated R&D work that is being conducted to capture system requirements. Technical rept.

138 DREV-R-9629

A statistical analysis of smoke trail velocity profiles and balloon velocity profiles has been carried out to evaluate and remove their inherent noise content. The day-to-day variability in the probability of exceeding critical shear was evaluated. The corona anemometer data was compared with the much larger data-base of smoke trail data. Although the corona anemometer showed a higher probability of turbulence, it was within the variability expected from the smoke trail analysis. It is shown that the diffusion integral which leads to the diffusion coefficient is very sensitive to the variability in turbulent occurrence probabilities. (Author)

Final rept.,

AFGL-TR-82-  
19 0284

DIMEX (Dipole plasma Microwave EXposure) experiment has demonstrated both stable confinement of plasma at electron densities of the order of  $10^{10}$  to  $10^{11}$  per cm<sup>3</sup> and electron temperatures of 1 eV and also has demonstrated strong absorption of 1 GHz microwaves with much reduced reflection (-10dB). In addition, high-intensity microwaves (greater than 0.1 W/sq cm) were strongly reflected, indicating that the plasma shell can function as a cloak to radar and a shield to HPM. It is believed that the successful demonstration of plasma confinement, cloaking to low-intensity microwaves, and even shielding to high-intensity microwaves can be explained in terms of existing theory, drawn from the magnetic and laser fusion communities. (JHD)

Final rept.

MRC/WDC-R-  
230, AFOSR-TR-  
68 90-1075

The purpose of the lecture series was to review current progress on specific areas of hypersonic vehicle design. Some general conclusions from the course can be stated. Lectures on vehicle optimisation were presented in which a generalised approach was used and the concept of the waverider was thoroughly discussed. Heating was highlighted as one of the most important problem areas in the aerodynamic design of hypersonic vehicles. Considerable emphasis was placed on the need to develop large hypersonic facilities in which complete configurations can be tested and on the desirability of conducting free-flight tests.

Lecture series

AGARD-LS-42-  
238 VOL-1

The results of an engineering study of the methods, procedures, and equipment pertinent to a system for handling military cargo during air shipment from U. S. Air Force delivery points to U. S. Army receiving and distribution areas are presented. The results compare the number of AC-1 Caribou and HC-1 Chinook aircraft, ground support equipment, and personnel required to accomplish a given logistic mission as a function of time for the following basic operational modes: manual loading and unloading of small modules of cargo; forklift loading of 2000- to 3000-pound palletized cargo units; special purpose vehicle loading of 6000- to 7000-pound consolidated cargo loads moving over roller conveyors; and special-purpose vehicle loading of 6000- to 7000-pound loads cons-dated on a mobile pallet moving over rails. The resultant data are subsequently posted, and procurement and annual operating costs are presented. A new cargo-handling system for aircraft is also discussed.

null

NSS-  
2306,TRECOM-  
291 TR-62-92

The general problem of a cylindrical antenna immersed in a dissipative medium is formulated in a manner that permits the determination not only of the distribution of current and the admittance, but also of the electromagnetic field. The analytical procedure is approximate but quantitatively sufficiently accurate to be of practical value. It may be extended to treat coupled antennas in a dissipative medium.

null

60 TR-336

This report documents the design and development of a telemetry logging system that formats and records analog and digital data from rocketborne instruments. The main objective in the development of this system was to improve data acquisition capability so on-the-spot data plots of the instrument measurements would be available for quick-look analyses. The system design includes an explanation of the controller-subcontroller design concept with schematic illustrations and processed data samples. (Author)

Scientific rept.  
no. 2, Jun 77-  
Jun 78,

AFGL-TR-78-  
111 0180

null

null

370 null

MININEC is a method of moments computer program for the analysis of thin wire antenna problems. MININEC uses a Galerkin procedure to solve for the wire currents using an integral equation formulation that relates the electric field and the vector and scalar potentials. This approach results in a compact computer code suitable for use on a microcomputer. MININEC solves for the impedance and currents on arbitrarily oriented wires including configurations with multiple wire junctions. Optics include lumped impedance loading, near electric and near magnetic fields, and far field patterns for free space or perfectly conducting ground. MININEC is written in the BASIC language compatible with IBM PC DOS. Keywords: Method of moments; Computer programs; Galerkin procedure; Thin wire antennas; Numerical Electromagnetics Code.

Final rept. Nov  
84-Sep 86,

NOSC/TD-  
938,DoD/SW/  
129 DK-87/015A

... .. concerning cumulative impact analysis of wetlands, the Corps of Engineers Districts and other wetlands professionals need data often not directly available. Cumulative impact assessment of wetlands includes relating historic patterns of flow, derived from the stream's flow record, to changes in the watershed associated with that stream. Harmonic analysis and time-scale analysis were applied to selected stream records to ascertain their potential for describing cumulative impacts. The study area chosen included selected streams in the White River basin, Arkansas/Missouri. The Cache River received particular emphasis because a significant amount of information was readily available concerning it and its surroundings. Daily flow values were retrieved from each of the streams. Using nonlinear, harmonic analysis as well as time-scale analysis (a technique adapted from fractal geometry) to reveal the time-dependent patterns in the respective samples, the results were compared decade-by-decade to discern changes in the historic, seasonal patterns. Other streams in the White River basin were analyzed in the same manner and compared with the Cache River, noting historic changes in land use and stream regulation. The study identifies methods with the Final rept.

WES/TR/WRP-  
47 SM-3

The chapters of Volume VII, the Soldier, develop a number of key insights and lessons concerning the US soldier during the years 1960-1973. These insights highlight a broad and diverse array of soldier-related problems and policies that developed in the years of the United States' combat role in Indochina. The insights are specific, focusing on the major themes discussed in the chapters of volume, including personnel policies and problems, racial discrimination, drug abuse, leadership quality, and careerism. The accompanying lessons, in contrast, while derived from the US soldier's experiences in Vietnam, are more general in tone, with wider application and greater interest to US military leaders and planners.

Final rept.

BDM/W-78-  
378 128-TR-VOL-7



The objective of this program is to develop improved spectroscopic methods for investigating the absorption of gases in the infrared region of the spectrum. During the contract year covered by this report, we were successful in achieving tunable output from a dye laser pumped by a lead laser, with power levels sufficient to produce tunable infrared radiation by nonlinear mixing.

(Author)

Final rept.,

AFOSR-TR-81-

100 0500

Contents: Irradiance and Beam Transmittance Measurements off the West Coast of the Americas; Nitrous Oxide Production in the Ocean; Biological Production and the Exchange of Oxygen and Carbon Dioxide across the Sea Surface in Stuart Channel, British Columbia; Acoustical estimation of Zooplankton Populations; Mid-ocean Observations of Atmospheric Radiation; Mineral Phases Formed in Anoxic Sediments by Microbial Decomposition of Organic Matter; Comparison of the Feeding Habits of Migratory and Non-migratory *Stenobrachius leucopsarus* (Myctophidae); Observations of Upper Ocean Temperature and Salinity Structure during the Pole Experiment; Mesopelagic Fishes of the Bering Sea and Adjacent Northern North Pacific Ocean. Feeding Habits of Cod, Capelin, and Herring in Balsfjorden, Northern Norway, July-August 1978-- The importance of Euphausiids; Diatom Taphocoenoses in the Coastal Upwelling Area off Western South America; Optical and Particulate Properties at Oceanic Fronts; Optical Properties of Turbidity Standards; Productivity, Sedimentation Rate, and Sedimentary Organic Matter in the Oceans -- Organic carbon Preservation; An XBT Digital Recording and Display System; and Ocean Optics.

null

REF-79-4,REF-

244 79-5

Message policy is defined to be the description of the disposition of messages of a single type, when received by a group of processes. Group policy applies to all the processes of a group, but for a single message type. It is proposed that group policy be specified in an expression which is separate from the code of the processes of the group, and in a separate notation. As a results, it is possible to write policy expressions which are independent of process state variables, and as well use a simpler control notation based on regular expressions. Input protocol, on the other hand, applies to single processes(or a group as a whole) for all message types. Encapsulation of processes is presented with an unusual emphasis on the transactions and resources which associate with an encapsulated process rather than the state space of the process environment. This is due to the notion of encapsulation without shared variables, and to the associated between group policies, message sequences and transactions.

(Author)

Memorandum  
rept.,

25 AI-M-692

Moving striations in a direct current argon glow discharge were studied over a pressure range from 11 mm of mercury to 200 microns of mercury and over the current range from 25 ma to 0.13 ma. Striations were found present at all pressures and currents, and the striation patterns observed were divided into four general regions with patterns becoming extremely complicated at the lower pressures. A disturbance in the positive column which seemed to originate at the cathode and propagate toward the anode was studied extensively using rotating mirror photography, an oscilloscope in conjunction with photomultipliers, and a spectrograph. Attempts were made to identify this disturbance as a negative striation, but it did not fit the characteristics or the descriptions offered by other investigators nor did it depend in any simple way upon the glow discharge parameters.

Master's  
thesis

87 null

TO DERIVE METHODS FOR SCORING THE DECISION-MAKING BEHAVIOR FOR USE IN A BROAD PROGRAM OF MANNED SYSTEMS RESEARCH TO IMPROVE TACTICAL DECISION MAKING. A test scenario was developed and administered individually to 20 senior field grade officers. The assigned task required each officer to write a defense plan for his division sector against an expected attack by two mechanized infantry divisions. The scenario was presented by using cathode ray tube (CRT) displays, computer-driven typewriters, and random access slide projection equipment. Defense plans were scored using USA CGSC school solutions as criteria. Two scoring procedures were utilized: (1) Levensorth Standard (based on rationales and solutions in the CGSC lesson plans) and (2) Consensus Standard (to provide for computing average subject responses in the event CGSC Standards were inappropriate as a result of scenario changes.

Technical  
research note

74 ARI-TRN-229

A cultural resource reconnaissance of federally-owned property along the shoreline of Okatibbee Lake in Lauderdale County, Mississippi resulted in the discovery of 77 cultural sites and the relocation of four previously recorded sites. Post-depositional impact, particularly in the form of sheet wash erosion, has severely impacted these sites. General information on the range and distribution of cultural components in the area was derived from the study.

Cultural  
resource rept.

COESAM/PDER-  
152 90/003

...the project consisted of three phases, an engineering design. Both expert designers and inexperienced subjects are being processed; after tests of learning style, both groups perform (1) an individual design task (constructing and electronic analogue simulator for demonstrating aspects of reaction kinetics), and (2) a team task. Section 2 discusses one method for comparing data about design behavior which is obtained during analytic sessions, using a man machine interface, after each design session; this data is an on-line, non-verbally elicited, explanation of how and why a subject produces his design. Most subjects also explain how their design relates to operation in an application domain. Section 3 exemplifies the type of personal and interpersonal design evaluation, using 4 criterion variables, which all subjects are required to furnish at the end of the design task. Descriptions of each design and its standard-format explanation (which includes reference to the application domain, in this case, physical chemistry) are elicited from, and exchanged between, subjects. The technique can be extended to members of an evaluation team presented with alternative designs (satisfying the same brief) and the standard-form explanations which relate them to an application domain. It is believed that the extended technique could

Progress rept.  
no. 6, 1 Jan-31  
Mar 77,

AFOSR-TR-78-  
49 0129

DMSP/F2 and F4 precipitating electron data are used to determine statistically the systematic variations of the equatorward boundary with Kp as a function of local time. The boundaries were chosen by hand for every DMSP/F2 satellite pass in 1978. These in turn are used to assess an algorithm developed to choose the boundaries automatically. From the statistical variations each boundary is projected to a midnight boundary. The projected midnight boundary served as an index of auroral activity-the Auroral Boundary Index. Listing of the 1978 hand- and computer-chosen boundaries and the Auroral Boundary Index for 1978 are included in appendices.

Environmental  
research  
papers

AFGL-TR-82-  
0398,AFGL-  
206 ERP-818

Contents: Operations; the Viet Cong  
Infrastructure; Chemical Activities; Army Aviation;  
Training; Psychological Operations; Roads and  
Bridges as Supports to Pacification; Logistics; Race  
Relations; Drug Abuse; Junior Officer Retention;  
Special Troops Battalion; The Brigade Acting  
Inspector General.

null

OACSFOR-OT-  
32 UT-71B018

In justification of programs requested, this document, in separate volume for each of the five Procurement Appropriations, and one separate volume for Construction Programs, provides backup data for the Army Budget submission for FY 1986. Included are Summaries of Requirements, Program and Financing Statements and Selected Data Sheets. This volume has procurement programs for missiles.

null

43 null

indirectly to the development and completion of this supranational project. It is impossible to name them all, but those who deserve special mention are Major Clif Prat, (U.S. Army) and senior DIA official Rix Mills, both of whom contributed substantially to the accurate translation of South American varieties of Spanish. U.S. State Department foreign service officer and distinguished JMIC faculty member Jon Wiant volunteered his deft pen to create the memorable illustrations. His work offers a welcome complement to the text. Finally, the editors wish to acknowledge Margaret Daly-Hayes, Director of the Center for Hemispheric Defense Studies, for her support of the concept of producing a book on intelligence, and the CHDS itself, which has offered a meeting place for professionals dedicated to the study of government intelligence. The editors also appreciate the continuous support of the leaders, faculty colleagues and students at their respective Joint Military Intelligence Colleges in Argentina and the U.S. The continued exchange of professional experiences within these collegial environments, so long as some written record of these exchanges is created, will ensure that these institutions will remain seedbeds for the growth null

fielding of experiments in support of the underground nuclear testing program, there has been an increase in interest concerning the construction of large underground caverns in Rainier Mesa. As a result, a cost and feasibility program was commissioned to evaluate hemispherical cavities between 24.4 and 91.4 m (80 and 300 ft) in diameter. The rock support designs for the cavities are based upon the use of internally installed rockbolts for the smaller cavities and tendons installed from annular galleries for the larger chamber. The evaluation program included research into past experience pertaining to the excavation and support of large underground caverns, assessment of the geological conditions which exist in Rainier Mesa, preliminary design of the cavities and their rock support system based upon the geological setting, development of mining plans for the excavation of the caverns, and estimation of the cost and manpower schedule to complete the construction of each size chamber based upon the preliminary design and mining approach. This report presents the findings of the cost and feasibility evaluation program and includes recommendations concerning the maximum practical chamber size considering schedule, dollar, and state-of-the-art

Topical rept.  
Jan-Oct 78,

EDAC-177-  
041.1R,DNA-  
4723T,SBI-AD-  
206 E300 488

This report provides a technical description of the ground station of the Space-Ground Link Subsystem (SGLS) and integrates the analyses performed by contractors who contributed to its development. The report is in three volumes: Vol 1 System Design Analysis contains the ground station description and related analyses; Vol 2 Receiver Design Analysis contains a detailed analysis of the SGLS receiver; and Vol 3 Supplementary Analyses is a reprint of analyses originally presented in the SGLS final design report.

null

WDL-TR3227-  
1,SAMSO-TR-  
335 69-180-VOL-1

----- Technical Research Reports -----

publications describing completed research studies or programs which contribute directly to the solution of Army human factors problems. The Report is generally divided into two parts-- a brief general report to management and a technical supplement. BESRL Technical Research Notes are of interest primarily to technically trained research workers in the Department of Defense and in other government research agencies. Notes present technical information concerning research methodology or basic psychological knowledge growing out of the work program. BESRL Research Studies are special reports to military management, generally prepared in response to questions raised by operating agencies when early answers are needed. Research Studies may include presentations to military management, interim bases for changes in personnel operations, and bases for research decisions. Distribution is usually limited to operating agencies with a direct interest in the content. BESRL Research Memorandums are informal reports on technical research problems. Research Memorandums include the following types of content: details concerning construction of experimental instruments, fragmentary or incidental data, and methodological

Technical  
research note

BESRL-TRN-  
56 191



Describes the numerical analysis and forecast models most widely used by U.S. Air Force meteorologists. These models are: the Air Force Global Weather Central (AFGWC) Global Spectral Model (GSM) the AFGWC Real-Time Nephanalysis (RTNEPH); the AFGWC High Resolution Analysis (HIRAS) models; the AFGWC Five- Layer cloud forecast model (5-LAYER); the National Meteorological Center (NMC) Nested Grid Model (NGM); and the NMC Aviation/Medium Range Forecast (AVN/MRF) model. Report also describes model grids and tells how the grids are built. Strengths and weaknesses of the various models are discussed, along with AFGWC and NMC production cycles. Meteorology, Weather, Forecasting, Computers, Supercomputers, Computer programs, Models, Analysis, Computer analysis, Numerical analysis, Cray, Grids, Resolution, Topography, Map projections, More. Technical note

AFGWC/TN--  
79 92/001

Topic included are: Sodium corrosion reviews; Corrosion in rankine-cycle space power systems; Corrosion by lithium; Solubility of structural metals in potassium; Corrosion by lead-bismuth alloys; Liquid-metal corrosion mechanisms; Cavitation by liquid metals.

null

7 null

This lecture series presents a review of the state of the art of damage tolerance analysis of airplanes. It shows that damage tolerance and fail safety assessment are out of the stage that tests were the only means to get answers to the pertinent questions regarding crack growth and residual strength. It also shows that tests are still indispensable, so that the question can be raised what has been gained by the development of analysis procedures. Tests only give information for a few specific areas: e.g., in a full scale test only one representative spectrum and load history are applied and only a limited number of critical locations can be evaluated. Analysis provides the means to evaluate spectrum variations, different airplane usage, other critical locations, and most important, design alternatives. Analysis still has shortcomings, but many of these apply equally much to experiments inasmuch as the reliability of test data and analysis results depend largely upon spectrum evaluation, flight load analysis, stress history, etc. Other shortcomings of the analysis can be largely overcome by using the tests to adjust predictions of crack growth and residual strength.

null

241 AGARD-LS-97

The third annual Navy-wide Personnel Survey (NPS) was mailed in December 1992 to a random sample of 20,547 active duty enlisted personnel and officers. Completed questionnaires were accepted through mid-February 1993. The adjusted return rate was 49%. Survey topics included rotation/permanent change-of-station moves, training, quality-of-life programs, organizational climate, and health issues. This technical note provides graphic presentations of the responses of enlisted personnel. Responses (weighted to allow inference to the Navy population) are shown by total group, pay grade, and other demographic variables, where appropriate. Rotation, Training, Quality-of-life programs, Organizational climate, Health issues.

Final rept. Aug  
1992-Jun 1993

NPRDC-TN-93-  
402 10

This report describes a computer program designed to calculate root-mean-square values for the acoustic phase, phase rate, and log-intensity fluctuation for a single ray path in an ocean in which the sound-speed fluctuations are the result of internal-wave activity. It is assumed that the internal waves can be described by the Garrett-Munk internal-wave model and that the theory of sound propagation developed by Munk and Zachariasen is valid.

Interim rept.,

NRL-8304,SBI-  
32 AD-E000 317

This contract has explored the multidimensional problem of the development of embedded software systems. In its reports and presentations the work has characterized these problems in various ways, but to view them as multidimensional is helpful inasmuch as the problems may be separated into different solution domains. These have been identified as: Communication; Principles and practices; Technology, and Compiler (Ada) language structure and capability. Contents: The Domain of Solutions; Integration of the Four Solution Domains; Tools; Program Architectural Designs; The Embedded Software Design Simulator (ESDS). Final rept.,

140 TR-1500.21

Cumulative search-evasion games (CSEGs) involve two players, a searcher and an evader, who move among some finite set of cells. Neither player is aware of the other player's position during any stage of the game. When the payoff for the game is assumed to be the number of times the searcher and evader occupy the same cell, Eagle and Washburn proposed two solution techniques: one by fictitious play and the other by solving equivalent linear programming formulations. However, both have proved to be time consuming even for moderately sized problems. This thesis considers two alternate linear programming formulations for CSEGs. Since both contain a large number of variables and constraints, the linear programming problems are initially solved with many of the constraints removed. If the solution to this relaxed problem is not a feasible optimal solution, additional constraints are added and the problem is solved again. This process continues until a feasible optimal solution is found. The results from a numerical experimentation with various solution techniques are also presented.

Master's  
thesis

47 null

innovation, how it can and should be generated and to what heights it might aspire. Then turning his attention to knowledge-based systems such as computer technology, the author reveals the current state of research in that field, including artificial intelligence and expert systems, and how creativity and contradiction orientation promote development. The middle section of the dissertation focuses on innovation as it helps re-mold expert systems and integral systems, respectively. Ensuing findings concern knowledge acquisition and the application environment, both of which are used as variables in the final chapter, which features an experimental model. The dissertation begins with the uses of innovation, how it can and should be generated and to what heights it might aspire. Then turning his attention to knowledge-based systems such as computer technology, the author reveals the current state of research in that field, including artificial intelligence and expert systems, and how creativity and contradiction orientation promote development. The middle section of the dissertation focuses on innovation as it helps re-mold expert systems and integral systems, respectively. Ensuing findings concern knowledge acquisition and the application environment, both

Doctoral thesis

Contents: Linear estimation theory; Further comments on the derivation of Kalman filters; Computational techniques in Kalman filtering; Modeling errors in Kalman filters; Suboptimal Kalman filter techniques; Comparison of Kalman, Bayesian and maximum likelihood estimation techniques; Nonlinear filtering and comparison with Kalman filtering; Linear smoothing techniques (post-flight data analysis); Nonlinear smoothing techniques; General questions on Kalman filtering in navigation systems; Application of Kalman filtering theory to augmented inertial navigation systems; Application of Kalman filtering to Baro/inertial height systems; Application of Kalman filtering to the C-5 guidance and control system; Application of Kalman filtering techniques to the Apollo program; Some applications of Kalman filtering in space guidance; Application of Kalman filtering for the alignment of carrier aircraft inertial navigation systems; Navigation at sea using the invariants form of Kalman filtering; Marine applications of Kalman filtering; Optimal use of redundant information in an inertial navigation; Application of Kalman filtering techniques to strapdown system initial-alignment; and A Kalman filter augmented marine navigation system.

null

AGARD-  
516 OGRAPH-139

The coverage includes basic research on solid state, liquid, gas, and chemical lasers; components; nonlinear optics; spectroscopy of laser materials; ultrashort pulse generation; crystal growing; theoretical aspects of advanced lasers; and general laser theory. Laser applications are listed under communications; holography; laser-induced chemical reactions; instrumentation and measurements; beam-target interaction; and plasma generation and diagnostics.

Scientific  
interim rept.  
Jan-Mar 1975

120 null

This grant studied the nature of the synergistic interaction of the growth factor TCFa and the nuclear protoonco-protein'product c-Myc for bitransgenic mouse mammary tumorigenesis. We found evidence of a multifactoral interaction of the two genes, involving cooperative stimulation of proliferation, anchorage independent colony formation, suppression of cell death (apoptosis), and chromosomal destabilization. In addition, we observed that the TGFalpha-related growth factors amphiregulin and cripto-I were likely to have tumor promoting effects similar to TGFalpha in breast cancer. Further studies addressed the ability of c-Myc and TGFalpha to interact in a novel paracrine mammary system in vivo. In summary, this grant allowed the development of a new model system whereby the interactions of two important genes in breast cancer may be dissected in vivo at the molecular level.

Final rept. 1  
Sep 94-31 Aug  
99

202 null

Laser; Photoexcitation of Nuclear Isomers by  
 (Gamma, Gamma') Reactions; Adaptation of a  
 Fixed Energy Electron Accelerator to Produce  
 Variable Endpoint Bremsstrahlung; Determination  
 of Gateway States in  $^{197}\text{Au}$  with a Compton X-Ray  
 Spectrometer; Calibration of Pulsed  
 Bremsstrahlung Spectra with Photonuclear  
 Reactions of  $^{77}\text{Se}$  and  $^{79}\text{Br}$ ; Scaling to High  
 Average Powers of a Flash X-Ray Source Producing  
 Nanosecond Pulses; Frequency Modulation  
 Spectrometer for Mossbauer Studies; Calibration  
 of Pulsed X-Ray Spectra; Depopulation of the  
 Isomeric State  $^{180}\text{Ta}(m)$  by the Reaction  
 $^{180}\text{Ta}(m)$  (Gamma, Gamma')  $^{180}\text{Ta}$ ; Diamond-like  
 Carbon Films Prepared with a Laser Ion Source;  
 Activation of  $^{115}\text{In}(m)$  by Single Pulses of Intense  
 Bremsstrahlung; Flash X-Ray Source Excited by  
 Stacked Blumlein Generators; Activation of  $^{111}\text{Cd}(m)$   
 by Single Pulses of Intense Bremsstrahlung;  
 Comment on 'Mossbauer Sidebands from a Single  
 Parent Line'; Large Scale Effects of the Magnetic  
 Phase Modulation of Recoilless Gamma  
 Transitions; Laser Plasma Source of Amorphous  
 Diamond; 'Mossbauer Isomer Shift Measurements  
 without Mechanical Tuning'; and Accelerated  
 Decay of  $^{180}\text{Ta}(m)$  and  $^{176}\text{Lu}$  in Stellar Interiors  
 through (Gamma, Gamma') Reactions.

Final technical	
rept. 26 Sep	
1986-24 Dec	
1989	198 UTD-GRL/8903

This survey is prepared monthly from lists  
 received through the cooperation of US  
 government agencies and includes universities,  
 research institutions, and commercial translation  
 organizations. It is a compilation of projects  
 completed or started during the preceding month.  
 Translations are listed by area and subject  
 category. Scientific projects, are grouped as a  
 section regardless of geographic area. Title in  
 English, Author, foreign language title of source of  
 material, date of publication, and publication  
 identification of the completed project are given  
 when available. Tables of contents of journals  
 translated cover-to-cover are reproduced from  
 the current publications.

null

310 null



The purpose of this paper is to present a model that can be of help to military users who have to prepare functional requirements for battle simulations. The particular functional requirements are for a battle simulation that will be used to conduct research on training command, control, and communications (C3) skills among the four leaders of a tank platoon (i.e., the platoon leader, the platoon sergeant, and the two tank commanders) during the performance of combined arms operations. This battle simulation, SIMCAT (SIMulation in Combined Arms Training), is being developed for the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) by the Human Resources Research Organization (HumRRO) under contract MDA903-83C-0504 with Perceptronics as a subcontractor. The functional requirements were prepared for ARI by HumRRO and were provided to Perceptronics for the hardware/software development of SIMCAT. While these functional requirements are specific to the development of SIMCAT and the purposes for which SIMCAT was intended, they are being presented in this paper to serve as a model for others who must prepare functional requirements for battle simulations. The functions for which requirements are provided (e.g., terrain, movement, engagement,

Final rept.,

HUMRRO-PP-2-  
48 84

null

null

JPRS-NEA-84-  
66 096

During the past year, several issues were investigated: (1) establishing the validity of the thin flame model when used to compute flow-combustion interactions in a turbulent shear layer; (2) developing an efficient methodology to compute the unsteady strained flame structure when the flame thickness is much smaller than the flow scale. In the first effort, the transport element method was applied to compute (a) a reacting flow in which combustion proceeds according to a single-step, temperature dependent Arrhenius reaction, and (b) a mixing-limited model in which Schvab-Zeldovich variables are used to obtain the infinite speed chemistry results. The results of both computations showed that, at high Damkohler numbers, while there is a small error in the prediction of the total burning rate using the second approach, the second model accurately estimates the effect of combustion on the flow dynamics in terms of volumetric expansion and vorticity generation. Work on the second project resulted in a more efficient model to compute the flame structure under conditions of unsteady strain. The computational model is based on a series of mathematical transformations which reduce the governing equations to time- dependent reaction-diffusion equations. Turbulent Combustion,

Annual  
technical  
progress rept.  
1 Sep 92-31  
Aug 93,

AFOSR-TR-93-  
111 0835

Existing wave climatologies are primarily based on visual ship observations. These climatologies may be unreliable, particularly in data-sparse regions. Shipborne wave recorders have provided reliable wave data for selected areas of the oceans, but a scarcity of these data remains. This pilot atlas introduces a new, numerically derived, historical data set in the form of a wind and wave climatology. It is intended to provide the design, scientific and operational communities a more accurate representation of the overall wave climate of the North Atlantic Ocean than is available from other sources.

null

NAVAIR-50-1C-  
777 538

This report describes the results of Phase II testing of 13AN52 which is one of 80 prehistoric sites and one of 2 Archaic sites known in the Rathbun Lake area, (which was tested by personnel from the Luther College). Although a burned rock midden and a distinct scatter of lithic waste and chipped stone tools were found, the site was too disturbed to attempt elaborate cultural reconstructions. The report notes that 13AN52 does not meet National Register of Historic Places criteria. Originator-supplied keywords include: Archeological site testing, South Central Iowa, and Chariton River.

Final rept.  
1977-1979,

72 null

null

Technical rept.  
Apr 1966-Jul  
1969

AFML-TR-69-  
366 84-PT-3-VOL-3

To investigate the role of tricresyl phosphate (TCP) in inhibiting the iron-catalyzed thermal degradation of a neopentyl polyol ester gas turbine lubricant base stock, various TCP/ester combinations were encapsulated in mild steel tubing and heated at 500 F up to 96 hours. The relative degradation rates of the individual mixtures were measured by monitoring the effusion rate of hydrogen (a degradation byproduct) through the capsule wall. The capsule interiors were then examined by electron microscopy and diffraction to determine whether correlation existed between the features of the surface films formed and the observed degradation rates. Distinctive films were produced in each test mixture. When ester degradation was inhibited by the addition of 2-10% TCP, a characteristic iron oxide layer was always found at the ester/steel interface. It was postulated that TCP induces the formation of this film, that the film is the agency of inhibition, and that it is similar in action and genesis to the iron oxide passive films known in aqueous systems.

null

10 null

Abstracts are presented in this book in the following areas: Energetics and Dynamics, Catalysis, Bioinorganic, Synthesis and Techniques and Applications.

Final rept.,

ARO-21423.1-  
690 CH-CF

literature, addressed issues specific to problems of decontamination of chemically contaminated human remains. Specific areas of concern included: (1) identification of a worst case situation; (2) determining if hypochlorite is the best decontaminant available; (3) determining the optimum pH for hypochlorate use as a decontaminant; (4) determining an optimum concentration of hypochlorite; (5) determining whether there is benefit in using the sodium salt over the calcium salt of hypochlorite; (6) determination/identification of the agent(s) most difficult to decontaminate; (7) estimation of amount of agent to which remains would be exposed; (8) estimation of how much, if any, agent could be found in decontaminated remains that might be hazardous to handlers of the remains subsequent to decontamination; and (9) determining if there are cosmetic effects produced by the decontamination process. Because the Army was proceeding to write doctrine for a specific decontamination procedure, the questions addressed in this report were focused to those issues that were of prime importance to near-term development of a field system for decontamination of chemically contaminated human remains so that the remains

Technical rept.

USAMRICD-TR-  
221 93-02

The Index is designed to identify all scientific and technical reports published by the various OAR subordinate units during 1967-1968, as well as the results of research sponsored by OAR at the AFSC laboratories during this same period. It is also intended to furnish a ready reference for the identification of technical reports produced under certain contracts, grants or projects. The publication includes a Bibliography of research results organized into subsections and cross referenced by a Corporate-Author Index, an Author Index, a Contract/Grant-Number Index, a Project-Number Index, an AD-Number Index, and a KWIC (Keyword-in-Context)-Type Subject Index. In addition, there are three Appendices to assist the user to reference pertinent reports to the relevant Air Force R+D organizations and projects.

Research index

1246 OAR-69-0010

The computation of parameters for symmetric laminates involves series of tedious calculations for both in-plane and flexural properties. In order to alleviate the magnitude and complexity of calculations for complicated symmetric laminates, the program of this report was designed for a commercially available microcomputer, the Hewlett-Packard HP-87, and is based for the most part on program logic developed by the Air Force Wright Aeronautical Laboratories for the TI-59 handheld programmable calculator. Program logic is explained in detail with flowcharts and a full listing of the program is included. A description of the program logic provides the user with a comprehensive explanation of program operation.

(Author) Technical rept.,

66 NPS-67-82-011

~~the research cloud modeling program was~~

established by OUSDR&E and is chaired by the Phillips Lab, Geophysics Directorate. As part of this program, the CIDOS conference is held at 18 month intervals. This forum was attended by over 150 researchers and DoD systems designers/users to exchange information on requirements and ongoing research for cloud effects of weapon, communication, and surveillance systems. The theme of CIDOS-93 was Clouds; The First Order Impact-For Defense and Civil Simulations. A Keynote address entitled Modeling and Simulation-To Fight the Future...Harness the Power of Simulation was presented by LtCol David Bartlett, Defense Modeling Simulation Office, United States Marine Corps. Three and a half days of CIDOS-93 were devoted to oral and poster presentations in six sessions: (1) Introduction and Program Reviews, (2A) Simulation Support, (2B) Analysis and Applications, (2C) Forecasting, (3) Systems and Sensors, and (4) Databases. The final session consisted of workshop meetings on two topics; Simulation Support and Cloud Microphysical Impacts Military Systems Support (e.g. Ship/Aircraft Tracks). Summaries of these are included in Part 1 of this document. Clouds, Cloud models, Cloud simulation, Cloud databases, Cloud observing, Cloud detecting, Cloud retrieval, Cloud Interim rept.

PL-TR-94-  
2188,ERP-  
512 1152

This report presents an account of the activities of the MERADCOM-OSU System Reliability Program in the area of hydraulic cylinder structural integrity assessment. A dynamic mathematical model of the locked-rod or impulse testing is developed and the effects of changing test setup parameters are also demonstrated. A computer program for simulating locked-rod testing is presented along with a user's guide. Draft procedures for both stroking (endurance) and locked-rod (impulse) tests are included in an appendix. Results of experimentation with locked-rod setup are also presented. This report presents the data obtained from the On-Board Monitor activities. These data are a result of endeavors on two projects--On-Board Monitor and Operational Severity. STAM units were installed on a variety of vehicles. As many as five parameters per vehicle were monitored with several tests repeated with multiple runs. (Author)

Annual rept.  
Feb 76-Feb 77.

OSU-FPRC-  
193 7M2

This report describes theoretical studies related to man-made disturbances of the upper atmosphere which can affect VLF wave propagation. The purpose of our research was to estimate the effect that artificially created plasma holes could have on whistler made signals propagating through the ionosphere. In the course of our research, we have developed models which describe the flow of reactive vapor which can be injected into the plasma layers. Our research has considered the influence of the modified ionosphere on propagation of HF and VHF as well as VLF radiowaves. During the final period of research, we have found evidence of man-made perturbation of the earth-ionosphere waveguide.

Final rept.,

69 SU-SEL-E324-1



The Advanced Degree Requirements Information System (ADRIIS), an interactive computer-based data retrieval system, was updated, validated, optimized, and documented. ADRIIS was implemented for use by noncomputer oriented Air Force Institute of Technology faculty and staff at time-sharing terminals. The ADRIIS Inventory and Requirements data bases can be queried for information about Air Force graduate degree officers and Advanced Academic Degree job positions. The ADRIIS system was analyzed, tested, and altered to insure correct operation and reliable output reports. A successful validation effort was conducted with the Air Force Data Services Center using two separately developed computer programs to compare results.

Master's  
thesis,

AFIT/GCS/MA/  
167 77M-3

The purpose of this study is to identify the capabilities and limitations of a particular set of navigation systems and evaluate their performance in the current airspace environment. The navigation systems evaluated are Loran-C, Omega, VHF Omnidirectional Range/Distance Measuring Equipment (VOR/DME), Global Positioning System (GPS), Doppler navigation system, and inertial navigation system (INS). In addition to detailed technical and operational analyses of each navigation system, consideration is also given to the constraints imposed by and the deficiencies existing in the standards by which accuracy and effectiveness of navigation systems are measured.

null

1378-01-3-  
2652,FAA-EM-  
169 82-15

The present publication contains basic documents on arms control and disarmament developments in 1975 and is the latest in a series of volumes that have been issued annually since 1960. The papers are arranged in chronological order, following a topical list of documents and a list of conferences. Other reference aids include a bibliography, a list of persons, and an index.

null

868 ACDA-Pub-93

Experiments are described which provide data on the relations between number and sound pressure level of acoustic impulses as a function of the susceptibility of different people to auditory fatigue. This information plus previously obtained data on the effects of pulse repetition rate and the results of planned experiments on the effects of rise time should provide the basis for establishing a general description of the effects of gun noise on auditory fatigue. This description should provide the means for specifying the noise characteristics of weapons and operational procedures for their use with respect to protection of the hearing of military personnel. The great variability in the susceptibility of different persons to impulses, probably due to variations in the behavior of the auditory reflex, suggests that damage risk criteria for impulse noise must be designed to protect those persons with ears far more sensitive than those possessed by the average person. Individual differences in susceptibility to auditory fatigue are much greater for impulse than for steady state noise. One of the experiments conducted revealed that persons susceptible to auditory fatigue from impulse noise were not necessarily more or less susceptible to steady state noise.

null

65

949

This volume is a collection of the written contributions of the invited speakers to the 46th Annual Symposium of the Society of General Physiologists, focusing on molecular biology and function of carrier proteins, held in Woods Hole, Massachusetts, 10-13 September 1992. In addition to the keynote address and the talks included in the five official plenary sessions of the conference, the symposium was broadened for the first time this year by two sessions on New Ideas, New Faces, designed to focus attention on the work of junior investigators. Judging by the number of posters submitted, the symposium topic greatly interested scientists in the field. Conference, Biology, RAD IV membrane carriers, DNA, Toxins.

null

325 null

Catastrophic failure of propulsion and gun systems has been attributed to abnormal combustion within granular propellant charges. The effects of igniter strength, propellant type, deterrent concentration, and projectile motion on the overall transient combustion process in granular propellant beds were studied experimentally. The results show that igniter strength significantly affects the duration of the induction period, and also the accelerative behavior of the pressure front traveling through the bed; a weaker igniter causes a more pronounced pressure front acceleration. A large igniter volume was found to reduce the rate of flame spreading and pressurization processes. Combustion of slightly deterred propellants produced extremely rapid flame spreading, higher peak pressures, and higher pressurization rates than regularly deterred propellants. Propellant particle geometry was found to greatly affect the rate of total mass consumption within a propellant bed and thereby influence the peak pressures and pressure wave phenomena within the bed. (Author)

Final rept. 15  
Feb 74-14 Feb  
77

88 BRL-CR-347

Worldwide Manpower Distribution by Geographical Area is published quarterly and contains summary data on the worldwide distribution of Department of Defense (DoD) active duty military and civilian personnel and their dependents, by country and DoD component. Keywords: Tables data; Statistical data.

null

DIOR/M05-  
265 89/04,M05

null

null

NAVAER-10-35-  
163 591

This project contributed to improved understanding of the growth, physiology and control of magnetite production by the magnetic bacterium *Aquaspirillum magnetotacticum*. As a result of the research performed under this contract it has become possible to i) culture *A. magnetotacticum* to high biomass yields in microaerobic continuous culture, and to ii) precisely regulate through reproducible control of culture parameters, the formation of membrane proteins and bacterial magnetosomes in vivo. This is a vital prerequisite to studies of gene expression and magnetosome biogenesis in this organism. In contrast to iron uptake by enteric bacteria, cell iron uptake was found to involve a non-specific active transport mechanism at low iron concentration. A hydroxamate siderophore was produced only with the culture iron at 10 micro moles, or greater. Keywords: Magnetism; Bacteria; Outer membranes; Periplasm; Iron reductase; Cytochrome; Magnetosome; Biological absorption; Membranes biology.

Final rept. Jul  
1985-Jan 1989

82 null

Organized religion has played a significant role in warfare throughout history. From the time Moses led the Israelites out of Egypt into the new Promised Land until 2001 and the undertaking of the Global War on Terrorism, religion in one form or fashion has impacted the individual soldier. The United States Civil War from 1861 to 1865 was no different. The purpose of this thesis is to look at the events leading up to the Civil War and the conflict itself from the viewpoint of the Southern Baptist denomination. Specifically, the thesis focuses on the reasons for the creation of the Southern Baptist Convention, as well as examines how the denomination supported the war effort. It looks at the wide range of individual contributions of the denomination's chaplains, missionaries, evangelists and colporteurs. It also details how important the use of religious tracts were in ministering to soldiers. As we continue our Global War on Terrorism, the information contained within this paper should serve as a reminder to those men and women at the Southern Baptist Seminaries that religious service to the army is still necessary and that it comes in many forms. As far as the human dimension and the spiritual fitness of soldiers are concerned, what worked in 1863 is still applicable in 2003.

Master's  
thesis

141 null

The purpose of this review is to examine the conclusions from the environmental, engineering and economic studies of the construction of a water way between Lake Erie and Lake Ontario in the United States. This report will also serve as a basis for further action by Congress. (Author)

Final rept.

129 null

The report reviews briefly the application of ultrashort pulses to imaging radars, and shows the need for an alternate signal processing scheme. A mathematical description and physical interpretation of frequency domain sampling is presented and its application to time scaling and matched filtering is discussed. An experiment to demonstrate the technique is outlined and will be carried out during the next reporting period.

Semi-Annual  
technical rept.  
1 Mar-31 Aug  
1973

UARL-  
45 M920479-42

This thesis demonstrates that neural technology may be successfully employed to mimic some of the thought processes of a negotiator during a bilateral negotiation. Using the constraint satisfaction paradigm, originally developed to explore parallel distributed processing, a neural network is proposed to simulate the thought process of a buyer who negotiates the purchase of a good based on price and quality. The findings on this thesis suggest that continued research in neural networks to replicate the mental model of the negotiator holds great promise. The ability to model true beliefs and evaluation methods has an advantage over more traditionally prescriptive models. The neural network model allows incorporation of human irrationality and provides an ability to assess how that irrationality affects the negotiation outcome.

Master's  
thesis

101 null

...are not an apparently healthy people ...  
35 have significant but undiagnosed coronary artery disease. For 15 to 30% of these people, sudden death is the first symptom of heart disease and as many as half of those who die have had a prior unrecognized infarct (heart attack). Applying these statistics to pilots, at least 1 pilot over 10,000 over the age of 35 who fly an annual average of 300 hours in high-performance aircraft will die each year at the controls resulting in loss of the aircraft. Based on published reports, the Air Force loses from 20 million to as much as 50 million dollars per year from aircraft lost this way. Furthermore, it follows that there are 10-15 unrecognized new infarcts per year per 10,000 of these same flyers. Improving the identification of coronary disease in these pilots would lower the number flying with unrecognized heart disease. This would decrease the chances of sudden death of pilots at the controls and reduce the number of aircraft lost. This report describes proposed enhancement of an existing computer model to improve ECG criteria and to define an optimal set of ECG electrodes for the identification of significant coronary artery disease with and without myocardial infarction. The ultimate goal is the development of a portable ECG Mapping Cart that can be used in flight surgeon's offices

Final rept. 4  
Apr-25 Nov  
84,

133 null

The Flood Control Subcommittee finds that serious flood problems exist in the California Region. Although the existing flood control measures have been very effective in their respective areas, damages from flooding continue to increase. Except for the inherent flood risks, most of the flood plain lands are ideally located for residential, commercial, industrial and agricultural development. As the population and economic activity in the California Region continue to grow, recurring floods will cause increased loss of life, human suffering, damage to property, and loss of goods and services. Comparison of existing and projected flood damages, with damages in other regions, indicated that the California Region ranks as one of the major flood problem areas of the Nation. This flood problem is one of the principal factors to be considered in the optimum development and use of the water and related land resources of the region.

null

478 null

The purpose of this study was to determine the problems and possibilities of developing a digitized mapping system for the ground tactical commander. The specific tactical units targeted were the Marine Infantry regiment and below. Particular emphasis was placed on the microcomputer as the implementation hardware. A review of the Defense Mapping Agency (DMA) databases was conducted and related Department of Defense programs were studied. to develop insights and to provide a graphical tool for understanding the problems of a digitized mapping system, a Prototype was developed. It was determined that current microcomputer technology and DMA data bases provide the capability to develop and field an adequate, if not optimum, digitized mapping system.

Master's  
thesis,

118 null



This is Part I of a three-part document presenting facilities design criteria for the design of the typical MIDAS operational station. The primary objective is to provide sufficient definition of the station technical equipment and its operational requirements to develop a design concept of the facilities, structures, and interconnecting services required by this equipment.

Revision no. 2

LMSD-447159-  
66 B-PT-1

This report describes the development and evaluation of a computer graphics algorithm capable of rendering high detail imagery of real world visual environments modeled as a single valued elevation function of horizontal location. The objective of the development was to analyze the feasibility of a real time implementation. The results indicate that, although technically feasible, the real time implementation is too computationally expensive to consider.

Recommendations for future work to reduce expenses are made. (Author)

Final rept. Jan-  
Dec 81,

NAVTRAEQUIP  
892 C-80-D-D014-2

Lamont-Doherty Geological Observatory of Columbia University, provided and operated the Research Vessel ROBERT D. CONRAD (AGOR-3) in support of Dr. Henry Fleming's three cruises to investigate certain features of the Brazil Margin and Mid-Atlantic Ridge under Project CENTRATLAN. Project CENTRATLAN is a cooperative U.S. - Brazilian effort in studying geotectonic processes in the South Atlantic Ocean. It is a multiyear program which has been ongoing since 1980. The purpose of these investigations was to do detailed shipboard investigations of specific problems revealed by earlier magnetic and gravity surveyed overflights. The cruise was successful.

Final rept. 15  
Sep 84-15 May  
85.

2 null

null

null

FTD-ID(RS)T-  
335 0241-81

The Diagnostic Rhyme Test (DRT) for intelligibility of voice communications systems has been implemented at the Air Force Voice Processing Facility, Hanscom AFB, Massachusetts. This report describes the recruiting and training of listeners and the usage of software to score the DRT. In addition, performance of the in-house DRT is described. It is concluded that the in-house DRT is an economical measure of intelligibility that yields highly reliable results and adequately discriminates small differences in intelligibility. It is further concluded that in-house DRT results are comparable to those obtained by a contractor. null

RADC-TR-78-  
203 129

The Final Laser Communication Subsystem Design Report under Contract F04701-71-C-0329 (Laser Communication Preliminary Subsystem Design for the Space Data Relay Subsystem) consists of three volumes. This report, Volume 3, contains detailed technical discussions of the important aspects of the study which were investigated in order to reach the final design conclusions. Final rept. 19 Apr-19 Oct 1971

LMSC-  
B290200-  
3,SAMSO-TR-  
583 71-252-VOL-3

A conceptual framework and functional definition of Army representation are developed from data gathered in an extensive review of related literature. Based on this information, a Convergence/Divergence Model is constructed--using the national policy objectives of military effectiveness, social equity, and political legitimacy as standard criteria of representation. Quantitative data on Army representation are compiled from several existing sources--including a longitudinal (2 1/2 year) reference on the All-Volunteer experience. Standard and new statistical methods are employed to examine the demographic, socioeconomic, quality, and attitudinal measures of Army representation, according to guidelines established in the conceptual model. Final rept. Jun-Nov 1976

HUMRRO-FR-  
ED-76-45,ARI-  
228 TR-77-A9

null	null	NRL/PU-6790- 67 02-450
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null	null	218 null
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While the Hall Effect Thruster is a relatively mature technology that has been flown in several missions, the physics of the processes governing the thruster dynamics are not yet completely understood. In particular, the so-called anomalous diffusion, a short term for the excessive electron conductivity both inside and outside of the thruster, remains an unclear phenomenon. It is commonly agreed that a central cause for the higher-than-expected electron mobility are correlated azimuthal oscillations that create an effective azimuthal force. Recent experimental results, obtained independently in Michigan and Princeton with modern thrusters, confirm the existence of a low-frequency azimuthal oscillation, called rotating spoke, of similar nature as those originally detected in the 1960's by Janes and Lowder. This project aims at studying theoretically these oscillations by means of a global stability analysis of the Hall discharge against azimuthal disturbances. A central goal of the study will be to determine and quantify in terms of scaling laws their role in anomalous diffusion.

Final rept. 15  
May 2013-14  
May 2014

AFRL/AFOSRU  
K-TR-2014-  
150 0046

The purpose of this report is to provide a comprehensive overview of a most complex and low-visibility subject, U.S. Government policy towards patents resulting from federally funded research and development contracts. The report covers the period 1941 through 1977 and discusses the evolution of current U.S. Government patent policy. Various attempts by all three branches of the federal Government to establish a uniform patent policy are summarized along with a discussion of current policy and proposed legislation, and a synopsis of Department of Defense policy and procedures. The report ends with a prediction of future legislation to establish a uniform patent policy, and a note of warning to the Department of Defense if that new policy requires the Government to take title to all inventions resulting from federally funded research and development.

Study project  
rept.,

45 null

Critique is a compilation of conclusions, criticisms, and recommendations, presented in narrative form by campaign from the beginning to the end of World War II in the Southwest Pacific. It is a composite appraisal, emphasizing exceptional or inadequate performances of the Engineers, including, where possible, reasons involved, corrective measures employed, and the recommended changes in Engineer officers from the highest to the lowest levels of staff and command are recorded, covering the problems of engineer organization, administration, intelligence, amphibian and combat operations, construction, capacity and adequacy of personnel, training, and supply. Problems incidental to operating with other branches of the armed forces of the United States as well as Allied arms and services are disclosed, oftentimes verbatim from the reports of the participants. The effects on engineer operations of abrupt revisions in plans because of rapidly changing strategical requirements are recorded together with on-the-spot reactions of the Engineer planning staffs involved.

null

497 null

The report describes a user-friendly software package for the analysis and presentation of results from explosive destructive testing. The analysis covers the Bruceton, Probit and Army Materiel Command Regulation (AMCR) statistical methods. The program is illustrated by its application to several small scale tests for the assessment of explosive sensitivity to various stimuli. They are the Gap test, Jet Sensitivity test, Slapper Detonator test and Cap Sensitivity test. The Report includes an overview of the basis of the mathematical equations used in the evaluation of the statistical data, and the menu commands in the computer model are described. Technical rept.

MRL-TR-93-  
42,DODA-AR-  
59 008-572

The purpose of this study was to determine if recent improvements in the computing power of Personal Computers (PCs) have made them a viable alternative to the larger, multi-user oriented computers, better known as mainframes. The Numerical Electromagnetics Code (NEC3), a 10,000 line Fortran program, was down-loaded from the Naval Postgraduate School's IBM 3033AP mainframe and implemented on various PC systems. The systems considered were the IBM RT PC (using IBM RT PC VS FORTRAN), a Definicon DSI-780 Coprocessor Board (using SVS FORTRAN), and a Compaq Deskpro 386/20 AT PC (using NDP FORTRAN-386). Using NEC3 example problems, comparisons of speed and accuracy were made between the PCs and the mainframe. Results show that the Compaq Deskpro 386/20, with a Weitek 1167 math coprocessor, using Micro Way's NDP FORTRAN-386 (32-bit Fortran compiler), can be used to implement NEC3 on a PC. Performance times for the Deskpro (w/1167) were only 20% to 25% slower than the mainframe's. Due to the Weitek's internal accuracy (single precision), solutions of the NEC3 examples were comparable to the mainframe's only for simple problems. As the complexity of the NEC3 problems increased, the error due to the Weitek's single precision calculations also

Master's thesis,

112 null

null

Interim rept.,

AFOSR-TR-78-

13 1067

The aspects of state of the practice modeling and identification of large space structures are discussed in this report. Methods of modeling a structures as well as identification procedures are presented along with data acquisition and processing requirements. Recommendations for developing algorithms for the task of space structure identification are given.

Final rept. Sep 1985-Aug 1986

AFRPL-TR-86-

356 054

Contents: Shock testing and analysis; Fluid structure topics; Acoustic and vibration testing; Impact and blast; Measurement and criteria development; Isolation and damping; Dynamic analysis; Minuteman dynamics; Modal test and analysis; Shipboard problems and blast effects.

null

138 Bull-46-Pt-1

An experimental study was carried out on the performance of a feedback stabilization scheme for optical interferometers. Optical interferometers are susceptible to acoustic noise which translates into path length fluctuations in the interferometer arms. These fluctuations induce phase noise, resulting in amplitude fluctuations on the interferometer output. The experiment was performed on a Mach-Zehnder homodyne interferometer where a RMS noise reduction of 23 dB was observed. The stabilization scheme has application to other interferometer configurations. In the future, it will be applied to stabilize cavities used in the squeezed state generation of light. (Author)

Master's thesis,

AFIT/CI/NR-85-76 41T

The report describes airborne and landline instrumentation (and missile interfaces) required for monitoring, launching and flight of an operational missile.

null

GDA-AE60-258 0653

This paper is divided in two parts. In the first part some abstract critical point theorems are proved using minimax arguments. The second part is devoted to applications. We study the existence of periodic solutions of the Hamiltonian systems.

Technical summary rept.,

67 MRC-TSR-2508

null

null

30 AFRRI-SR80-6

This study addresses the feasibility of executing joint deep air operations in a dense Anti-aircraft environment. It identifies some proven tactics and techniques for use in these operations, placing particular emphasis on night operations facilitated by equipment which is currently being tested and fielded. To test the hypothesis that joint deep air operations are feasible in a dense anti-aircraft environment, this study examines it first from a historical perspective. General lessons are drawn from operations conducted from 1945-1973. A more detailed study is made of the Israeli experience in the Beqa'a Valley of Lebanon, the British and Argentine experiences in the Falklands and the U.S. experiences in Grenada. An indepth analysis of the Soviet air defense artillery (ADA) network is also done and compared with the current and near term (1990) U.S. technology and tactics to identify weaknesses. Conclusions drawn by this study indicate unequivocally that it is feasible to conduct both fixed wing and helicopter deep operations if these operations are properly planned, prepared and resourced.

Monograph,

59 null

Papers presented at the first symposium of the Battery Material Research Association in Brussels, Belgium covered a wide range of topics on the current research being done on battery materials. Information was given on the production and performance of battery materials, thermodynamics of electro-chemical reactions, corrosion of battery materials, and rechargeable systems. (Author)

null

NSWC/TR-83-  
21 448



in past years, research, and development of agencies has resulted in the development of several more effective techniques for developing and for presenting technical data for maintenance. Application of these development techniques and improved presentation formats for operational use has been hindered by the fact that technical data managers frequently do not have sufficient information available on the improved techniques and formats to allow them to select and procure the improved data. The guidelines developed by this effort can be used by personnel who develop technical data for the Air Force and by those who manage such efforts. A thorough review of the state of the art in developing, presenting, and procuring technical data was accomplished to provide the basis for developing the guidelines. This was accomplished first by reviewing formats, specifications, and applicable literature and by then conducting extensive interviews with government and industry personnel who are knowledgeable of, and experienced in, current technical data procedures. The next phase involved analysis of these data, the selection of candidate formats, the development of descriptions on the formats, the development of criteria for selecting formats and development of guidelines for procuring data. This

Final rept.

May 78-May

80,

AFHRL-TR-80-

298 51

This report provides the necessary information for using two separate computer programs: (1) a simulation model of vehicle traffic through fields of emplaced magnetic, acoustic, or seismic sensors; and (2) a pattern detection algorithm of two-way vehicle traffic through a field of emplaced sensors. The simulation model supplies the user with a device to simulate detection patterns of different sensors under varying vehicle-flow and background (false-alarm) conditions. In addition, it provides inputs to the pattern detection algorithm allowing precise verification of the pattern recognizer's ability to detect vehicle flow. The pattern detection algorithm is designed to accept inputs from the simulation model to allow proper selection of critical parameters. It is also designed to accept real-world data--both actual detections and false alarms--of vehicle flow past fields of sensors.

null

111 R-1186-PR

The problem of radiative transfer in plane-parallel, perfectly scattering atmosphere is described. Chandrasekhar's solution applicable to atmospheres of small and moderate optical thickness is outlined. His solution reduces the problem to that of determining the X-, Y-, K-, and L-functions, the scattering functions. Mullikin has extended this method of solution to atmospheres of large optical thickness. Sekera and Kahle have used Mullikin's method of solution of calculating the emergent radiation from plane-parallel Rayleigh-scattering atmospheres of large optical thickness. Their numerical results are reproduced here in the Appendix, as tables of scattering functions. The numerical method for determining the intensity and polarization of the radiation emerging from the top and bottom of atmospheres is given, and suggestions for additional uses of the tables are made. Finally, a few examples of representative calculations are presented. (Author)

null

152 P-5795

Contents: Municipal and Industrial Water Use and Stream Quality; Flood Damages; Navigation; and Power Markets and Valuation of Power.

null

DAEN/NAP-12181/RO3-483 62/08

The Institute for Defense Analyses (IDA) Tactical Warfare (TACWAR) model is a fully-automated combat simulation that can be used to assess the interaction of combat forces employing conventional, nuclear, and chemical weapons in a theater-wide campaign. This document presents the information necessary for programmer personnel to maintain the TACWAR model. (Author)

Computer system manual,

CCTC-CSM-MM-237-77-240 PT-2

The remedial investigation (RI) will investigate sources at both the Upper Camp and Lower Camp. as well as assess the potential for migration of contaminants from the sources. Media to be sampled include surface water, surface soil, subsurface soil, sediment, and groundwater. Field screening techniques will be used, as well as the services of offsite laboratory. -BKA

Final rept. 29 Mar-15 Jul 94,

872 null

Mouse hepatitis virus strain A59 (MEV-A59), a murine coronavirus, infects different murine cell lines causing different levels of virus growth and virus-induced cell fusion. The role of the MEV receptor (MHVR) glycoprotein and related glycoproteins in determining the outcome of MEV infection in vitro was examined. A previously unknown murine CBA-related glycoprotein (now named Cea10) was discovered and found to be co-expressed with MHVR in the Cl1 D and F40 lines of mouse fibroblasts. A monoclonal anti-MHVR antibody, MAb-CC1, protected the Cl 1 D and F40 cells from MHV infection. A chimeric molecule in which the N-terminal domain of MHVR was replaced with that of Cea10 did not bind to MAb-CC1 or MHV-A59 virions in a virus overlay protein blot assay. Neither the expression of this chimeric protein in MHV-resistant BHK cells nor the native Cea10 conferred MHV susceptibility. The Cea10 protein was shown to be an approximately 35-37 kDa secreted glycoprotein. These results showed for the first time that two murine CEA related genes can be co-expressed in some cell lines from inbred mice, while MHVR was the only MHV receptor in these cell lines.

Technical  
Report

262 null

emphasis on the development of laser and contract has been placed on fundamental theoretical and experimental studies of various phenomena associated with diatomic molecular gas flows in which anharmonicity plays an important role in producing or maintaining an inversion which is suitable for lasing. Most of the work concerned carbon monoxide gas dynamic or electrically excited flows because these systems were capable of being studied in our laboratories, had considerable potential practical importance, and displayed many characteristics common to other diatomic gas lasers. In several cases the results may be generalized to other systems.

Study of the master kinetic equations demonstrated that approximate analytical solutions exist under certain conditions. It is shown that quantitative prediction of the vibrational population distribution can be determined from knowledge of just a few key parameters in many cases of practical interest. The experimental measurement of small signal gains in highly expanded CO-N<sub>2</sub> mixtures confirmed the anticipated large gains achievable at very low temperatures. However, unexpected rotational nonequilibrium was observed which can limit the power available from P branch laser lines. A summary of efforts to provide a simplified

Final progress  
rept.,

AFOSR-TR-77-  
129 0956

assigned to the Training Analysis and Feedback (TAF) Section of the NTC Operations Group with a training tool for learning the routine skills needed to operate the De Anza Graphics Display. The instruction is organized in a step-by-step manner that begins with the most rudimentary station operations and progresses through the manipulation and control of all functions necessary for routine operation of the De Anza Graphics Display Tablet. Instruction is presented in a series of hands-on exercises that demonstrate various graphics display functions used by Core Instrumentation Subsystem (CIS) personnel to electronically monitor the battalion task force during the rotation. The manual is divided into six sections: (1) Preventive Maintenance/Minor Troubleshooting; (2) Map Control; (3) Unit/Player Display Formats; (4) Control Measures; (5) Map and Button Bins; and (6) Historian and AAR Mode Controls. Each section contains one or more sets of hands-on exercises designed to be completed with minimum supervision regardless of the skill level of the learner. All exercise sets can be completed in 4-1/2 hours. In addition to the Table of Contents, which lists all exercise and function buttons described in the text, an alphabetical Index that lists each De Anza function addressed

Final rept. for  
period ending  
Jul 1986

BDM/ARI-TR-  
0021-85,ARI-  
133 RP-87-01

Evidences obtained from high purity  $MgAl_2O_4$  ceramics deformed at high temperatures are presented which confirm theoretically predicted multiple (111) (110) slip systems for spinel. Stress-strain and kinetic data and microstructural examinations indicate that spinel, when sufficiently pure, does meet the Taylor-von Mises criterion for generalized plastic flow of a polycrystalline solid.

Technical rept.

TR-1,AROD-  
41 4932.2

This report describes the modifications and updates that have been made to the Parameterized Real-time Ionospheric Specification Model (PRISM) that is operational at the 55th Space Weather Squadron (55 SWXS). It also describes the implications of work carried out under a separate contract for the design and development of a new version of PRISM (to be known as PRISM 2) that is to include the plasmasphere, improved theoretical climatology, and an improved data assimilation algorithm.

Scientific rept.  
no. 2, 11 Aug  
96-10 Aug 97

AFRL-VS-HA-TR-  
40 98-0080

Emesis data collected from 21 ionizing radiation studies involving 210 rhesus (*Macaca mulatta*) monkeys has been examined. These studies contain a wide variety of experimental parameters prepared by investigators interested in unique situations. When proposed, they were viewed as pilot studies to determine the presence or the absence of radiation effects upon performance. This report examines the studies a posteriori grouping them as follows: Distribution Specification, ED sub 50 Determinations, Dose Rates, Mixed Rates, and Descriptive.

Final rept. Jan  
71-Dec 77,

80 SAM-TR-78-26

null

null

BUAER-AE-61-  
174 4-VOL-1

null

null

FTD-ID(RS)T-  
44 2350-77

This document provides a review of the literature, an annotated bibliography, and glossary of terms related to current and past trends in job design. The following topics are included: Quality of Work Life; Conceptual and Theoretical Framework for Job Design; Measurement of Tasks and Job Structural Attributes; Survey Case, Field, and Laboratory Studies of Job Design; and Interaction of Individual and Group Variables with Job Design. Technical rept.,

493 TR-6

Caution Bars (stop bars or hold bars) are used to identify taxiway hold lines and warn pilots of an approaching runway. Caution Bars are difficult to see when they are covered by snow or sand, or when a high-cockpit aircraft is at or close to the caution bars. Under these conditions, supplemental lights (taxi-holding position lights) could help. This project was to determine the desired characteristics of horizontal and vertical coverage, intensity, flash rate, and orientation of the supplemental lights. The results indicated that these characteristics were acceptable or desired: Horizontal and vertical coverage: 15 degrees (as shown by photometric data); Intensity: 30-percent night; 100-percent day (1600 candela light); Flash rate: 58 flashes/minute (off the shelf equipment); and Orientation: toe-in 20 degrees toward taxiway pitch-up 10 degrees above horizon. The results also indicated that the lights would enhance identification of the taxi-holding position.

Final rept.

DOT/FAA/CT-  
82/119, DOT/F  
26 AA/RD-82/79



A systems approach is used to view the process by which the Department of Defense acquires and modifies its major weapon systems. Attention is focused on the program cost outcomes of this procurement process. The research seeks out the causes of why the final cost of a defense program or contract differs from earlier estimates. The evolution of the term cost overrun into cost growth is traced. Systems diagramming is used to develop a model of the procurement process. The model demonstrates the multiplicity of relationships affecting defense programs.

Final rept.

248 null

phenomena whereby electron - beam-driven electron plasma waves (EPWs) are nonlinearly coupled to an electromagnetic (EM) radiation field. The basic physics of three-wave mixing is investigated in the mm-wave regime and the scaling of mm-wave characteristics established with beam and plasma parameters. Our approach is to employ two counterinjected electron beams in a plasma-loaded circular waveguide to drive counterstreaming EPWs. The nonlinear coupling of these waves generates an EM waveguide mode which oscillates at twice the plasma frequency and is coupled out into rectangular waveguides. Independent control of the waveguide plasma, beam voltage, and beam current is exercised to allow a careful parametric investigation of beam transport, EPW dynamics and three-wave-mixing physics. The beam-plasma experiment, which employs a wire-anode discharge to generate high-density plasma in a 3.8-cm-diameter waveguide, has been used to generate radiation at frequencies from 7 to 60 GHz. Two cold-cathode, secondary-emission electron guns are used to excite the EPWs. Output radiation is observed only when both beams are injected, and the total beam current exceeds a threshold value of 3 A. The threshold is related to the self-magnetic pinch

Annual rept. 1  
Apr 1987-31  
Mar 1988

AFOSR-TR-89-  
125 0001

Contents: Introduction to Key issues in National Strategy; Keynote Address: Evolving Strategies for a Changing World; Evolving a National Strategy; National Security Strategies for the Use of Space; Alternative Strategies for the Defense of Western Europe; Comparing United States and Soviet National Strategies; Reorganizing the United States System for Developing Strategy.

null

421 null

A three dimensional analysis of the intensity distribution of backward optical transition radiation has been performed. The effects of variations in electron energy and beam divergence and on material properties such as dielectric permittivities and the resultant coherence length upon the angular distribution and polarization of optical transition radiation has been investigated. A surprising observation important to the use of optical transition radiation as a diagnostic tool for high energy electron beams is the behavior of the perpendicular component of the intensity. In contrast to low energies where the parallel component dominates, at electron energies above 200 MeV, the perpendicular component dominates. This requires the use of a polarization filter to diagnose particle beam properties at high energies.

Master's  
thesis

144 null

The dissertation opens with a review of the influence of (surface) roughness in various contexts, from the theoretical, such as in simple geometry, and compressor performance statistics. A detailing of the trial construction within a high-speed cascade tunnel is followed by the measurement and transfer of roughness in modern production processes. The second half of the dissertation is devoted entirely to experiments. Firstly, the author investigates the influence of surface roughness on: (1) isotropic profile Mach critical velocity ration distributions; (2) total pressure loss correction values; (3) boundary layer development; (4) turbulence in the boundary layer. Secondly, he undertakes numerical experiments with the Alfa II and the Alpha 3.0 calculation methods.

Doctoral thesis

177 null

This report is a six-part statistical summary of surface weather observations for Davis-Monthan AFB, Tucson, Arizona. It contains the following parts: (A) Weather Conditions; Atmospheric Phenomena; (B) Precipitation, Snowfall and Snow Depth (daily amounts and extreme values); (C) Surface winds; (D) Ceiling Versus Visibility; Sky Cover; (E) Psychrometric Summaries (daily maximum and minimum temperatures, extreme maximum and minimum temperatures, psychrometric summary of wet-bulb temperature depression versus dry-bulb temperature, means and standard deviations of dry-bulb, wet-bulb and dew-point temperatures and relative humidity); and (F) Pressure Summary (means, standard, deviations, and observation counts of station pressure and sea-level pressure). Data in this report are presented in tabular form, in most cases in percentage frequency of occurrence or cumulative percentage frequency of occurrence tables. (Author)

Final rept

USAFETAC/DS-  
515 79/064

Major topics include: Atomic frequency standards; Frequency stability; Noise in resonators, filters, and oscillators -- A discussion session; Time distribution and transfer; Oscillators; Properties of quartz and berlinite, radiation effects, and etching; Quartz and other piezoelectric resonators -- Theory, design & processing; Filters and SAW devices; Crystal measurements and transducers. Keywords: Crystal oscillators symposia; Quartz resonators; Signal processing; Surface acoustic wave devices; Cesium beam frequency standards; Hydrogen masers; Rubidium oscillators.

null

588 null

scale ring-stiffened cylinders. The test specimens were machined from aluminium tubing, and then mechanically deformed in order to introduce more realistic levels of out-of-circularity (OOC) in the critical collapse mode. Six of the test specimens had additional damage in the form of artificial corrosion thinning, which was introduced by machining away some of the shell plating. Corrosion damage was found to affect the strength of cylinders in different ways, depending on its orientation with respect to the OOC shape. When the corrosion damage was aligned with an inward lobe of the applied OOC shape, the effects of thinning and imperfections were additive and led to significant decreases in collapse pressure. When the hull thinning was collocated with outward OOC lobes, the corrosion damage tended to reduce the overall OOC, and only a small reduction in collapse pressure was noted, primarily due to the high stresses in the thinned shell itself. Finite element models were used to simulate the mechanical procedure used to apply OOC to the cylinders. The predicted residual stress field was in the elastic range of the material, and subsequent collapse analysis indicated that those residual stresses resulted in a 3% reduction in collapse pressure compared to a stress-relieved

Technical memorandum

DRDC-ATLANTIC-TM-480 2010-239

The many factors influencing the choice of suitable sealing methods for ammunition and allied stores are summarized. The importance of adequate waterproofing is emphasized, in view of the widely varying atmospheric and other conditions to which stores in Service are liable to be subjected. The properties required in sealing compositions are outlined and performance specifications for lutings and cements are proposed. Details of selected lutings and cements are given on individual data sheets. The types of joint normally used are considered, and the methods of applying sealing compositions to them are discussed. A bibliography with abstracts of 24 references is included.

Technical rept.

ERDE-TR-  
71,TRC-BR-  
78 28288

encephalitis (JE) virus and mouse brain neurons were analyzed by electron microscopy. JE virus replicated exclusively in the rough endoplasmic reticulum (RER) of neurons. In the early phase of infection, the perikaryon of infected neurons had relatively normal-looking lamellar RER whose cisternae showed focal dilations containing progeny virions and characteristic endoplasmic reticulum (ER) vesicles. The reticular RER, consisted of rows of ribosomes surrounding irregular-shaped, membrane-unbounded cisternae and resembled that observed in JE-virus-infected PC12 cells, were also seen adjacent to the lamellar RER. The appearance of the reticular RER indicated that RER morphogenesis occurred in infected neurons in association with the viral replication. The fine network of Golgi apparatus was extensively obliterated by fragmentation and dissolution of the Golgi membranes and their replacement by the electron-lucent material. As the infection progressed, the lamellar RER was increasingly replaced by hypertrophic RER which had diffusely dilated cisternae containing multiple progeny virions and ER vesicles. The Golgi apparatus, at this stage, was seen as coarse localized Golgi complexes near the hypertrophic RER. Golgi apparatus, Japanese encephalitis virus, null

13 null

the emergence of the present research that

propose sets of criteria that would help in the design of alloys more resistant to hydrogen embrittlement. The research is based upon the original idea that a fine and homogeneous distribution of particular kinds of traps could achieve the above goal. This starting idea was developed from an investigation of existing hydrogen embrittlement theories, which showed that a common factor of all theories was the presence in the matrix of large deleterious accumulations of hydrogen at specific sites. Fe-Ti alloys in both the carburized and uncarburized condition were chosen as the model material to simulate internal trapping of hydrogen. Microstructure characterization revealed that all alloys consisted of a ferrite matrix in which free substitutional titanium atoms and titanium carbide particles were present. Techniques were developed to distinguish between reversible traps (titanium atoms, dislocations, grain boundaries, coherent particles) and irreversible traps (such as titanium carbide particles). This characterization separation was achieved both experimentally (using an electrochemical permeation cell) and theoretically (by proposing two new models of reversible and irreversible trapping, and by comparison with existing theories). (Author)

Technical  
rept.,

TR-7,CMU-036-  
336 099-7

null

Technical rept.

56 TR-491-45

A study to determine the effect of the proposed 2020 Master Plan on tidal circulation in Los Angeles and Long Beach Harbors was conducted using a numerical model with a two-dimensional depth-averaged formulation of the hydrodynamic equations. The model, which had been verified in a previous study, used an implicit finite-difference scheme to numerically solve the equations. To observe the dispersion of conservative substances, the model also incorporated the two-dimensional conservative constituent transport equations. The 2020 Master Plan consists of placing 2600 acres of landfill at various locations throughout the harbors. Tidal circulation was studied for 70-hr sequences of spring, mean, and neap tides for each of three harbor configurations: (1) existing configuration (1983), (2) landfills placed on existing bathymetry, and (3) landfills placed with increased channel depths. The 2020 Master Plan produced no changes in tidal elevation or phase throughout the harbors.

Final rept.,

157 CERC-MP-84-5

The purpose of Beams 92 was the exchange of new ideas and results associated with the science and applications of high-power particle beams in the following areas: (1) Physics and technology of high-power particle beams; (2) New developments in pulsed-power technology and high-power accelerators; (3) High-power particle beam experiments and diagnostics; (4) Particle-beam interactions with matter; (5) Physics of pulsed-power-driven discharges; (6) Applications to coherent radiation generation; and (7) Technical and industrial applications.

null

712 null

For many storage models defined on some semi-Markov process  $X(t)$ , the asymptotic distribution of the imbedded discrete time process can often be determined by exploiting the properties of the dual of the underlying Markov chain  $X_{\text{sub } n}$ , which effectively reverses the process. If this is the case, a technique is given which under certain regularity conditions shows the asymptotic distribution of the entire continuous time process can be obtained, and is equal to an altered version of the reversed discrete time process. It is shown this method not only can be applied to models where the asymptotic distribution was previously unknown, but can also improve upon characterizing many of the results for models in which the asymptotic behavior is obtained by a renewal argument. (Author)

Technical  
rept.,

FSU-TR-  
M721,TR-D-85-  
ARO,ARO-  
39 19367.36-MA



Radial structure of a diffusion controlled, equilibrium oxygen discharge is modeled and analytically solved by using a Bessel substitution. A Maxwellian electron energy distribution is assumed. The initial model consists of electrons,  $O(-)$ ,  $O_2(-)$ , and  $O_2(+)$  ions in background  $O_2$  at 300 K. The reactions considered are dissociative attachment, associative detachment, and molecular ionization. The model is solved as a basic characteristic value problem for electron temperature. It is found that for a radius of 1.1cm at pressures of 0.2, 0.5, 1.0, and 5.0 torr, the equilibrium electron temperatures are 3.7, 2.2, 1.6, and 1.0 eV respectively; however,  $pR$  is not a scaling parameter. Results indicate that the  $O(-)$  ion is the numerically dominant negative charge carrier and that it diffuses radially inward. The analytic technique is further applied to a four species, four reaction model which contains the  $O_2(-)$  ion produced by charge transfer. An analytic solution of these models demonstrates a simple analytic scheme which may be used to solve other discharge models which contain more than four accompanying reactions. (Author)

Master's  
thesis,

AFIT/GEP/MA/  
113 78D-1

In the past three years a new type of programmable logic device has emerged. The programmable gate array is a new approach to an old problem of trying to implement logic designs in an efficient manner. This thesis explore the implementation of design using the Field Programmable Gate Array (FPGA). In particular, this thesis utilizes the XILINX development system tools to implement design into the XILINX Logic Cell Array (LCA). This thesis begins by defining characteristics of the LCA and then defines the characteristics of the Small Computer Systems Interface (SCSI) which is used as a design implementation example. The XILINX implementation study is conducted on the design example. Both Mentor Graphics and Futurenet schematic capture tools are used for design entry. Following design implementation, backannotated design simulation is performed to study the effect of the LCA technology on design performance. The results of this thesis showed that designs implemented using technology performed comparably to other implementation technologies. Additionally, this implementation method allows design to be completed in a significantly shorter time frame than previously possible.

Master's  
thesis,

104 null

For electron beams, a theory of the dynamics of driven Langmuir wave turbulence was developed. In low density beams, Langmuir wave evolution was found to be governed by nonlinear index of refraction effects, and associated self-focusing, rather than by wave reaction back on the beam. In laser-plasma interactions, the nonlinear theoretical work was verified experimentally in collaboration with Dr. N. Peacock of Culham Laboratories. In an experiment on nonlinear interactions of a carbon dioxide laser with a dense plasma focus device, almost 100 percent anomalous absorption of the radiation was observed along with intense Langmuir turbulence. The results were published in Physical Review Letters. A classical theory of the Raman-induced Kerr effect was developed. A computer code was developed to help determine plasma temperatures, radiation, impurity distributions, and overall plasma evolution in Z-pinch plasmas. (Author)

Final rept. 1  
Aug 76-1 Oct  
79,

CU-  
1036,AFOSR-  
528 TR-80-0167

The geology of the Yatesville Lake Dam site and a discussion of how the engineered structures were adopted to the existing foundation conditions is the purpose of this report. Yatesville Dam is located in Eastern Kentucky, near the town of Louisa. Geologically, the area lies within the Cumberland Plateau Section of the Appalachian Plateau Physiographic province. The Pennsylvanian Age rocks are mostly sandstones, shales, coal, and siltstone. The principal features of this work are: a rock-fill dam with a central impervious core, a concrete intake structure, an uncontrolled spillway, a maintenance building, and a paved access road and parking area. The report describes in detail the procedures used to establish foundation grades, excavate and treat the foundation. Pertinent correspondence relating to foundation conditions along with one volume of typical foundation treatment photographs is included. Geologic cross-sections and boring logs are part of this report. Also included is information on the contractors and contract supervision. The physiography and topography of the area are discussed. Excavation, drilling, pile driving and grouting procedures are described.

Final rept.  
1984-1986

531 null

Humid Tropic Environmental literature has been collected at domestic and foreign depositories to aid in the determination of an inventory of geographic research of the humid tropic environment. Documents were screened, abstracted and placed in data processing format for various program tasks. The collected bibliography is presented in a KWIC Index for rapid searching by users. The KWIC Index contains 14,515 documents, 9,170 authors and 58,830 keywords. It appears in five sections: A-Frequency of Stop Words; B-Frequency of OK words; C-Author Listing and Index; D-Keyword listing and Index, and E- Bibliographic Listing and Index. The last section (E) is arranged in geographic, subject and author order. Approximately 10 percent of the documents are abstracted. Documents of military significance or of great scientific value are indicated. Materials are derived primarily from the literature of the following disciplines: Geographical, Earth, Atmospheric, and Biological Sciences.

null

520 null

B7700 NETED Reference Manual describes the NETED text editor, used for preparing computer programs, data files, documents and other publications. Each of the 115 NETED commands is described on a separate page, as well as in a cross-referencing summary by function. A discussion of the history of NETED as well as its many features, a sample annotated session and a list of all diagnostics messages are included. (author)

Final rept.,

DTNSRDC/CML

147 D-82/27

zones of the Magnetic Silencing Facility Deperming Pier at the Trident Refit Facility, Naval Submarine Base Bangor, Washington were subjected to Level I and II examination to determine the overall condition of the members and to identify specific defective members which might require maintenance and repair. The overall condition of the members ranged from very good to fair. The intertidal diagonal braces and horizontal wales were found to be in very good condition with only 4% of the members found attacked or damaged. The submerged zone timbers such as the 'X' and 'Z' loop trays and tray support timbers were in fair to good condition, with several members having sustained significant marine borer attack or damage. The number of defective timbers found is approximately 283. It is recommended that these timbers be subjected to preventive or restorative maintenance and repair. It is estimated that repairs to defective timbers will cost between \$230,000 and \$290,000 depending on repair methods used. These fees are based on replacing damaged members with either high retention (20 lbs/cu ft) creosote treated predrilled timbers or with molded fiberglass members. The choice of material and repair/replacement techniques will affect the final null

CHES/NAVFAC-  
103 FPO-1-85(6)

A seasonal Secchi depth atlas has been developed for the world's coastlines. Optical data have been compiled from data gathered by the National Oceanographic Data Center and from open literature for water depths less than 500 meters. These data have been averaged by one-degree squares, sorted by season, and placed in a category of six classes of Secchi depth ranges. Four charts were used to cover the world at a scale of 1:12,233,000, and four seasons were selected to encompass 3-month intervals. Additionally, annual mean Secchi depths have been compiled in four charts. Secchi depth data were found for approximately 50% of the world's coastlines. In the areas where no optical data were available other oceanographic, meteorologic, and geomorphic data sources were used to estimate the expected Secchi depth ranges.

Final rept.

115 NORDA-83

Sources of information, such as design handbooks, specifications and technical journals and books on engineering, are provided for use by design engineers in the application of rubber to Army weapon systems.

Technical rept.

AMSWE/RE-TR-  
28 67-2384

The present work is a continuation of the experimental investigations described in AD-611 759. The purpose was to increase the thrust augmentation of a configuration consisting of a Coanda surface (quadrant), deflecting the primary jet sheet through 90 degrees, in conjunction with additional (thrust augmenting) surfaces. The effect of a horizontal and vertical gap between the lip of the nozzle and the leading edge of the deflection surface, as well as the effect of a gap between its trailing edge and the downstream diffuser wall (tertiary flow) was studied. These experiments were carried out for a convergent (subsonic) and a convergent-divergent (supersonic) nozzle at various pressure ratios. The subsonic jet sheet produced the highest thrust augmentation. Tilting of the quadrant led to an increase in the augmentation ratio (excluding the lift acting on the nozzle), while the total thrust augmentation (including the lift over the nozzle) did not increase. Typical secondary and exit mixed flow velocity profiles were obtained. The highest total thrust augmentation observed was 1.37.      null



The purpose of this study was to investigate factors associated with the professional role perceptions and functions of Air Force social workers. Existing evidence had indicated that they tended to restrict their professional activities to a psychiatric model of practice. Several variables, including those of professional identity and professional security, were examined in relation to breadth of professional role perception. Fixed alternative response scales were constructed to measure these variables. The results indicated that the workers who (1) were most secure in their role activities and (2) were able to distinguish the attitudes and skills of their profession from those of psychiatry were the ones who expressed the most comprehensive perception of desired role functions. Implications of the study for the Air Force involved re-consideration of existing managerial and administrative structures in relation to the psychiatric role modeling expectation for social workers. Implications for the social work profession concerned the need for programs of continuing education.

Doctoral  
thesis,

262 AFIT-CI-77-16

The Functional Description for the Department of the Army Movements Management Systems - Redesign Phase 1 (DAMMS-R1) contains functional information concerning the design and development of the DAMMS-R1 subsystems; Freight, Container, and Transportation Movements Address Subsystem (TMAS). This document also includes information about the Data Model, files sets, and the Data Element Dictionary. Keywords: Automated; Transportation management; Database systems.

Draft rept.,

DSDPG-375-  
049-87-3-VOL-

853 2

The general mixed  $\mu$  problem has been shown to be NP hard, so that the exact solution of the general problem is computationally intractable, except for small problems. In this paper we consider not the general problem, but a particular special case of this problem, the rank one mixed  $\mu$  problem. We show that for this case the mixed  $\mu$  problem is equivalent to its upper bound (which is convex), and it can in fact be computed easily (and exactly). This special case is shown to be equivalent to the so called 'affine parameter variation problem (for a polynomial with perturbed coefficients) which has been examined in detail in the literature

Technical  
memo.

CIT-CDS-93-  
25 015

inspection of the dam and appurtenant structures did not reveal conditions which constitute an immediate hazard to human life or property. The dam, however, has a number of problem areas which should be investigated further. The structural stability analysis indicates unsatisfactory stability for the dam when subjected to forces which could occur during winter operations (including ice loading), the Probable Maximum Flood (PMF), and 1/2 PMF events. A structural stability investigation of the dam should be started within 6 months to determine the effect of the dam's steel bar anchor system and the uplift forces acting on the base of the dam. Remedial measures should be completed within 2 years to increase the structural stability of the facility to meet the Corps of Engineers screening criteria. The hydrologic/hydraulic analysis establishes the spillway capacity as 46% of the Probable Maximum Flood (PMF) with the sluice gates open and 30% of the PMF if the gates remain closed throughout the storm. The dam will be overtopped by 2.72 feet by the PMF with the gates closed or 2.55 feet with the gates opened. However, the spillway is capable of passing the 1/2 PMF under either of these two conditions

null

156 null

chosen within which to evaluate and use altimetric data from the U.S. Navy Geodetic Satellite GEOSAT. The zero-order accuracy of the major GEOSAT geophysical data record (GDR) channels was verified, and occasional gaps in the altimeter coverage were noted. GEOSAT'S 17-day repeat orbit allowed use of collinear-track processing to create profiles of the difference between the sea surface height along a given satellite repeat, and the mean sea surface height along that repeat's groundtrack. Detrending of sea surface bias and tilt on each repeat reduced orbit and other long wavelength errors in the difference profiles. The corrections provided on the GEOSAT GDR were examined for their effects on the difference profiles of three test arcs. It was found that only the ocean tide, electromagnetic bias, and inverted barometer corrections varied enough over the arc lengths (approx. 4400 km) to have any noticeable effect on the difference profiles. Only the ocean tide correction was accurate enough to warrant using it to adjust the sea surface heights. The recommended processing of GEOSAT data for the area included making the ocean tide correction, three-point block averaging successive sea surface heights, and forming the mean height profiles from 18 repeat cycles (to

Master's thesis,

This project report summarizes the bandwidth compression research activities performed by the University of Kansas under contract number F33-615-74-R-1093 with the Air Force Avionics Laboratory at Wright Patterson Air Force Base, Ohio. The primary purpose of this study is to investigate the feasibility of video bandwidth compression in the order of 50:1. This compression was simulated using imagery digitized to 64 grey levels (6 bits). This task was accomplished by three steps. These steps are: transform compression, frame rate reduction, and Differential Pulse Code Modulation (DPCM). Since the transform compression scheme is vital to the success of this project, major emphasis was placed on this area. Results indicate that a 50:1 compression is feasible and that the best transforms to be utilized in a hybrid manner with DPCM is the Discrete Cosine. Additional research developments led to a fast implementation of the Karhunen Loeve transform which is optimum under root mean square error criteria.

Comparisons of other fast transform performance is made as well as an optimum bit coding scheme. Final rept. Dec 73-Dec 75, (Author)

257-4,AFAL-TR-245 76-102

Site 45-OK-11 is on the north bank of the Columbia River in Okanogan County, between River Mile 576 and 577. The University of Washington excavated 1020 cu m of site volume from 1978-1980 for the U.S. Army Corps of Engineers, Seattle District, as part of a mitigation program associated with adding 10 ft to the operating pool level behind Chief Joeeph Dam. Systematic aligned random sampling with 1 x 1 x .01 m units of record in 1 x 2 or 2 x 2-m cells disclosed two major cultural components representing the Hudnut and Kartar Phases.

Final technical rept. Aug 78-Oct 84,

372 null

null

Final rept.

451 null

AMCP 706-202, Engineering Design Handbook, Helicopter Engineering, Part Two, Detail Design, is the second part of a three-volume helicopter engineering design handbook. The preliminary design (covered in AMCP 706-201) is developed during the proposal phase, at which time all subsystems must be defined in sufficient detail to determine aircraft configuration, weight, and performance. The detail design involves a reexamination of all subsystems in order to define each element thoroughly with the aims of optimizing the aircraft with regard to mission capability as well as cost considerations.

null

572 AMCP-706-202

Divergence experienced during rolling maneuvers has frequently been referred to as inertial coupling. This leads to a misconception of the problems involved. The divergence experienced during rolling maneuvers is complex because it involves not only inertial properties, but aerodynamic ones as well. The material in this chapter is intended to offer a physical explanation of the more important causes of roll coupling. Coupling results when a disturbance about one aircraft axis causes a disturbance about another axis. An example of uncoupled motion is the disturbance created by an elevator deflection. The resulting motion is restricted to pitching motion, and no disturbance occurs in yaw or roll. An example of coupled motion is the disturbance created by a rudder deflection. The ensuing motion will be some combination of both yawing and rolling that results in coupling problems large enough to threaten the structural integrity of the aircraft.

null

USAF-TPS-CUR-  
933 86-03

trained and ready Army, armed with effective weapons, conducting operations in accordance with current doctrine. The accomplishments of both operations resulted in great part from twenty years of introspection and thought which generated AirLand Battle doctrine, the doctrine embodied in FM 100-5, operations, and FM 22-100, Military Leadership. Further, the early 1980s were characterized by a defense build-up and the Army's procurement of the 'Big Five' weapons systems. The procurement included the Abrams Main Battle Tank, the Bradley, the Patriot Missile System, the Apache Attack Helicopter, and the Multiple Launch Rocket System, each contributing to the success of DESERT STORM and the Apache in JUST CAUSE. Two decades of intense preparation for war against the Soviet Union contributed to the stunning victories in Panama and the Persian Gulf. The information for this pamphlet was gained through oral history interviews from battlefield commanders of JUST CAUSE and DESERT STORM. Questions focused on leadership and command techniques. The key for the Army of the future, operating against as yet unknown threats and with limited resources, is to maintain the technical, tactical, and operational edge. The findings in this pamphlet illuminate

Pamphlet

TRADOC-PAM-  
88 525-100-2

This document is the fifth in a series of bibliographies covering the human factors engineering literature. It covers most of the journal target articles for the year 1967.

null

294 HEL-BIB-VOL-5

In order to gain facility with mechanical impedance methods, and to determine the feasibility of using theoretical impedance functions in the design of machinery foundations, the mechanical impedance of a tip-driven cantilever beam of uniform cross section was determined. This experimental impedance function is compared with a theoretical impedance function. Correlation between the two impedance functions is good at the first resonant and the first antiresonant frequencies.

Attachment of the means of driving the cantilever beam and measuring its resulting motion appears to modify the nature of the structure and its response to an exciting force. The accuracy of the experimental impedance function is limited by the accuracy of the phase angle determinations. A clamping jig for achieving experimentally the clamped end condition is described. The validity of the assumptions of linearity and negligible damping is established qualitatively.

Master's  
thesis

84 null

The focal point of the activities of the Society of Engineering Science is its annual technical meeting. The technical program of this meeting consists of 48 sessions in which 330 papers are scheduled for presentation. This book contains the abstracts of these papers.

null

371 null

Determination of the elastic-plastic fracture toughness for three medium strength materials of varying ductility has been carried out. The materials in decreasing ductility are HY130 Steel, CMS-9 Steel, and Inconel 718. A survey of measurement-point techniques for  $J$  sub Ic has been incorporated in the study to evaluate the effect of ductility on the determination of both an elastic-plastic fracture parameter and a fracture measure for direct estimation of the elastic fracture toughness  $K$  sub Ic.

Materials rept.

40 DREP-80-A

This specification establishes the requirements for performance, design, fabrication and test of a Digital Message Device, herein test referred to as the DMD. This device shall be used by the Forward Observer to transmit and receive tactical digital messages over standard Army tactical communications equipment as part of the Tactical Fire Direction System (TACFIRE).

null

191 EL-SS-2603-TF

In December 1985, the Deputy Chief of Engineers tasked the US Army Engineer Studies Center (ESC) to develop an automated planning system which would integrate existing data systems into an automated spreadsheet which could then be easily and routinely updated by Army stationing planners. The completed system would be used to screen installations to identify the best candidate sites for stationing an additional division or separate brigade. Also, ESC was tasked to use the developed system to evaluate 28 Army installation complexes in CONUS, Alaska, and Hawaii. This report summarizes the large amount of quantitative and qualitative data amassed by ESC for this study. This installation data book serves as an aid to Army stationing planners by providing detailed information on the geography, economic conditions, environment, training facilities, and real property of the 28 major Army installation complexes in the US.

Final rept. Aug  
87-Feb 88,

341 USAESC-R-88-4



~~Final report, research conducted for the~~

Behavioral and Social Sciences (ARI) developed Project First Term as a multi-year, longitudinal investigation of Soldier attrition and reenlistment among the cohort of recruits who joined the Army in Fiscal Year 1999. This effort allowed the evaluation of models of attrition and reenlistment intentions based on information contained in personnel records and collected from Soldiers who were surveyed as they entered the service, completed training segments, conducted duty assignments, and left the service. These models explored reasons for attrition and reenlistment intentions, and suggested management strategies that might be employed to reduce attrition. This report provides a comprehensive description of Project First Term methodology and analyses, and documents those results that are most relevant to the management of first term attrition. The focus of the analysis was on attrition that occurred during four major phases of a Soldier's first term (48 months) of service, specifically: Basic Combat Training (BCT), Advanced Individual Training (AIT), One-Station Unit Training (OSUT), and In-Unit. The authors devote a separate chapter of the report to examining attrition occurring in each of these phases (Chapters 4-7). In Chapter 2 they define how attrition was coded for the analyses

Final rept. Oct  
2002-Mar  
2004

449 ARI-TR-1172

Report contains Appendices A through H, Volume 2, (Part 2). Addendum reports for Operable units 4, 8 and 9.

Final rept.

SFIM-AEC-RP-  
CR-97006-V2-

911 PT2

This issue of L'Armement is devoted to the theme of nuclear deterrence. France's nuclear deterrent has two prongs: nuclear-powered missile carrying submarines and medium range air-to-ground missiles. The President of France reconfirmed the deterrence strategy in a speech to the Higher National Defense Studies Institute on 8 June 2001. France continues to view deterrence as insurance against a significant threat. Individual articles address such challenges as France's decision to dismantle its nuclear test sites. Mandated cost reductions, industry consolidation, nuclear safety, and communications. The publication acknowledges deficiencies in non-proliferation agreements, but advocated using political means to reduce the spread of weapons of destruction. Reference is also made to complications presented by the United States' pursuit of a missile defense system.

Series  
publication

197 null

null

Final rept.

317 null

As part of the CHURCH ANCHOR Exercise conducted in the central Northeastern Pacific Ocean during August and September 1973, the received signals from underwater explosive sources (SUS) detonated at a nominal depth of 18 meters were analyzed for signal propagation measurements. The signal received at four hydrophones were detected, digitally sampled and processed on-line by a digital minicomputer system aboard the Research Platform FLIP. The four hydrophone depths 775 meters, 2492 meters, 4250 meters, and 5180 meters, correspond to depths near the sound channel axis, a depth roughly midway between the axis and the critical depth, near the critical depth, and 142 meters above the bottom, respectively. Analyses were made at selected frequencies in the band from 10 Hz to 400 Hz. Signal propagation characteristics and signal-to-noise ratios were examined as a function of source-to-receiver range, receiver depth, and frequency. Bathymetric or changing water mass effects on the sound propagation were also noted.

Summary rept.  
Aug-Sep 1973

MPL-C-  
42/76,SIO-REF-  
80 76-10

The book contains the texts of twenty professional papers, as well as shorter statements by panel participants, and considerable verbatim discussions. Starting with the theme of the need for rules and rights in the use of the sea, the proceedings then go on to consideration of existing fisheries arrangements and their implications, conflicts of uses in the sea, and alternative regimes for the sea, ending with a discussion on the future development of world fisheries. In this latter connection, considerable attention was paid to the problems of U.S. jurisdiction over its fisheries resources beyond the twelve- mile limit.

Technical rept.  
no. 2, 31 Mar  
1967-31 Mar  
1968

183 TR-2

An overview of the Instream Flow Incremental Methodology (IFIM) is presented with particular emphasis on guiding influences of western hydrology, regional geology, important pre-IFIM studies, and select biological considerations. These influences are compared and contrasted with those prevalent in other regions of the United States. These influences are used to partially explain conflicting literature evaluations of IFIM and also to serve as the basis of suggestions for improving the methodology, particularly for eastern and southeastern United States applications. Improving IFIM by incorporating tenets of the Hydraulic Stream Ecology Concept and thus relaxing the present tight linkage between hydrology and biology characterizing many applications of the methodology is suggested. This suggestion enhances the realism and defensibility of the methodology for assessment and also makes IFIM an investigative tool for advancing stream ecology.... Environmental assessment, Physical habitat simulation, Instream flow incremental methodology, Regional considerations, Warmwater fishes.

Final rept.

WES/TR/EL-93-  
50 3

An investigation was conducted into finding materials and procedures for mixing, applying, and curing rapid-setting epoxy adhesives under seawater. Separate formulations were developed for use at 5C and 20C. They were easily mixed and applied underwater from a plastic cartridge. A simple system of chemical heating was found to accelerate underwater curing, especially in cold waters.

Final rept. Jul  
1972-Jun 1974

18 CEL-TN-1367

The author considers estimation procedures for the moving average model of order  $q$ . Walker's method uses  $k$  sample autocovariances ( $k \geq q$ ). Assume that  $k$  depends on  $T$  in such a way that  $k$  nears infinity as  $T$  nears infinity. The estimates are consistent, asymptotically normal and asymptotically efficient if  $k = k(T)$  dominates  $\log T$  and is dominated by  $(T^{1/2})$ . The approach in proving these theorems involves obtaining an explicit form for the components of the inverse of a symmetric matrix with equal elements along its five central diagonals, and zeroes elsewhere. The asymptotic normality follows from a central limit theorem for normalized sums of random variables that are dependent of order  $k$ , where  $k$  tends to infinity with  $T$ . An alternative form of the estimator facilitates the calculations and the analysis of the role of  $k$ , without changing the asymptotic properties.

Technical rept.

157 TR-21

This report briefly describes the development of a low-cost, ship-to ship optical communications system (OCS) under a six-month Phase I Small Business Innovative Research (SBIR) contract. Laser communication systems have been developed for use at fixed ground stations, aircraft, and satellites. However, they have not been successfully used in ship-to-ship applications. The difficulty is that ships have large, random linear random linear and angular motion, which interferes with holding a narrow-beam laser on an optical receiver. This study prepared a conceptual design of a relatively short range, low-power ship-to-ship system that would operate under severe sea conditions. The emphasis of the study was on the design of a low-cost gimbal set and its associated tracking system. (fr)

Final rept. Oct 87-May 88,

ATA-M-SBIR-025,NOSC-TD-

129 1287

'Guide to Technical Documents' lists all the formal reports that have been published by Civil Engineering Laboratory on research, test, and evaluation.

null

88 null

Results of experimental and theoretical investigations are presented on the use of a nuclear generated plasma in a noble gas plasma diode thermionic converter. Related programs of emitter materials development and plasma measurements are described. These are presented in the following individual sections contained in this report: (1) inpile ion chamber experiment theory and tube design, (2) pulsed noble gas plasma diode experiments, (3) electron mobility in gases, (4) spectroscopic measurements in a cesium low voltage arc converter, and (5) uranium carbide-rhenium cermet emitter.

(Author)

null

62

900SR2,AFCRL-

1 62 900

Experiment) case was simulated using the Regional Atmospheric Modeling System. This three dimensional, mesoscale model was applied in non-hydrostatic and nested-grid mode using explicit, bulk microphysics and radiation. The simulation resulted in very good agreement between observed and model predicted dynamic and cloud fields. We verified cloud height, thickness, areal extent and microphysical composition against GOES satellite imagery, lidar, and aircraft measurements taken during the FIRE Cirrus IFO (Intensive Field Observation). The simulated cirrus lifecycle is examined to determine possible formation, maintenance and dissipation mechanisms. Sensitivity simulations were run to determine long and short wave radiative forcing. Also, a simulation was run with no condensate to examine cloud feedbacks on the environment. Cloud top generation zones, fallstreaks, and layering were simulated. Longwave radiation appeared to be instrumental in developing weak convective activity in the lower layer thereby increasing it's optical depth. Cloud top cooling and cloud base heating affected the flow around the cloud. Secondly, the effects of three upper boundary conditions on cirrus clouds were studied in a synoptic setting.

null

CSU-ATSP-

483,AFOSR-TR-

142 91-0776

This 1977 edition of the Federal Information Sources and Systems inventory incorporates several major improvements over the edition published in 1976. The intent in conducting the initial inventory in 1976 was to determine the scope of organized collections of information and how such data were described by Federal agencies. The 1977 inventory evolved from the pilot process. With the help and cooperation of agencies involved in the inventory, uniform reporting requirements and definitions were established leading to a more consistent and comprehensive information sources and systems inventory. Coverage increased from 63 agencies in the pilot inventory to 91 agencies in this inventory.

null

GAO/PAD-77-  
646 71

There are many aspects to the term user-centered. For this research, we have concentrated on the issue of information management. Our theoretical starting point was to identify the distinction between two levels of mental representations that users have of the tasks they want to perform on computer systems. In our proposal to ARI, we planned to distinguish between a situation model and a system model. The situation model is a representation of the task the user wants to perform in terms of the specific task domain. It is subjective and varies somewhat among individuals, but our assumption has been that it is well specified. In order to do anything, however, the user's situation model must be transformed into a system model, which is normative and system specific. This distinction has been the driving idea behind the theorizing and system building in this project. Our question has been, how, for a variety of tasks in which information management plays a central role, this transformation is achieved, and what system support can be provided for it. (Author) (kr)

Interim rept.  
Sep 1986-Feb  
1989,

41 ARI-RN-90-47

~~sample of Hispanic and Mainstream recruits~~, recruits answered a questionnaire that obtained their perceptions of supervisor-subordinate relations. In addition, a number of items measured values related to supervisor-subordinate behaviors such as Power Distance, Uncertainty Avoidance, Collectivism, and Masculinity (Hofstede's, 1980). Evidence was found that the Hispanics were higher than the Mainstream respondents on Power Distance and Uncertainty Avoidance; and lower on Masculinity. There was also a trend suggesting higher Hispanic scores on Collectivism, and descriptions of a sample of supervisory situations suggested a greater tolerance by Hispanics for supervisors who are non-participative (high Power Distance); but there were no preferences for supervisors high in initiating structure and collectivism. Reactions to supervisors high or low on Initiating Structure and Consideration revealed strong similarities between Hispanic and Mainstream recruits. Both samples liked the supervisors high on both traits much more than the supervisors low in both characteristics. However, there was a trend for Hispanics to prefer the high Consideration--low Initiating Structure supervisor more than the high Initiating Structure--low Consideration supervisor.

Interim rept.

43 TR-ONR-11



The objective of this report was to determine the effect of various types of indexing aids on the minimum reliability of indexers. The three types of tools tested as indexing aids on a collection of randomly selected chemical patents were a classificatory device (Manual of Classification of the U. S. patent Office), an alphabetical subject-authority list of terms (Chemical Patents Code List of Documentation Incorporated), and a concept-associative tool (Chemical Engineering Thesaurus of the American Institute of Chemical Engineers). The former two tools registered a highly significant improvement of the base zero inter-indexer consistency; the concept-association aid, on the other hand, failed to show any effect. The analyses and interpretation of the results indicate that an improvement in indexer reliability, and hence in the quality of indexing, can be brought about through the use of prescriptive, rather than suggestive, vocabularies which formalize the relationships among terms so as to invariable enjoin the indexer's assignment of index terms. Indexing aids which display numerous variable ill-defined relationships among terms appear to be acting in the opposite direction.

Final technical  
note

RADC-TDR-63-  
71 116

the X-19 V/STOL technology. The broad categories discussed include in Section I a review of the developments leading up to the X-19 program. Sections II through VI are devoted entirely to the propellers and the considerations involved in design. The radial force principle is postulated in Section II. Interference effects on the wings due to the propellers are discussed in Section III. The propeller aerodynamic design in hover and cruise is presented in Section IV. Section V is devoted to the structure and control mechanisms of the propeller. Section VI relates to the use of propellers as in airplane control device. The tandem wing principle is discussed in Section VII, covering stability, control, and drag. Section VIII is devoted solely to ground effects. The wind tunnel research activity leading up to the X-19 is presented in Section IX. The structural loads in hover, transition and cruise are discussed in Section X. Section XI presents information pertinent to landing procedures in hover or cruise in the event of power failure. A summary of the flight test program is given in Section XII, including aircraft and hardware performance characteristics. Finally, Section XIII is devoted to a general discussion and assessment of the aircraft's unorthodox features.

Final rept.

WAD-R1005-F-  
VOL-1,AFFDL-  
TR-66-195-VOL-

359 1

The entity simulation model described in this publication is an initial product of the operations research efforts conducted by the Statistical Research and Analysis Division, BESRL under SIMPO-I Task. The model was designed for integration into the more generalized SIMPO-I simulation package for evaluation of personnel and manpower policy alternatives across the Army's major personnel functions. The entity model concentrates on the procurement, selection, and allocation aspects of the personnel system. The SIMPO-I, when completed, will consist of a relatively comprehensive computerized model of the Army personnel subsystem--incorporating a simulation model and a library of computer programs. Other modules to be developed, have appropriate interfaces with the entity module, will be concerned with such personnel functions as distribution, tour rotation, promotion, and training. Representative applications of an entity model in a simulated system are discussed. A detailed description of the general simulation program is given together with a manual for use of the program in the Appendix to the report.

Technical  
research note

BESRL-TRN-  
46 193

The information and requirements presented as they apply to the assembly and checkout contractor (Boeing) meet the objectives for technical approval, inventory, acceptance, and delivery/turnover of the Minuteman Wing II WS-133A Weapon System Facilities at VAFB. The methods to be used by Boeing to modify and demonstrate the weapon system using supporting technical manuals and implement the acceptance and delivery/turnover of the weapon system to the procuring authority was described. The remaining facilities under SAC control requiring modification (e.g. SMSA) will be modified by the use of a separately negotiated time compliance technical order and will not be included. The delivery/turnover activities described also pertain to only the Wing II LF(s) since the Wing II supporting facilities which were not yet in SAC's custody will remain in the custody of Boeing at the end of the Wing II Program in order to support the Wing III Program.

null

119 D2-13302-2

A nano-engineering approach has been developed for the synthesis of the thermoelectric composite materials. A possible way for enhancing ZT is to incorporate thermoelectric materials, e.g., Skutterudite, into the nano-sized pores of three-dimensional periodic arrays. The present study reports the development of a method for making a Nano-Engineered Thermoelectric (NETE) coating on silica particles. The coated particles are assembled into three-dimension array of opals to form METE composite. The process consists of coating silica particles with gold and then with thermoelectric material. Gold coating has the advantage that post-coating assembly provides a continuous network of Skutterudite-filled gaps between gold interconnects. The second coating was carried out by chemical co-precipitation of Co and Sb precursors from a solid solution onto the surfaces of the gold-coated particles under controlled conditions. Through further heat-treatments (calcination, reduction and alloying), a Skutterudite layer has been formed in high purity. Both the gold- and gold/Skutterudite-coated particles retain the morphology of the original silica particles. In this paper, the processing conditions and materials characterizations are reported and discussed.

Conference  
proceedings

EOARD-CSP-99-  
8 5023

Earth; Development and In-flight Evaluation of a Triplex Digital Autostabilisation System for a Helicopter; Aspects of the Design and Development of the Maritime Autopilot Modes for the Westland Lynx Helicopter; Design and Testing of a Redundant Skewed Inertial Sensor Complex for Integrated Navigation and Flight Control; Scan Converter and Raster Display Controller for Night Vision Displays; Applications of Pattern Recognition Systems for Day/Night Precision Aircraft Control; Heterodyning CO<sub>2</sub> Laser Radar for Airborne Applications; A Self-contained Collision Avoidance System for Helicopters; Helicopter High Definition Rotor Blade Radar; Design Procedure for Aircrew Station Labeling, Selection and Abbreviation; Subjective Assessment of a Helicopter Approach System for IFR Conditions; Impact of Multi-function, Programmable, Control Display Unit in Affecting a Reduction of Pilot Workload; Etude d'Interface Equipage-Systeme dans un Helicoptere AntiChar de Nuit; NAVTOLAND (Navy Vertical Takeoff and Landing Capability Development); Guidance and Control Unit for All Weather Approach; Simulation and Study of V/STOL Landing Aids for USMC AV-8 Aircraft; and Flight Control in an Integrated Guidance and Control System.

null

238 AGARD-CP-258

The sol-gel process for making ceramic powders from solutions-gels, and especially the use of alkoxide precursors, and their subsequent conversion of gels to ultrahomogeneous glass was developed at Penn State by the P.I. and his students. Our conceptual innovation on which the present work rests is, we believe, as major a development as was our development of the sol-gel processing in the decade 1948-58. In that development we succeeded in making ceramics that were homogeneous on the 'unit cell' scale. Since 1982 we conceived and first published and filed patents on and what we have now developed in detail is deliberate heterogeneity on the same scale (1-10 nm units). The work under this grant is focused on applications and processing, while the thermodynamics and structure of this family of heterogeneous materials is studied under a parallel NSF grant. (JG)

Final rept. 15  
May 1983-14  
May 1985,

AFOSR-TR-90-  
110 0019

Contents: Tuned Gyro Cost Reduction through a Novel Hinge Design; Optical Rotation Rate Sensors; A Nuclear Magnetic Resonance Gyro using Noble Gas Isotopes; Hamilton Standard Superjet TM Solid State Fluidic Rate Sensor; The Cactus Accelerometer; Inertial System Alignment and Calibration on a Moving Base; and Identification and Determination of Strapdown Error-Parameters by Laboratory Testing.

null

AGARD-AG-  
142 254

null

null

508 D2-11162-1

The elements of a mathematical theory for the analysis and design of organizations are presented. The focus of the research has been on information processing and decisionmakers organizations supported by Command Control and Communications(C3) systems. The mathematical framework used in modeling the individual decisionmakers, as well as the organization, is that of n-dimensional information theory. Petri Net representation of the organizational structure is used to model the interactions between organization members as well as their interactions with the C3 system. Comparison and evaluation of alternative organizational forms is accomplished by considering organizational performance, individual workload and the sets of satisfying decision strategies. A brief description of research on distributed estimation and on information storage and flow in C3 systems is also included.

Final rept. 1  
Jul 83-30 Jun  
84,

LIDS-FR-  
1393,AFOSR-  
77 TR-84-0830



This report concludes phases two and three of a three phase project conducted under TAEG's Recruit Training Optimization project. It provides a curriculum design, a description of the optimal curriculum with guidelines for training, and a plan for implementation. Phase one effort was reported by TAEG Report number 34. Essentially the design utilizes a systems approach to provide a four phase modularized curriculum addressing administrative processing and training preparedness, military training, Navy training and detachment and transfer training. A unique adaptive screening and training procedure is included in the initial phase. The curriculum provides for training evolutions to be accomplished within a framework approximating fleet daily routine with specific attention directed toward promoting understanding of the place and function of the individual within the overall Navy system. Emphasis is placed upon developing individual preparedness and responsibility in meeting Navy standards as a prerequisite for a variety of follow-on training and duty assignments. (Author)

Rept. for Feb-  
Dec 78 on  
Phase 2,

134 TAEG-67

This test and evaluation program classified and examined several representative examples of non-gold base, porcelain-fused-to-metal alloys. The systems, or groups, included the following precious and non-precious alloys: High palladium-copper, high palladium-cobalt, palladium-silver, nickel-chromium-beryllium, nickel-chromium beryllium-free, and cobalt-chromium. General information on terminology, dental porcelain, porcelain-fused-to-metal alloys, investing, spruing, casting biocompatibility, laboratory safety, and cost comparisons was also included. In addition, detailed processing instructions for the representative alloys have been provided.

Final rept. 1  
Oct 84-1 Oct  
85,

USAFSAM-TR-  
370 86-5

The purpose of this report is to give a broad overview of the field of team training as it relates to military teams. It includes an annotated bibliography and state-of-the-art review of research bearing on team training which covers the time period from 1955 to 1980. Critical conceptual and methodological issues are discussed in the review and discussion is focused on team performance rather than human relations variables. Categories of the annotated bibliography are organized to support the review. These include theories and models of team behavior, variables affecting team performance, military team training studies, methodology for assessment of team products and processes, studies of the characteristics of effective and ineffective teams, and previous reviews of small group and team research. Keywords: Team assessment; Team effectiveness; Team dimensions; Team functions; Teamwork; Small groups; Group performance; Group processes; Team training; Team processes.

Research note  
Oct 1980-Jun  
1982

278 ARI-RN-86-18

This report updates report LC-76-EM1, dated May 1976, and covers findings from the research program on gyroscopes. The program approach on these devices has included literature and user surveys, data bank analyses, data collection from various military systems and special testing programs. (Author)

Final rept. Jun  
74-Jan 78,

31 LC-78-EM1

Partial Contents: Biological Surveys, Vegetation Species, Biological profiles, Historic Soil, Sediment Data, Hazard Quotients, Soil Sample, Qualitative Survey, Wildlife, Mammal, Community Similarity, Vegetation Sample Collection, Blacktailed Jackrabbit,, Ecological Risk Assessment, , Birds, Passerine, Habitats, Taxonomy.

Final rept.,

SFIM-AEC-RP-  
1389 CR-97056

NextGen is a Congressionally mandated initiative to modernize the national air transportation system in order to reduce air traffic delays, save fuel, enhance safety, and mitigate the environmental impacts of aviation. It embraces satellite-based surveillance, digital communications, and performance-based navigation within a net-centric environment. NextGen also ensures that defense and security needs are met and that U.S. leadership in global aviation is retained. Ultimately, the return on NextGen's investments will yield positive benefits for our nation's economy. The JPDO is responsible for developing a framework for NextGen planning and development, identifying and prioritizing key multi-agency concerns, and driving consensus in the development of investment choices and decisions. By executing its collaborative processes, the JPDO ensures efficient coordination between the Federal partners whose decisions impact NextGen, namely the FAA, NASA, DOD, DOT, DHS, and DOC. This ensures that these partners have the benefit of a multi-departmental perspective when developing future plans.

null

8 null

Partial contents: Fast Analytical Simulation of Missile Flight; Architectural Decomposition of Software Applications; Teaching the Second Computer Science Course in a Reuse-Based Setting; Engineering Environments and Emerging Standards; Government Training for Ada and SW Engineering; Education and Training; A Comparison of Ada and C as Teaching Language; Life Cycle Issues; Ada in Undergraduate Computing Education; Process Oriented Reuse Experience to Data; Existing Re-engineering Tools and Capabilities.

null

228 null

An investigation was conducted to determine the feasibility of a low- cost, caseless, solid-fuel integral-rocket ramjet (IRSFRJ) that has no ejecta. Analytical design of a ramjet powered air-to-ground missile capable of being fired from a remotely piloted vehicle or helicopter was accomplished using current JANNAF and Air Force computer codes. The results showed that an IRSFRJ powered missile can exceed the velocity and range of current systems by more than a two to one ratio, without an increase in missile length and weight. A caseless IRSFRJ with a non ejecting port cover was designed and tested. The experimental results of the static tests showed that a low-cost, caseless IRSFRJ with a non-ejectable port cover is a viable design. Rocket ramjet transition was demonstrated and ramjet ignition was found to be insensitive to the booster tail off to air injection timing sequence.

Master's thesis,

62 null

null

Monograph

SMUFD-TRANS-  
66 34

dependent on diesel generators are classified into six climatic groups and three power classes for generic analysis. Methods for describing both the hourly average and statistical characteristics of the solar energy and wind power available in each of these six climatic regions are developed. The technology currently available or expected during the next five years for collecting energy from the environment and storing it for subsequent generation of electric power is reviewed. A method for computing battery life as a function of the hourly use pattern is developed. A life-cycle-cost analysis methodology applicable to continuously variable life expectancies is developed and illustrated. Diesel generator costs, including service visit expense, are modeled. Other factors relating to the analysis of alternate energy systems as supplements to diesel-electric generators at remote sites are discussed. Simulations show that the use of storage batteries and a DC to AC inverter permits the diesel to be off during periods of low power demand with significant reduction in both annual fuel use and cost. Supplementing this basic diesel-battery hybrid with energy collected from the environment is cost effective and saves additional fuel. Other hourly simulation model results are

Final rept. Feb  
80-Feb 81,

227 USCG-D-06-81

This report is a summary of the state-of-the-art in LORAN-C receiver design (April 1984). The data sources were manufacturers, designers, and trade literature. Every effort was made to accurately depict the status of receiver design activity in the midst of a volatile LORAN-C receiver market. New receiver models are being introduced monthly; existing models are being modified in response to requests from an expanding user community. Twenty-eight manufacturers have provided the author with data on eighty-five receivers. These receivers are the state-of-the-art technologies. Design features and current trends are included in this report as well as data sheets on each receiver.

Final rept. Sep  
82-Feb 84,

(Author)

DOT-TSC-CG-  
84-1, DOT-CG-  
109 N-1-84

<p>A study was made of combustion mechanisms of composite solid rocket propellants, using the sandwich burning method to minimize the statistical aspects of experimentation and interpretation of results inherent in propellant studies. The results provide a more clear picture of the complex combustion process than has been possible previously. Because of the importance of knowledge of the decomposition mechanisms of individual propellant ingredients at combustion zone temperatures, a combination of facilities was planned for studies of this subject. The primary effort under the contract was development of a new thermal analysis instrument that can measure weight change as a function of time while heating a sample at 100C/sec. Heating may be done by laser, furnace, or radio frequency induction. The test sample is deposited on the free end of a rod that vibrates during a test, and mass change is determined by recording the change in vibration frequency of the rod. Results are reported comparing the decomposition behavior of two propellant binders as measured by this high rate thermogravimetric analyzer and a conventional TGA.</p>	<p>Final rept. 1 Aug 1979-31 Jul 1985</p>	<p>223 null</p>
<p>null</p>	<p>null</p>	<p>230 null</p>

of the Inarajan River drainage and adjacent ridges that will be subject to inundation in the event of proposed construction. Historical research at the Micronesian Area Research Center, University of Guam, and at the Bishop Museum library indicated that portions of the Inarajan area were cultivated in the nineteenth century and early twentieth century. Crops included rice, coconut, cacao, and coffee. Present-day land use is limited to hunting and fishing; a single pasture was noted during fieldwork. Reconnaissance survey involved walking transects through the survey area's two microenvironmental zones. Approximately 4 acres (1.5%) of Zone I (alluvial flats and taluvial slopes) and 26 acres (6%) of Zone II (savanna) were sampled. Three extensive areas of prehistoric activity, evidenced by ridge-crest pottery scatters, were located within the survey boundaries; these have been assigned temporary designations as Sites A, B, and C. A portion of one of these areas had been previously reported by Reinman as Site 66-05-0103. As probable remnants of large, complex, and as yet incompletely described sites of unknown function and structure, these sites may be expected to yield data relative to a number of research questions. Portions of Sites A and C would be impacted by the proposed

null

29 null

This report describes research undertaken by Mission Research Corporation during 1983-84 in support of the experimental effort to model effects of high altitude nuclear bursts using high power lasers. Hydrodynamic simulations of experiments at NRL are discussed; the appropriate scaling laws are derived for variation of all important experimental parameters.

Technical  
rept.,

AMRC-R-  
486,DNA-TR-  
84-174,SBI-AD-  
113 E301 695

This report represents the third years effort of an annual 10 week summer research program conducted by university faculty members at selected USAF System Command Laboratories. Program objectives are (1) To provide scientific and technological benefits to the USAF while enhancing the research interest and capabilities of engineering educators. (2) To stimulate continuing relations among participating faculty members and their professional peers at the AFSC laboratories. (3) To form the basis for continuing research of interest to the Air Force at the participant's institution. (4) To sponsor research in areas of mutual interest to the USAF, the faculty member, and his institution. (Author)

Interim rept.,

AFOSR-TR-78-  
566 0348

Fifteen sites of potential environmental concern, grouped into six waste management zones, were evaluated. A total of 22 monitor wells were installed and groundwater samples were obtained from each well. Soil samples were obtained for chemical analysis from 12 soil borings. Samples of surface water, bottom sediments and fish tissues were obtained from three ponds. All chemical analyses were accomplished in accordance with Standard USEPA analytical methods. Based on the sampling and analyses performed, levels of contamination were found in soils or groundwater at seven of the 15 sites evaluated which warrant further investigation and potential remedial actions. Recommendations were made as to appropriate follow-up site evaluation work at these seven sites. (Author)

Final rept. Dec  
84-Jul 85,

467 null



A modular design process as applied to signal processing and switching systems is described. Architecture analysis, high order language evaluation and comparison, system simulation, and hardware/software tradeoffs were made in the context of modular design of signal processing and switching systems. The principal motivation for modular system design is lower life cycle cost. (Author)

Final rept. 16  
Aug 76-15 Mar  
77.

152 null

specimens employing three different symmetric stacking sequences were used for this project. Replicates for each specimen type and stacking sequence were loaded to ultimate and four load levels below ultimate to produce specimens containing progressive amounts of damage. During loading of each specimen Acoustic Emissions (AE) were monitored as a function of load. Specimens from each of the four load levels were inspected for matrix cracking, delamination and fiber bundle fractures using penetrant enhanced X-ray radiography and the deply technique. The deply technique, a unique but destructive inspection method, was used to separate the graphite-epoxy composite into its individual laminae while maintaining the integrity of each lamina. With the application of a gold chloride penetrant before deplying, the internal matrix damage as well as fiber bundle fracture could be readily observed on the surface of the individual laminae. These damage observations were recorded on a Lamina Damage Characterization Chart for each specimen. These charts contain pictorial sketches, with fiber orientations shown, for each lamina of the specimen segment deplyed. A summary of the inspection results including photomacrographs of

Final rept. Jun  
80-Dec 81,

LG-  
81ER0245,AF  
WAL-TR-81-  
515 3157

<p>This report furnishes airport activity of the Certificated Route Air Carriers. Included in the data contained in Table 6 are passenger enplanements, tons of enplaned freight, express, and mail. Both scheduled and non-scheduled service, and domestic and international operations are included. These data are shown by airport and carrier. Table 7 includes departures by airport, carrier and type of operation, and type of aircraft. (Author)</p>	<p>Semi-annual rept. for period ending 30 Jun 76.</p>	<p>316 null</p>
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<p>The eight volume series of the U.S. Navy Marine Climatic Atlas of the World has had wide acceptance as an authoritative reference for large scale operational planning and applied research. This volume based on nearly 20 years of additional data, is an update of Volume V (U.S. Navy Marine Climatic Atlas of the World, 1959) and is designed to fulfill the same requirements: wind, air temperature, sea surface temperature, humidity, precipitation, visibility, ceiling, barometric pressure, sea ice, ocean tides and ocean waves.</p>	<p>Reference rept. 1854- 1978</p>	<p>NAVAIR-50-1C- 718 532-REV</p>
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<p>null</p>	<p>Final rept.</p>	<p>M-125-1,FR/31- 141 10-44</p>
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In a previous project, a state-of-the-art intrusion detection system was analyzed and numerical results were obtained for various intrusion situations. The system consisted of a ported coaxial cable laid circularly around an area to be protected and an antenna near the center of the circle. The presence of an intruder (electromagnetic scatterer) near the cable perturbs the field and thereby changes the signal at the antenna. The analysis was based on the plane-wave spectral representation of fields and the assumed scatterer was a uniform spheroid with constitutive parameters designed to simulate those of a human frame. Emphasis was on polarization effects. Although the previous analysis constituted an attempt to model this system quite accurately, the price for this accuracy was extremely large computer time. In order to reduce computer time, approximations were made along the way that reduced the overall accuracy. The present report discusses a follow-on to the above mentioned project whose objective was to produce a simpler, less computer-time-intensive model and associated software that can be readily used to study the effects of parameter changes on system performance. Steps were taken toward that objective, as follows: (1) The software was thoroughly checked and redesigned for greater

Final rept. Mar-  
Nov 84,

RADC-TR-85-  
147 234

Approximately two percent of the population suffers from brain damage. Some of these cases lead to speech defects. The diagnosis of neurogenic speech defects is a speciality of clinical neuropsychology. The typical approach is subjective. Technical acoustic evaluation procedures are rarely used in diagnosis and therapy. This dissertation describes a modular diagnostic system for speech defects" that supports the standard diagnosis of neurogenic speech defects based on the acoustic analysis of the speech signal and the compilation of diagnostic parameters."

Dissertation

291 null

Volume 3 in the analysis of the operations conducted in the Battle for Leyte Gulf comprises the chronological record of the Allied and Japanese actions from 20-23 October, during which the Southwest Pacific Area forces, supported by Pacific Ocean Area forces, captured footholds in the Leyte Gulf region of the Philippines. The prior phases dealt with in Volumes 1 and 2 are essential to a comprehension Battle of these later developments in the course of the evaluation battle. rept.

NAVPERS-  
1102 92510

Abstracts are given for research in airbreathing combustion, rocket propulsion, and diagnostics in reacting media supported by the Air Force Office of Scientific Research. Instability, Flames, Propulsion, Gas Turbines Combustion, Shear Layer, Supersonic, Soot, Sprays, Lasers, Fluorescence, Spectroscopy, Rocket, Plasma, Scramjets. Technical rept.,

AFOSR-TR-92-  
298 0740

project, program correctness, finite state devices,  
 and program complexity (timing). A variety of  
 artifacts were developed to support course  
 material, programming assignments, and  
 laboratory assignments in the mathematics of  
 software engineering. The program correctness  
 artifact centers on an artifact, called Assert. Assert  
 is an Ada package that assists users in testing  
 program assertions. The finite state device target  
 is supported by several artifacts. One artifact in a  
 course module, with laboratory and programming  
 assignments, that centers on the use of finite  
 state device concepts in programming and the  
 classical representations of finite state devices in  
 Ada. The second finite state device artifact is a  
 Turing Machine simulator that simulates a turing  
 machine with from one to three tapes. The timing  
 target centered on generalizations of the classical  
 Towers of Hanoi problem. The traditional Towers  
 of Hanoi problem appears in many computing  
 texts as a recursion example. Our study of the  
 Towers of Hanoi problem led to the observation  
 that there is no formal proof for the Towers of  
 Hanoi problem when more than three spindles  
 are used. This problem lends itself to substantial  
 experimentation among the students as they  
 compete to develop the program with the best

Final rept. 24  
 Sep 1992-24  
 Sep 1994

40 null

Our DCHEM coupled reaction rate code has been  
 updated to include the latest data concerning  
 chemical reactions and rate constants. Particular  
 attention was given to the neutral chemistry  
 involving hydrogen and to ion hydration reactions  
 and to ion-ion and electron-ion recombination  
 rate constants. In addition, the code has been  
 revised and will now provide values of the  
 'effective rate constant' at any time desired. This  
 will facilitate use of the code results in modeling  
 efforts and in sensitivity calculations.

null

28 null

This report provides the results of the technical evaluation (TECHEVAL) of the Coast Guard boat CG-502001. This boat is being used to evaluate the Norwegian Crew Concept (NORCREW) at U.S. Coast Guard Station Taylors Island, Maryland. The U.S. Coast Guard Research and Development Center conducted testing on 13-19 November 1992. This testing was executed to independently establish a performance baseline for the NORCREW boat CG-502001 and determine if there were any significant technical performance characteristics of the boat that could have a negative impact on the outcome of the NORCREW concept evaluation. The report compares the design and performance of the NORCREW CG-502001 with the 41-FT UTB. It is the opinion of the R&D Center TECHEVAL team that there are no technical performance characteristics of the CG-502001 that would have a negative impact on the outcome of the NORCREW concept evaluation.

Final rept.

CGR/DC-  
19/93,USCG-D-  
151 20-93

The purpose of this research was to compile into a single volume present knowledge which will be useful to a designer applying ceramic materials in aerospace structural applications. All efforts were directed toward the collection of information to acquaint designers with the properties, fundamental principles, characteristics, limitations, utilization and performance of high-temperature, load-bearing ceramic products and with the characteristics, limitations and utilization of ceramic processes. The information provided in this manual was obtained by means of intensive literature surveys and through contacts with various government agencies, industrial concerns, and academic institutions. The case-history approach was used for the compilation of information on the behavior of ceramic products and material systems subjected to thermal loads to provide the background for a possible correlation between known thermal shock theories and brittle materials behavior.

Final technical  
rept. Jan 1964-  
Apr 1965

GIT-A-749-  
F,AFML-TR-65-  
204 171

The primary purpose of this manual is to supply recommendations for the protection of vulnerable equipment in Naval H.F. radio stations from the damaging effects of lightning strikes in areas of relatively high lightning incidence. The recommendations, which can be applied to any installation containing electronic equipment operating in a high lightning-incidence area, include methods of interception of direct strokes, protection against induced current and voltage surges, and protection against ground currents due to lightning. The expected number of lightning strikes per year to an installation may be based on the thunderday level for the region. This information may be combined with the statistical distributions of peak current in lightning flashes to predict the frequency of occurrence of injected currents of various magnitudes. Adequate earthing arrangements, depending on the local soil resistivity, will prevent excessive potentials within or between various parts of an installation. With suitably placed grounded overhead shield wires, it should be possible to prevent direct strikes to any vulnerable part of an installation excepting antennas.

null

EE77/5,TN-  
85 2/77

Turbo Vision TM , a new application framework for PC DOS-based software development, is evaluated for its effectiveness as a base for computer applications. Turbo Vision provides an object-oriented, text-mode user interface and an event-driven program structure. An overview of the structure and software tools provided by Turbo Vision is presented. Various factors, such as consistency in architectural design, technical support, and ease of use, are considered.

Technical note

DREO-TN-93-  
21 37

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null

164 null

A NEW COMPUTER PROGRAM, UDEC, has been developed which simulates the behavior of jointed rock masses subjected to high and transient loadings. It is an explicit, time-marching procedure that models assemblages of discrete blocks or particles that interact mechanically. The program includes modes that describe the behavior of rigid blocks, simple deformability, and full deformability. The modes and other components are also designed to interact so as to model other kinds of physical behavior, such as fluid interaction, edge-to-edge contact, and soft corners. (Author)

Final technical  
rept.,

74 PCAR-1-80



This report is a six part statistical summary of surface weather observations for Eglin AFB, Valparaiso, Florida. It contains the following parts:

(A) Weather Conditions; Atmospheric Phenomena; (B) Precipitation, Snowfall and Snow Depth (daily amounts and extreme values); (C) Surface winds; (D) Ceiling versus Visibility; Sky Cover; (E) Psychrometric Summaries (daily maximum and minimum temperatures, psychrometric summary of wet-bulb temperature depression versus dry bulb temperature, means and standard deviations of dry-bulb, wet bulb and dew point temperatures and relative humidity); and (F) Pressure Summary (means, standard, deviations, and observation counts of station pressure and sea-level pressure). Data in this report are presented in tabular form in most cases in percentage frequency of occurrence or cumulative percentage frequency of occurring tables.

Final rept.

USAFETAC/DS-  
81/084,SBI-AD-  
459 E850 114

This report furnishes detailed airmen statistics. It contains calendar year statistics on pilots and nonpilots and the number of certificates issued. (Author)

null

43 null

This volume provides abstracts and indexes for AGARD publications published during the period 1977 - 1979. By an arrangement with the U.S. National Aeronautics and Space Administration (NASA) in Washington, the NASA computerized data base has been used to prepare this publication. Full bibliographic citations and abstracts for all the documents in this publication are given in the abstract section, which is organized in the major subject divisions and specific categories used by NASA in its abstract journals and bibliographies. The major subject divisions are listed in the Table of Contents, together with a note for each that defines its scope and provides any cross-references. Category breaks in the abstract section are identified by category number and title, and a scope note. Within each category, the abstracts are arranged by series and year. Items from Scientific and Technical Aerospace Reports (STAR) appear before the unclassified items of limited circulation and the classified documents (entries here are unclassified). Examples of the typical citations with abstracts are given following the Table of Contents.

null

AGARD-INDEX-  
427 77-79

It is reported that by using the Nd glass laser, experiments of beam target interaction are carried out and neutrons are observed, released from targets. The maximum number of observed neutrons, however, is of the order of 10 to the 13th power, which is much less than that for the real goal, i.e., 10 to the 21st power. The physics nowadays occurring in a tiny test-target will differ from that in a practical target in a reactor. It is a very important at present to reveal the phenomena occurring in a practical target and to make clear the physics of target implosion. At the end of 1985, construction of PBFA-II in Sandia National Laboratories was finished. PBFA-II can extract the lithium beams of 2MJ. By this value, are expected achievement of breakeven and release of nearly practical amount of fusion energy from a target. Unfortunately, experiments regarding beam-target interaction are not realized yet. Thus the theoretical and numerical approaches will play an important role in ICF research at present. And development of pulsed power techniques in Japan seems urgent for fusion research.

Research rept.

348 IPPJ-859

Contents: Installation Compatibility; Inlet System  
Compatibility; and Exhaust System Compatibility. null

PWA-FP-66-  
158 100-VOL-3D

A fire in the piping system of the high pressure oxygen side of the recompression chamber at the Fleet Diving Unit, Pacific has led DREP to undertake a comprehensive look at the cleaning procedures and the materials used in an oxygen environment. As a result of this investigation, it was established that Teflon and Viton coated with Krytox, (a fluorosilicone grease) could be used in a high pressure oxygen system. A cleaning procedure for parts used in oxygen service is also included. (Author)

Materials  
rept.,

22 DREP-79-E

Direct numerical simulation of complex gas dynamics problems (computational experiment) is performed with the help of Euler, Navier-Stokes and Boltzmann equations. The basic principles of the computational experiment are formulated and the results for various gas dynamics problems of a complex internal structure are presented. The problems examined include the transonic regime (super-critical flows including transition through sound velocity), flows with a jet injected into the main stream and diffraction problems. Body wake flows are studied at various Reynolds numbers. The structure of a shock wave provides an example of rarefied gas flows at various Mach numbers. A set of control tests is worked out for the estimation of calculation accuracy. (Author)

Final technical  
rept.,

94 AE-79-1

null

null

360 BRL-905

plume ion energy, and radiated EMI were characterized for Pratt & Whitney's T-220HT Hall Effect thruster. The T-220HT is a high power (6-20 kW) thruster designed for maximum peak thrust. Tests covered a power range from 8-10 kW and discharge voltages of 300 and 600 V. Plume measurements at Air Force Research Laboratory (AFRL) facilities demonstrated plume widths narrower than typical Hall thrusters. Half- angles containing 90% of the integrated plume flux were in the range of 27-29. Radiated electromagnetic emissions were measured over a frequency range from 200 MHz to 60 GHz at The Aerospace Corporation. For discharge voltages at or below 300 V, EMI was below MIL-STD 461E limits except at a single peak below 1.4 GHz, where the limit was exceeded by only about 5 dB. Increasing the discharge voltage to 600 V noticeably increased emissions in this frequency range, but these were still generally below MIL-STD 461E. Plume ion energy spectra were also characterized at The Aerospace Corporation's facility. An RPA (Retarding Potential Analyzer) was mounted at a downstream distance of 1 meter and was varied in position from 20 deg. to 100 deg. from the thruster centerline. Measurements generally confirmed the plume profile data taken at AFRL.

Technical  
paper

AIAA-2003-  
17 5158

Protection Agency (EPA), Office of Noise Abatement and Control; the U.S. Army Corps of Engineers, Construction Engineering Research Laboratory (CERL); and the Directorate of Civil Works was undertaken to demonstrate in a construction project the availability of retrofit control technology for pile drivers. Various in-use retrofit noise control measures for reducing the noise of pile drivers were investigated: alternative pile driving techniques, mufflers, noise enclosures, impact cushions, and vibration damping of piles. Costs and productivity impacts associated with the noise control measures were also examined. Costs were developed in units of dollars per pile. Productivity was identified in terms of the time to set up and drive a pile. The ability of a general construction contractor to bid on a noise specification, and then obtain and implement the noise control measures during the construction project were a part of the demonstration. The vibratory pile driver took the longest time to drive a pile. The noise enclosure and muffler had no significant impact on the time to drive a pile. The enclosure did require a longer set up time, but a longer duration test is required to substantiate these productivity data. The Corps of Engineers' use of a detailed contract bid document specifying Final rept.,

The debate concerning America's All-Volunteer Force, seven years after the elimination of the peacetime draft in June 1973, is more controversial than ever before. It is argued that the 'quality' of recruits who enter the services (especially the Army) is of lower caliber than historically experienced. Proponents of conscription contend that the quality of accessions is not representative of the population at large. They consistently compare the education, race and mental abilities of today's All-Volunteer Force (AVF) entrants with the same qualities of those who enlisted (or were inducted) during the conscription years. A more helpful comparison would be to compare the socioeconomic characteristics of today's force with the characteristics that would be present if conscription were still being used. This thesis sets the frame for that analysis--examining military representativeness during the Vietnam draft years, and comparing it to the socioeconomic and quality characteristics of the general population of the same period. It tracks a cohort of young men, 14 to 17 years of age in 1966, through a period of seven draft years (1966 to 1973).

Master's  
thesis

103 null

Among the most sublime utterances in the rhetorical fabric of our nation's founding is Article 1 of the Bill of Rights: Congress shall make no law... abridging the freedom of speech or of the press." For those American citizens wearing the uniform of our armed services

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13 null

This study examined the Quality of Life (QOL) of a randomly selected sample of military personnel assigned to Bergstrom AFB, TX and Lowry AFB, CO. A survey instrument was developed for this purpose. This study was designed to determine how different groupings of Air Force military personnel who were assigned to two bases which were located in two different Standard Metropolitan Statistical Areas (SMSA) perceived their QOL and to compare these perceptions to the QOL ratings produced by a model developed by Dr. Ben-Chieh Liu of the Mid- West Research Institute. Statistical analysis involved the use of factor analysis and standard frequency and crosstabs computer analysis products. The results of the study indicated that Dr. Liu's model was valid for these two SMSAs.

Master's  
thesis

AFIT-LSSR-7-  
129 78A

Pulsed power and high-voltage technologies are playing an ever increasing role in weapons' effects simulation, fusion power research, power distribution, materials processing and medical research. It is a rapidly expanding field of applied physics as evidenced by the growth in published literature. Three years ago, the Air Force Weapons Laboratory (AFWL) initiated a project to compile a computerized data base of pulsed power research papers. The data base is stored on our IBM System 2000. This AFWL Technical Report is the first release of the bibliography to date. It contains about 2,500 full bibliographic citations, original sources, availability, key words and abstracts. There are three indices: Subject, Personal Author, and Corporate. There are 30 main subject headings, from Breakdown Studies to Switching. Volume II contains the citations. In addition to these entries, the data base contains about 7,500 additional titles. As these titles are added to the full bibliography, they will be published.

Final rept.,

AFWL-TR-83-  
273 74-VOL-2



This thesis describes results from moored current meters, 150-350 m, for a region over the continental slope off Cape San Martin, California, from January 1979 to April 1980. Current vector time series were constructed from the data and compared to a local coastal upwelling index. Progressive vector diagrams were also constructed, and spectrum analysis was performed for alongshore and cross-slope currents. The California Countercurrent was found to be present in the study area during the entire period. Seasonally, the countercurrent was substantially stronger during the spring. Frequent current reversals and oscillations occurred between equatorward and poleward flow, less often at the nearshore station. Preferred low frequency energy peaks were found at periods of about 10 days. The intensity of the countercurrent increased with increasing coastal upwelling index, and the cross-slope flow also appeared to be related to the local coastal upwelling index. Keywords include: California undercurrent; Davidson current; California current; Eastern boundary currents; and metered currents.

Master's  
thesis,

148 null

This survey is prepared monthly from lists received through the cooperation of US government agencies and includes universities, research institutions, and commercial translation organizations. It is a compilation of projects completed or started during the preceding month. Translations are listed by area and subject category. Scientific projects are grouped as a section regardless of geographic area. Title in English, author, foreign language title of source of material, date of publication, and publication identification of the completed project are given when available. Tables of contents of journals translated cover-to-cover are reproduced from the current publications. An index to authors of items in this issue is provided at the end of the survey. Scientific and technical translations are grouped according to the COSATI subject category list except for military science and ordnance items which are listed under 'military' in the appropriate geographic areas.

null

196 null

Under this grant a study was carried out of the electronic and optical properties and modeling of intercalated graphite. A major contribution of this work has been the formulation of a model for the electronic structure, applicable to compounds of arbitrary stage and intercalant. The results of this model have been applied to the interpretation of Fermi surface and magnetoreflexion measurements also carried out under this grant. These measurements thus provide detailed information on the effect of intercalation on the electronic structure and on the Fermi surfaces of intercalated graphite. Results on infrared spectroscopy of intercalated graphite provide information on the lattice mode structure, complementing the findings on the electronic structure. The use of Raman spectroscopy to study adsorbed species on graphite surfaces is demonstrated. (Author)

Final rept. 15  
Jul 77-14 Oct  
80,

AFOSR-TR-80-  
99 1065

null	null	788 null
<p>class submarines to supply breathing air and to provide pressurized air for surfacing. The bottles are exposed to cyclic loading, which may result in the initiation and growth of fatigue cracks. An internal crack-like indication in a high-pressure air bottle instigated this study to better understand the growth of potential fatigue cracks. This will enable better management of the remaining operating life of high-pressure air bottles with detected cracks. In this study, the feasibility of using externally-mounted strain gauges to monitor the growth of known internal cracks in high-pressure air bottles was examined. A combination of numerical modelling and experiments was used to validate this technique. Two experimental samples were internally pressurized and external strain was measured. Reasonable agreement of measured strain with finite element analyses of the samples suggests the high-pressure air bottle finite element analyses results are reliable. Finite element analyses and experiments showed an area on the exterior of test samples opposite an internal notch with a modified strain field. The numerical analyses indicated that changes in the strain field associated with crack growth may be detected using external strain gauges. These results are</p>		
	Technical Report	60 null

californica secretes opaline, a viscous substance that presumably discourages predators. A series of electrophysiological and pharmacologic studies were done to characterize the motor neurons that control the release of opaline from the opaline gland. Three cells were found in the right pleural ganglion in which action potentials in the neurons were associated with contraction of the opaline gland. Electrophysiological studies further showed that the neurons send axons in the nerve trunk innervating the gland. The neurons also can produce gland contraction when synaptic activity in the central nervous system is blocked and make excitatory synaptic connections with contractile cells on the surface of the opaline gland. The excitatory connections have several features similar to excitatory junctional potentials described in other motor systems in Aplysia. Based on these properties the three neurons were identified as opaline motor neurons. The identified neurons were shown to make up a large portion of the motor input to the opaline gland via the nerve pathway studied in vitro. The opaline motor neurons also demonstrate a firing pattern and type of synaptic input which are similar to the features previously described for the motor neurons controlling ink release that is

Doctoral  
thesis,

AFIT/CI/NR-82-  
108 84D

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null

1 null

solid contact as taking place only on the tips of the higher asperities of each surface, so that the contact load is borne only on a very small portion of the total surface area and all frictional heat is generated and absorbed in this small area. The size and number of the individual asperity junctions is in general not known; but averages are known, and it appears that asperity heights and spatial frequencies are described reasonably well by Gaussian statistics. This should make it possible to calculate frictional hot-spot temperatures and distributions on an explosive surface, given some laboratory measurements of factors such as coefficients of friction, frictional work expended and surface characteristics. With hot-spot statistics available, the probability of explosion can be calculated by available, published methods. A coordinated theoretical and empirical research program is proposed to apply the above engineering and mathematical concepts to explosives. The results should facilitate the identification of basic mechanical processes (such as metal-metal friction, or the viscous or plastic shear of explosives) which do and do not generate explosion hazards. This in turn will aid the design of more valid laboratory friction sensitivity testers and the design of safer

Final technical  
rept.

This volume provides abstracts and indexes for AGARD publications published during the period 1974-1976. By an arrangement with the US National Aeronautics and Space Administration in Washington, the NASA computerized data base has been used to prepare this publication. Full bibliographic citations and abstracts for all the documents in this publication are given in the abstract section, which is organized in the 10 major subject divisions and 74 specific categories used by NASA in its abstract journals and bibliographies. The major subject divisions are listed in the Table of Contents, together with a note for each that defines its scope and provides any cross references. Category breaks in the abstract section are identified by category number and title, and a scope note. Within each category, the abstracts are arranged by series and year. N10, 000 series (STAR) items appear before x70,000 series items. Examples of typical citations with abstracts are given following the table of contents. There are five indexes: Subject, based on NASA Thesaurus nomenclature; Personal Author; Corporate Source; Report/Accession Number; and Accession/Report Number. Sample entries are shown on the first page of each index. null

AGARD-INDEX-  
403 74-76

null

null

BUAER-AE-61-  
356 4-VOL-6

This paper examines the impact of price competition on weapon systems acquisition. The multidimensional impact of competition on price and non-price aspects of weapon system production and acquisition are discussed. The importance of cost quantity relationships for measuring the effect of competition on price and the theoretical basis of those relationships are reviewed. The problems of and the techniques for accomplishing the transfer of technology associated with competition for production contracts are briefly outlined. Previous estimates of savings due to competition are reviewed, and their underlying methodology criticized. It is proposed that the introduction of competition be analyzed as an investment. The eventual reductions in procurement costs must be balanced against the initial costs of introducing competition and establishing a second source. The opportunity cost of government funds should be incorporated by calculating the net discounted present value or the rate of return of introducing competition for the procurement of a particular system. Finally, conclusions and policy recommendations are presented, based upon both empirical analyses and qualitative findings from interviews.

Final rept.

IDA-P-  
1435,IDA/HQ-  
247 79-21585

transport in tandem volume magnetic multicusp ion sources is explored. The model, the positive ion source code Pos, by Glasser and Smith, calculates plasma density, drift velocity, electron temperature, and ion temperature in an ion source. The usefulness of the model is limited: (1) The plasma density trend runs opposite to experimental results, and electron temperatures are an order of magnitude higher than experimentally observed. (2) simplification of the reaction chemistry leads to a plasma balance between ionization and outflow instead of the correct balance between ionization and recombination. (3) Wall losses are neglected. (4) There are inconsistencies in the derivations of some equations. (5) The final solution depends on the choice of an initial estimated solution. (6) Results of the model are not totally reproducible. (7) Numerical instabilities develop upon modification of terms or variation of initial conditions outside of a narrow range. Calculations of the plasma potential from the results of the model are qualitatively correct. Boltzmann Equation, Ion Sources, Plasma Simulation, Electron Temperature, Plasma Density, Ion Temperature, Hydrogen Ions, Magnetic Filters, Hydrogen Plasma Chemistry.

Master's  
thesis

AFIT/GEP/ENP  
136 /92M-01



This quarter marked the sixth anniversary of the U.S. entry into Iraq. Since the March 20, 2003, invasion, the Congress has appropriated \$51 billion in foreign aid for relief and reconstruction efforts that have touched every aspect of Iraqi society, from training and equipping its security forces to improving the delivery of essential services. These tens of billions in taxpayer dollars were provided chiefly to four major funds: the Iraq Relief and Reconstruction Fund (\$20.86 billion), the Iraq Security Forces Fund (\$18.04 billion), the Economic Support Fund (\$3.74 billion), and the Commander's Emergency Response Program (\$3.5 billion). As of March 31, 2009, the United States had obligated \$42.16 billion and expended \$37.89 billion for Iraq reconstruction. Several landmark events shaped continuing relief and reconstruction efforts this quarter.

Quarterly rept.

225 null

This volume reports on the community life of the Institute of Geodesy. The volume includes biographies of prominent professors, profiles of other Institute professors, synopses of projects and lectures that have taken place worldwide, and Institute synopses of team projects.

overview

152 null

The IVth International Symposium on the Effects of Noise was held in Beaune, France, May 28-30, 1990. The symposium brought together a distinguished group of scientists and clinicians from all the disciplines related to noise- induced hearing loss. Noise-induced hearing loss (NIHL) continues to be a significant public health problem. In 1987, the National Institute of Occupational Safety and Health rated NIHL as one of the United States' top 10 work related problems, involving at least 11 million workers (NIOSH, 1987). The problem is even more severe in the military. In 1986, the Veteran's Administration paid over \$167 million for compensation claims related to NIHL. The problem is equally serious in Europe, where over 15 million people work in potentially dangerous noise environments. While these statistics are alarming, they do not begin to reflect the personal hardship, the diminished quality of life, and the loss in personal productivity associated with NIHL. Final rept.

562 null

The DoD Congressional Action Authorization report is a track by line item of the DoD Budget throughout the congressional action process to include House and Senate Armed Service Committee action and Conference (enacted authorization) action for FY 1985. The report includes Summaries by appropriation (such as Oper. & Maint., Army), appropriation title (such as Procurement) and Service component levels. (Author)

Final rept.

115 FAD-726/85

This study extends previous research into food distribution under crisis relocation conditions by investigation detailed distribution problems in a state, California, where relocation distances are unusually long, and heavy population concentrations in threatened areas are expected to stretch the capabilities of host areas to the limit. (Author)

Final rept.,

SYSTAN-D162-  
151 VOL-1

controversial. Many of the written comments from participants suggested that no true consensus was reached on any particular aspect of environmental cracking! This camp believes that while we may have progressed somewhat in our appreciation of the various environmental cracking phenomena since the Firminy meeting, we have not reached any true understanding of the phenomena as a whole. This view proposes that continued, often unsubstantiated and qualitative, debate on the details of a variety of mechanisms hinders our progress toward material and component performance predictions. This situation, more than anything else, makes for frustration within the engineering design community. A second camp of participants concludes that substantial progress has been made since Firminy. Much of the speculation of the 1970s has been replaced by quantitative experimental evidence. Quantitative and testable models are emerging, with focus on specific embrittlement mechanisms that are relevant to classes of alloys and environments. Meaningful life predictions may be developed to include environmental cracking. The critical importance of crack chemistry and crack-tip process-zone deformation and fracture has spawned new

null

601 NACE-10

On the basis of a number of geotechnical and cultural criteria and military and operational suitability, two areas have been identified as suitable for M-X deployment. These are Nevada/Utah and Texas/New Mexico. This report deals with the Nevada/Utah region which covers a large portion of Central Nevada and Western Utah. The study area for socioeconomic analysis, called the region of influence (ROI), includes the Nevada counties of Clark, Eureka, Lincoln, Nye, and White Pine and the Utah counties of Beaver, Iron, Juab, Millard, Salt Lake, Utah, and Washington. (Author)

Final rept.

M-X-ETR-  
2,AFSC-TR-81-  
159 02

tools needed to build a high-frequency air breakdown model. We developed a Quasi-Equilibrium Methodology (QEM) for extending fluid electron transport models to the nonequilibrium regime, based on assuming that the transport coefficients relax toward their equilibrium values on time scales quantified by time-dependent Boltzmann equation solutions. Our analysis of nonequilibrium electron transport discovered and explained a velocity overshoot effect that is not generally known. That tendency of the electrons to overshoot the equilibrium drift velocity is shown to have a profound effect on streamer behavior. We examined the extent of possible simplifications to our kinetic air breakdown model, concluding that factors of 2 to 5 speed-up are possible. We have identified the major phenomenological issues in a modeling strategy, and examined nonequilibrium effects on ionization waves. Finally, we present a plan to complete development of a computational model of High Frequency air breakdown suitable for incorporation into EMP coupling codes, including model verification experiments and implementation of the computer module in an existing EMP coupling code. Dielectric breakdown, Kinetics, Boltzmann equation, Non-equilibrium

Final rept. Feb-  
Sep 1991

TETRA-TR-91-  
80 17

Contents: Honorable Eugene V. McAuliffe US-USSR Competition and Evolving Balances of Power; The US-USSR Strategic Equation -- Strategic and major substrategic forces; The Third World and US-Soviet Relationships; The People's Republic of China and the US-Soviet Relationships; Economic Interdependence and the US-Soviet Relationships; and International Technology Transfers.

null

251 null

The report describes a theoretical analysis of smoke propagation from factory stacks to help make it possible to predict the degree of air pollution by smoke in an area, with specific characteristics of the stacks and smoke which is ejected into the atmosphere, and under certain meteorological conditions. By knowing the latter, it is possible, on the basis of a theoretical analysis, to determine such characteristics of stacks and smoke with which the smoke concentration does not exceed the limits of certain established norms.

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16 null

A summary is presented of research from the past year's efforts supported under this contract. The research covered inter-related topics in solar-terrestrial relationships. It is recommended that the present dual approach of investigations of solar-terrestrial events both of the past solar cycle as well as contemporary observations be continued. Comparison of phenomena among different phases of the solar cycle have identified several inter-relationships useful in the development of prediction techniques for geomagnetic disturbances and solar energetic particle events. (Author)

null

Scientific-  
2,AFGL-TR-77-  
156 0166

null

null

358 null

configuration identified by nuclear techniques; (2) Combination of deep level transient spectroscopy; (3) Microscopy of Frenkel pairs in semiconductors by nuclear techniques; (4) Muon stopping sites in semiconductors from decay positron channeling; (5) Polarized spectroscopy of complex luminescence centers; (6) A re-evaluation of electric field enhanced emission measurements for use in type and charge state determination; (7) X ray spectroscopy following neutron irradiation of semi- conductor silicon; (8) Transition metals in silicon carbide (SiC) : vanadium and titanium; (9) Photoluminescence excitation spectroscopy of cubic SiC grown by chemical vapor deposition on Si substrates; (10) Luminescence and absorption of vanadium in 6H SiC; (11) Impurity defect reactions in ion implanted diamond; (12) Electron trapping defects in MBE-grown relaxed n-In<sub>0.05</sub>-Ga<sub>0.95</sub> As on gallium arsenide; (13) Scanning tunneling microscopy studies of semiconductor surface defects; (14) Photoluminescence characterisation of the silicon surface exposed to plasma treatment; (15) An analysis of point defect fluxes during silicon dioxide precipitation in silicon; (16) Electrical properties of oxidation-induced stacking faults in n-type silicon; (17) Morphology change of oxygen precipitates in CZ-

Final rept. 1  
May 1991-30  
Apr 1992

ISBN-0-87849-  
628-9,ARO-  
28661.1-EL-CF-  
525 PT-3

This report contains 357 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, contributions to books, published papers, magazine articles, 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.

Summary rept.

739 NPS-08-93-001

A dynamic theory of monopoly must take into account the fact that a monopolist cannot normally sign contracts to guarantee that the future prices of his output will be above some minimal level. Thus, in a dynamic theory the time path of prices will generally not be the one which, if a commitment to future prices were possible, would bring forth demands that maximize the discounted stream of revenues minus costs. A dynamic theory of monopoly is an equilibrium theory, and it seems natural that an equilibrium perspective is necessary for analyzing the problem. A major result of this paper is to affirm a conjecture of Coase (1972) that states that the market will open at a price close to zero. In summary, without repeat purchases monopoly rents must depend substantially on a monopolist's ability to commit to prices or quantities offered in the future. A second purpose of the paper is to extend Rubinstein's analysis of the bilateral monopoly bargaining problem with alternating offers to the case that a seller makes repeated offers to many consumers.

Technical  
rept.,

48 TR-468

Impact and penetration problems are of particular importance in many fields of engineering science, including wave propagation. Traditionally, mesh-based methods like the Finite Element Method have been used for their numerical analyses. Recently, mesh-free methods have attracted interest. The mesh-free Smooth Particle Hydrodynamics" (SPH) method used in this work offers advantages in modelling both large deformations and behavior of failed material

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223 null

An Advanced Conventional Armaments Panel was formed as part of a DARPA-sponsored assessment of the utility of electric guns in the fire support, anti-armor, and air defense mission areas. This panel was assembled and tasked to focus on identifying the near and intermediate-term capabilities that advanced conventional (nonelectric gun) technologies could offer in each of the above mission areas. This supplemental report contains first order conventional launch system parametric tradeoffs in the form of carpet plots, which present the performance capabilities of cannon and rocket systems. The utility of these tradeoff relationships is that they permit both the non-electric and electric gun and projectile designers to consider the most cost effective approach to satisfying their mission area requirements. This report also contains a survey of existing system performance parameters, and two projectile point designs. Long range artillery cannons and rockets, Anti-tank guns, Interior ballistics, Trajectories, Payload.

Technical rept.  
Jun-Jul 1988

SPC-88-1465-  
73 11



that they have experienced, are experiencing, and will continue to experience shortages of enlisted personnel possessing certain needed 'critical skills.' The Air Force is taking measures to at least temporarily relieve the shortages certain policies have aggravated by: Restructuring grade authorizations in all occupations to make them more self-supporting; Temporarily modifying the promotion policy to increase the percentage of promotions in the most critically short occupations; Increasing and targeting retraining efforts to move surplus airmen to the most critically short occupations and at the lowest grade possible; Intensifying prior service recruiting to more quickly eliminate shortages of mid-level noncommissioned officers in selected shortage occupations; Selectively allowing personnel possessing needed shortage skills to continue service beyond normal retirement points; Returning to selected critically short occupations qualified personnel who are presently performing other duties. DOD and the Air Force, Navy, and Marine Corps have agreed that many skill shortage problems can be alleviated by modifying personnel policies and practices, and that monetary incentives alone should not be relied on to resolve shortages. They emphasized that null

GAO/FPCD-82-16 16

The blast response of a 23 ft UHF Polemast Antenna was investigated in a free-field blast trial and in numerical simulation experiments. The antenna satisfactorily withstood the air blast loading at the nominal 7.0 psi peak overpressure location in Event Dice Throw, and the numerical model predictions for the natural frequencies and transient strain were in excellent agreement with the values obtained experimentally. (Author) null

DRES-TECHNICAL 52 PAPER-449

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NAVORD-1493

The results of three-dimensional movable-bed laboratory test are used to empirically relate the longshore sediment transport rate to the radiation stress and the longshore energy flux factor. Both correlate equally well with the longshore transport rate, producing correlation coefficient squared values of approximately 0.70. The surf similarity parameter also shows a strong influence on the longshore transport rate.

(Author)

Miscellaneous  
rept.,

95 CERC-MR-81-4

phenomena whereby electron- beam-driven electron plasma waves (EPWs) are nonlinearly coupled to an electromagnetic radiation field. The basic physics of three-wave mixing in the millimeter- wave regime will establish the scaling of millimeter-wave characteristics with beam and plasma parameters. Two counterinjected electron beams are used in a plasma loaded circular waveguide to drive counterpropagating EPWs. The nonlinear coupling of these waves generates an EM waveguide mode, oscillating at twice the plasma frequency, is coupled out into rectangular waveguides. Independent control of the waveguide plasma, beam voltage, and beam current allows a careful parametric investigation of beam transport, EPW dynamics. The beam plasma experiment, which employs a wire anode discharge to generate high density plasma in a 3.8- cm diameter waveguide, has been used to generate radiation from 7 to 60 GHz. Two cold cathode, secondary emission electron guns (<90 kV, and <6.5 A) are used to excite the EPWs. Output radiation is observed only when both beams are injected, and the total beam current exceeds a threshold value of 3 A. The threshold is related to the self magnetic pinch of each beam which increases the beam density and growth rate

Final rept. 1  
Apr 1985-31  
Jan 1989

HAC-REF-  
F6076,AFOSR-  
284 TR-90-0526

The purpose of this document is to provide a brief description of the organization, management and capabilities of major test activities supporting the Defense Departments of Canada, France, the Federal Republic of Germany, the United Kingdom and the United States. This first edition of an international summary of R and D Ranges and Facilities is a condensation of the information available at publication

null

206 null

Pool 13 of the Upper Mississippi River were studied in the initial phase (pre-notching) of a project to determine the effects of wing dam notching on fish and aquatic community characteristics. Fifty two species of fish were caught in the study area with hoop nets, electrofishing gear, and a small-mesh seine. Thirty eight fish species were caught on or near wing dams. Electrofishing provided the widest variety of fish species and hoop netting provided the least. Electrofishing and hoop net catches were influenced by river stage or discharge. Species composition of the catches changed more dramatically from sampling month to month than between kinds of habitat. Fish were caught in greatest numbers and diversity throughout the study area in August. Discharge varied from month to month and year to year. Water temperature and dissolved oxygen concentration were nearly uniform with depth and among sampling sites each month. Height of wing dams and their position with respect to an upstream bend in the river and to other wing dams influenced current velocity in the study area. Current sweeping over submerged wing dams and over emergent wing dams during high river stages helps prevent sediment accretion between them.

Master's thesis,

285 null

Contents: Measurement techniques, Thermal properties, Moisture, and Design of underground structures.

null

49 null

null	null	68 JPRS-71815
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The Office of Archeology and Historic Preservation inventory forms prepared by Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) personnel for the Richard B. Russell Multiple Resource Area are presented here as a resource to be used in subsequent historic structures studies. The field survey conducted in 1979 recorded 93 domestic buildings and 8 engineering structures. The original forms are housed in the Office of the National Register in Washington, D. C.

Rept. for 23  
Jan-1 May 79,

199 null

The purpose of the research was to develop job aids for the activities identified in the Instructional Systems Development Mode (ISD, TRADOC Pamphlet 350-30). Job aids are available for each of the five phases of the ISD model - ANALYZE, DESIGN, DEVELOP, IMPLEMENT, and CONTROL. Each job aid is composed of a Descriptive Authoring Flowchart and a Job Aid Manual. This volume, covering Phase II-DESIGN, contains an Introduction to the Use of the Job Aids and the Job Aid Manuals for Blocks II.1 through II.4. The Descriptive Authoring Flowcharts for Phase II are available in a companion document.

Research  
product

285 ARI-RP-80-16

This technical report contains a variety of papers presented at the Fifth Interaction Symposium on the Interaction of Conventional Munitions with Protective Structures. Papers were presented by international authors, to include both the English and German Language. The report is submitted as presented. All papers included in the technical report have been cleared for public release.

Technical rept.  
22-26 Apr 91,

AFESC/ESL-TR-  
538 91-55

The report covers the design, fabrication, and preliminary testing of some expedient means for moving skid mounted helicopters in rough terrain. The work was done in response to a request by the Mobility Equipment Research and Development Center (MERDC) for support of a camouflage program conducted by Modern Army Selected System Test Evaluation and Review (MASSTER) at Fort Hood, Texas.

Final rept.

18 LWL-TR-74-75

Observations of airglow at 630 nm (red line) and 557.7 nm (green line) during the February 2002 campaign at the High Frequency Active Auroral Research Program (HAARP) heating facility are analyzed. We find that during injections toward magnetic zenith (MZ) the green and red lines gain  $^5$  R within  $^1$  s and  $^{20}$  R within  $^{10}$  s, respectively. We term this period the onset of the HF-induced airglow. A model of the onset at magnetic zenith is developed. It accounts for background photoelectrons and dissociative recombination of  $O(^+)$ . It is shown that heating and acceleration of background electrons dominate the airglow onset. We propose a scenario for the generation of strong Langmuir turbulence for injections outside the Spitz region, including magnetic zenith.

Journal article

AFRL-VS-HA-TR-  
11 2005-1061

The work described in this report was performed under Contract N68305-77-C-0021 with the Civil Engineering Laboratory (CEL) at the Naval Construction Battalion Center at Port Hueneme, CA. The title of the contract was 'Coal Gasification Feasibility Study.' Coal gasification is recognized as a way to produce a clean burning boiler fuel from coal within acceptable environmental limits. The study was to assist the Navy in determining how coal might best be utilized, by comparing gasification with central direct coal-fired boiler systems at each of five bases. Bechtel showed in a previous study for CEL that gasification plants could be economically attractive at Navy bases. Gas from a plant producing 250 x 1,000,000 Btu/hr with a load factor of 90 percent was shown to have a lower life cycle cost than continued use of fuel oil. This second study examined plants as they would actually be operated. A conceptual design study comparing coal gasification with central direct coal-fired boilers at five bases was performed.

Final rept.,

117 CEL-CR-78.019

...study, explored the potential of fusion propulsion for Air Force missions. Fusion fuels and existing confinement concepts were evaluated according to elaborate criteria. Two fuels deuterium-tritium and deuterium- helium 3 (D-3He) were considered worthy of further consideration. D-3He was selected as the most attractive for this Air Force study. The colliding translating compact torus confinement concept was evaluated in depth and found to possibly possess the low mass and compactness required. Another possible concept is inertial confinement with propellant surrounding the target. A key issue for any long-burn concept is propellant addition without interfering with the fusion burn. This is required to increase thrust and generate an optimum specific impulse for a given mission. A reusable orbit transfer vehicle (ROTV) was identified as a mission and application where fusion propulsion can play a constructive role and is superior to both cryogenic chemical bipropellant and nuclear fission propulsion systems. Numerous technical and technological problems were identified and a development program is recommended. Keywords: Propulsion; Nuclear fusion propulsion; Fusion reactor; Mission analysis; Fusion fuel; Fuel cycles; Confinement methods; Orbit transfer vehicles.

Final rept. Sep  
1987-Jan 1989

AFAL-TR-89-  
240 005

...most extensive is provided for a general purpose speech recognizer. The research has focused upon the nature of normal speech, which can be distinguished from discrete articulation by the continuous movement (in normal speech) of articulators from one position to another; as a result, sounds in continuous speech are more likely to modify the production of surrounding sounds than they are in discrete speech. Assuming that, according to the ergodic theory, sound changes occurring in everyday speech reflect and repeat the changes occurred in the historical development of language (because the physical modes of speech production are the same), linguistic examples and theories of sound change were studied. From this study, a body of rules for sound change or euphonic combination was derived and their applicability to the English language tested. These rules represent an error-correcting code to restore omitted or indefinite word boundaries and/or to restore the orthographic phone classes which are altered in continuous speech. The study required the evaluation of existing research and theories, as well as the generation of some original data, the latter consisting of high-quality recordings of continuous speech samples. Both original data and previously published data were subjected to

Final rept.

295 AFCRL-64-85

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Final rept.

1378 null



the hush-house noise suppressor was made by Aero Systems Engineering of Texas, Inc. for acoustical suppression of various AF fighter/trainer aircraft during ground runup operations. This report provides measured and extrapolated data defining the bioacoustic environments produced by several aircraft/engines operating in the hush-house suppressor for various engine power configurations. Far-field data measured at 20 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for seven acoustic measures as function of angle and distance from the source. Refer to Volume 1 of this handbook, 'USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application,' AMRL-TR-75(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Data are presented for the following aircraft/engines operating in the hush-house noise suppressor: F-4, F-15, F-16, F-105, F-106, F-111F and T-38 aircraft and the TF41-A-1, J79-GE-15, F100-PW-100, J75-P19, J-75-P-17 and

Technical  
rept.,

AMRL-TR-75-  
823 50-VOL-172

Contents: Equations for vertex parts and bound states; Associating of nucleons in nuclei; Near-threshold behavior of the inelastic-scattering cross section; Nuclear-resonance generator with flowing liquid; Radiation of Sb125; Dependence of angles of orientation in dynamic double refraction on the velocity gradient; Determination of hydrogen in aluminum alloys by the method of isotopic balancing; On the 'Mean time of the free path' of O<sub>2</sub> molecules; Approximation of isolated line during transfer of radiative energy in the upper atmosphere; On polyanions in solutions; Question about phase transitions in solid bodies; Electrokinetic properties of deposits of copper ferrocyanide obtained in different conditions; Separating and identifying reaction products of deep splitting of germanium by fast protons; Thermodynamic investigation of solid solutions in a NaCl - KCl - CdCl<sub>2</sub> system at temperatures of 540, 580, 623C; Amperometric titrating certain cations by Trilon B with revolving microplatinum electrodes; Oxidation rate of copper during brief heating to high temperatures; Spectrophotometric investigation of ascorbate complexes; Reducing properties of ionites; Infrared absorption spectra of anhydrous sulfuric and orthophosphoric acids.

null

FTD-MT-64-  
235 358

Partial Contents: The Hygroscopic Nature of Wood; Psychrometric Relationships and Equilibrium Moisture Content of Wood at Temperatures Below 212 F (100 C); Psychrometric Relationships and Equilibrium Moisture Content of Wood at Temperatures Above 212 F; Moisture Sorption Hysteresis in Wood; Sorption Theories for Wood; Relative Humidity and Moisture Content Instrumentation; Water-Vapor Sorption by Woods of High Extractive Content; Moisture Measurement Problems in Lumber Drying; Some Surfacing Defects and Problems Related to Wood Moisture Content; The Effect of Temperature and Moisture Content on Physical Changes in Wood; and Factors Affecting the Water Adsorption of Particleboard and Flakeboard.

null

106 null

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null

37 BRL-1056

In volunteers experimentally infected with *Salmonella typhi*, serum iron and zinc concentrations became significantly depressed and there was a concomitant rise in serum copper before the onset of overt clinical illness. However, after several days of fever and the initiation of chloramphenicol therapy, serum iron and zinc concentrations significantly increased. Additional studies in volunteers with typhoid fever treated with chloramphenicol, in a volunteer with typhoid fever receiving cefazolin and gentamicin, and in untreated rhesus monkeys infected with *Salmonella typhimurium* provided evidence that the increase in serum iron concentration during the febrile phase was the result of chloramphenicol therapy, whereas the increase in serum zinc concentrations was a disease-related phenomenon. The importance of trace-metal monitoring during infectious disease and chemotherapy is discussed.

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6 null

Presents results of basic research in Command and Control in four areas; Theory and Models of C3, C3 Systems and Components, Decision Support Systems and Behavioral Aspects of C3, and Testing and Evaluation of C3.

Final rept. 7-9  
Jun 1988

635 SAIC-88/1866

Engineer Command and Control Environment  
corps is a complex system. The current doctrine for engineer force structures is inadequate. Three command and control alternative force structures, identified in the Engineer Structure Study, are evaluated to determine which structure best supports a mechanized corps. The analysis is based on the results of a Stochastic, Timed, Attributed Petri Net timed stepped simulation. The model used in this simulation was constructed using an interactive graphical design tool, called Modeler, by a team including the software developer ALPHATECH, the U.S. Army Engineer Center, and the Training and Doctrine Analysis Command. This was the Army's first use of Modeler. The C2 performance of the engineer staffs is simulated for each of the three force structures by simulation message traffic and processing for 15 days of war in three settings, offensive, defensive and transitional from offensive to defensive. The force structures are then analyzed by comparing simulation output using three measures of performances: Processing Capacity, Message-Quality, and Message Processing Speed. The Division Engineer alternative consistently out performs the Base Case and Company Restructure alternatives for each measure of performance and in each of the

Master's  
thesis

The vapour phase deposition of 4,4'-Oxydianiline (ODA) and Pyromellitic dianhydride (PMDA) on a polycrystalline silver substrate was studied using X-ray photoelectron spectroscopy. Adsorption of the pure components on the clean substrate at room temperature results in partial fragmentation of the adsorbate molecules. Bonding to the silver is believed to occur via the oxygens in the ODA and PMDA fragments. Room temperature codeposition of PMDA and ODA in a thin (~36 Å) layer, followed by heating, led to polymerization and the formation of an ultra-thin (~11 Å) and thermally stable ( $T < 450^\circ\text{C}$ ) polyimide film. Adhesion of this polymer involves chemical bonding to the fragments of PMDA and ODA initially chemisorbed on the surface. These experiments demonstrate that sufficiently thin polymerized films can be prepared and applied to fundamental studies of adhesion.

Technical  
rept.,

58 TR-6

Contents: Weldability as a Metallurgical Concept - A Definition; Weldability as a Problem Complex in Steel Metallurgy; Micro-Alloy Steels; General Influence of Columbium as a Micro-Alloying Element in Steel; Metallurgical Variables; Basic Properties of Columbium Steels Versus Processing Variables; Properties vs. Composition; Properties vs. Rolling Conditions; Properties vs. Heat Treatment; Three Postulates; Special Properties of Columbium Steels vs. Welding Technology; Application of Columbium Steels to Welding Fabrication; Columbium as Part of Complex Steel Alloys; Acknowledgment; References. Appendix A: The NC-testing Method. Appendix B: The NWH-testing Method.

Special rept.

53 SSC-154

This dissertation presents abstract data types as a means of introducing modularity in non-procedural languages. Non-procedural languages based on equational specifications have been proposed in recent years to improve programmer productivity reliability. Issues of structured programming (i.e. disciplined use of the control structure) have no meaning in the context of these languages because these are devoid of any control structure. Statements in a specification can be given in any order; the sequence of execution is determined after an analysis of the specification. Modularity, however, still remains an important issue in the context of these languages, as it allows specifications to be written and processed independently. Abstract data types are proposed as a means of introducing modularity. Notion of module for the specification of abstract data types is introduced and its denotational semantics is given. Nopal, a non-procedural language for the specification of testing of electrical circuits, has been chosen in which abstract data types are introduced for modularity. The abstract data types also allow specification of virtual devices in testing.

Final rept.,

165 null

This compendium features ten articles on the most pressing issues concerning the present and future of the United Nations. The issues include, most importantly, how globalization will alter the goals and assignments of the embattled organization. The authors tend towards the prescriptive, floating recommendations (especially with the environmental problems covered) with detailed accounts of how the levers of power and authority actually function. Yet a smoothness and cohesiveness convert the text from the all-too-typical pastiche academic work to a strong display of topical know-how; in this way, the cases for overhauling reform seem to be all the more convincing.

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365 null

Hungarian Special Operations Forces have the potential to enhance the security of Hungary. Seven years have passed from 2002, when the survey of the Cubic advisory team first recommended creating the Hungarian Special Operations Forces, until 2009 when these forces began operating in Afghanistan. In 2003, the Hungarian Ministry of Defense's comprehensive defense review identified special operations forces as a niche" capability that could add strength to the defense forces and fill critical shortfalls in Peace Support Operations. The Hungarian political leadership endorsed developing a special operations capability package to enhance national security

Master's  
thesis

109 null

This report addresses the economics of co-firing refuse derived fuel (RDF) in a stoker coal fired boiler. The report specifies the type of RDF required, the cost and type of modifications to the coal boiler, and the price which can be paid for RDF based on boiler size and RDF feedrate. Life cycle economic procedures are used to develop breakdown graphs of RDF price versus boiler size. A list of Navy coal boilers which were examined for potential conversion is given. Also, details on various types of equipment to produce RDF are given as an appendix.

Final rept. Sep  
82-Sep 84,

NCEL-CR-  
184 85.003

The purpose of the report is to describe the test equipment and procedure required for the pre-production of a solid propellant gas generator heater control assembly.

null

35 GDA-27A634-R

state of USARIEM algorithms for predicting the physiologic strain and weather related casualty rates associated with exposure to hot or cold environments. Next, a prototype software program is described that demonstrates the technical feasibility of consolidating numeric models for altitude, cold, and heat strain with operationally oriented handbooks for environmental physiology and medicine. This software program is a unified and dynamic environmental medicine and physiology computer-based tool of potential use for military medical personnel in predeployment analysis, planning, and training. The program's altitude module utilizes a simplified model of hypoxic strain. The altitude model does not yet include closed-loop feedback physiologic mechanisms or altitude illness prediction. These are areas requiring further altitude modeling efforts. The cold strain module's data structures and input-output interfaces were designed for USARIEM's lumped-parameter cold digit model. The heat strain module employs the well-established USARIEM Heat Strain Algorithm with an expanded interface that provides improved flexibility with regard to data entry and display modes. On-line medical handbooks provide narrative, tables, and

Technical  
rept.,

144 null



...the handbook serves as a primary reference document.

Force Manufacturing Officer career field. It serves as a single source reference document providing information the Manufacturing Officer needs to be knowledgeable of concerning Systems Program Office (SPO) responsibilities. The handbook is designed to be both educational for the newcomer in the career field as well as to serve as a refresher for those with more experience.

Contents includes: Manufacturing Planning; Program Management Directive and Plan; Production Plan; Cost/Schedule Control System Criteria (C/SCSC); Design to Cost/Life Cycle Cost Program (DTC/LCC); Work Measurement; Configuration Management; Contract Administration Service; Program Office Staffing; Production Readiness Review; Parts, Materials, & Process; MANTECH, TECH MOD, IMIP; Engineering Change Proposal; Value Engineering; Manufacturing Management/Production Capability Review; Pre Award Survey; Source Selection Evaluation Board Criteria & Evaluation; Post Award Review; Should Cost; Make or Buy Analysis; Component Breakout; Government Furnished Property/Equipment Analysis; Manufacturing Fact Finding; Production Surveillance; Government Furnished Property Management; Subcontractor Management; Labor null

67 ACSC-85-0730

A comprehensive computer program BOSOR4 for the stress, stability, and vibration analysis of segmented, ring-stiffened, branched shells of revolution is presented. The program includes nonlinear prestress effects and is very general with respect to geometry of meridian, shell wall design, edge conditions, and loading. Despite its generality the program is easy to use. Branches are provided such that for commonly cases the input data involve only basic information such as geometrical and material properties. The computer program has been verified by comparisons with other known solutions and test results. This manual consists of several sections in which the program scope is described, the analysis on which it is based is given, the flow of calculations is outlined, the input data are defined with sample cases, various possible pitfalls are emphasized, and sample list and plot output are given and described.

Final rept. 1  
Oct 1970-30  
Sep 1971

LMSC-  
318 D243605

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1185 null

The overall research program described in this report is to investigate the interaction of low (keV) and hyperthermal (10-100 eV) ions with clean and adsorbate-covered metal surfaces; in particular, ion-surface charge exchange processes. We report on the operation of the UHV scattering apparatus for the ion scattering measurements, ongoing development and upgrade of the apparatus, the use of two ion scattering simulations which together cover the entire energy range of interest, the further development of these simulations, and most importantly, the ongoing experiments to determine charge transfer probabilities. The data we present in this report are representative of the scattering spectra we measure. Completed analysis of these and similar spectra will be presented in forthcoming papers. To date, we have measured spectra for Li<sup>+</sup>, Na<sup>+</sup>, K<sup>+</sup>, He<sup>+</sup>, Ne<sup>+</sup>, and Ar<sup>+</sup> beams, ranging in energy from 50 eV to 4 keV, scattered from the <001> and <1-10> azimuths of Cu(110). Important features of these spectra have been identified with the scattering simulations. Keywords: Hyperthermal ion beams, Resonant charge exchange, Scattering dynamics, Ion scattering instrumentation.

Final rept. 1  
Apr 86-15 Nov  
87,

AFOSR-TR-87-  
14 1926

Contents: Section 1, Significant Operation -- Command, Personnel, health, morale, safety and discipline, Intelligence and counterintelligence, Operations, plans and training, Logistics and transportation, Psychological operations and civil affairs, Civil operations and revolutionary development support, Communications, Information, Inspector General, and Staff Judge Advocate; Section 2, Lessons Learned -- Personnel, Operations, Training, Intelligence, Logistics, Organization.

Operational  
rept. 1 Nov-31  
Jan 1969

OACSFOR-OT-  
95 UT-691324

Two performance indicators, effectiveness and thermal efficiency, are defined and used to evaluate the year-round performance of three protected membrane roofs in Alaska and New Hampshire. Effectiveness is a measure of the deviations of ceiling temperatures from a yearly average, with large deviations indicating erratic performance in the roofing-insulation system and small departures indicating a thermally stable system. Thermal efficiency, the ratio of calculated heat loss to measured heat loss, is affected by climatic conditions such as rain, snow, solar radiation and wind. Thermal efficiency values of 100% or greater are possible since the calculated heat loss is based only on the inside and outside air temperature differences and the thermal properties of the roof components. Results of the year-round evaluation indicate that the three protected membrane roofs generally have high values of both effectiveness and thermal efficiency. (Author)

null

44 CRREL-77-11

management problem on a naval platform is the ability to combine or fuse data, not only as a volume-reducing strategy, but also as a means to exploit the unique combinations of data that may be available. In this regard, the Command and Control Division at DREV is involved in multiple R&D activities in the field of local area Multi-Sensor Data Fusion (MSDF) for naval command and control afloat. Many different approaches to MSDF have been investigated and developed recently in response to the ever-increasing importance of the subject. However, at this stage of development, no standard approach is generally accepted for all applications. A wide variety of techniques have been proposed for many diverse applications, and the system designer must choose the techniques that are best suited to a specific problem. One of the best tools to help the designer with such a choice is a computer simulation for proof-of-concept purposes. This document presents an overview of the CASE\_ ATTI (Concept Analysis and Simulation Environment for Automatic Target Tracking and Identification) algorithm-level simulation testbed that has been developed by DREV to support the theoretical work. CASE\_ ATTI provides the highly modular, structured and flexible

Technical rept.

59 DREV-R-9411

This report continues a series of seven Reports on Research at the Air Force Geophysics Laboratory. This report covers a two-year interval. It was written primarily for Air Force and DOD managers of research and development and more particularly for officials in Headquarters Air Force Systems Command, for the Director of Science and Technology (DL), and for the Commanders of and the Laboratories within DL. It is intended that the report will have interest to an even broader audience. For this latter audience, the report, by means of a survey discussion, attempts to relate the programs to the larger scientific field of which they are a part. The work of each of the Divisions is discussed as a separate chapter. Additionally, the report includes an introductory chapter on AFGL management and logistic activities related to the reporting period. A listing of the publications of each Division during the period follow the chapter describing the research.

(Author)

Interim rept.,

AFGL-TR-77-  
0137, AFGL-SR-

100 204

Computer simulations of microwave coupling to a nitrogen breakdown plasma have been performed at 25 Torr. Non-hydrodynamic ionization fronts are observed to propagate toward the radiation source under a variety of circumstances. Free nitrogen breakdown simulations in a spherical system show the propagation velocity of the breakdown wave can be as high as  $5 \times 10^6$  to the 6th power cm/sec. An elementary theory is used for estimating the speed of the breakdown wave in one dimension. The results are in reasonable agreement with breakdown experiments.

(Author)

Memorandum  
rept.,

23 NRL-MR-4869

The topics of this volume include: (1) electron storage rings and circular accelerators, (2) accelerators and storage rings, other, (3) superconducting magnets, (4) pulsed power accelerators, (5) high intensity accelerators, (6) room temperature magnets, (7) electron linear, (8) linear accelerators, (9) new accelerator techniques, and (10) power supplies.

Proceedings

842 null

null

Operational  
rept. for  
quarterly  
period ending  
30 Apr 1966

OACSFOR-OT-  
160 RD-670834

This document consists of charts portraying approximately 7-day analyses of sea ice prepared by the Naval Polar Oceanography Center, Suitland, MD. Included are ice concentrations and ice thickness (age).

Final rept.

185 null

Contents: Control variable methods in the simulation of a model of a multiprogrammed computer system; Models for multi-item continuous review inventory policies subject to constraints; The bottleneck transportation problem; Some remarks on the time transportation problem; Integer points on the Gomory fractional cut (hyperplane); Determining the most vital link in a flow network; Optimal location of a single service center of certain types; Scheduling with earliest start and due date constraints; Large deviation probabilities for order statistics; A bivariate normal theory maximum-likelihood technique when certain variances are known; On the use of standard tables to obtain Dodge-Romig LTPD sampling inspection plans; A model for manpower productivity during organization growth; On models for business failure data; A note of a comparison of confidence interval techniques in truncated life tests.

null

134 NAVSO-P-1278

An experimental S band phased array radar system is described. The system was developed to provide experimenters with a means of acquiring real time radar data for on line or off line analysis and to establish a test bed for new experimental devices or data processing techniques. The system is built in modular form, thus allowing various parts of the system to be easily interchanged with experimental devices. It is linked to a 11/780 VAX computer which allows data to be transferred from the radar to the VAX in real time, or to be stored in high speed buffers and then transferred in blocks directly from the buffers to the VAX. The experimenter, using the VAX, can adaptively control the radar, request new beam directions, control data acquisition, etc., via the link.

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32 CRC-1417

Contents: The Dynamics of the DOD Science and Technology Program; The Development of a Method for Predicting the Noise Exposure of Payloads in the Space Shuttle Orbiter Vehicle; Probability of Failure Prediction for Step-Stress Fatigue Under Sine or Random Stress; On the use of Coherence Functions to Evaluate Sources of Dynamic Excitation; Status of Cavity Noise Phenomena Measurement and Suppression on the B-1 Aircraft; Space Shuttle Solid Rocket Booster Aft Skirt Reentry Noise Induced by an Aerodynamic Cavity-Flow Interaction; Snaps in Structures; A Simplified Method of Evaluating the Stress Wave Environment of Internal Equipment; High G Pyrotechnic Shock Simulation using Metal-to-Metal Impact; An Experimental Design for Total Container Impact Response Modeling at Extreme Temperatures; Empirical Procedures for Estimating Recoilless Rifle Breech Blast Overpressures; Blast from Bursting Frangible Pressure Spheres; Test Evaluation of Shock Buffering Concept for Hydrodynamic Ram Induced By Yawing Projectile Impacting a Simulated Integral Fuel Tank; Prediction of Fragment Velocities and Trajectories.

null

193 BULL-49-PT-1



This study identified and analyzed uses of naval technology in the creation and implementation of air and water pollution abatement policies in the navies of some 18 foreign nations. It also identified the degree of foreign naval competence in air and water pollution abatement and in waste disposal technology aboard foreign vessels of war. Final rept. 1 Jul 76-30 Mar 77, (Author)

86 USNA-EPRD-35

null

Final rept.

18 XRD-184

This report describes the instrumentation of SM-65-E Series R and D (Atlas) missiles to be flight tested at the Air Force Missile Test Center (AFMTC), Cape Canaveral, Florida. In general, the Series E R and D missiles are similar to the Series D (AIG) R and D missiles flown during the latter portion of the series D program. Primary innovations on series E missiles include the MA-3 rocket engine system, redesigned propellant feed ducting, sustainer engine gimbaling at staging, free-launch (no holddown), Lot IV inertial guidance, redesigned propellant level control system, new pneumatic regulators, redesigned fuel and LO2 staging valves, and structural changes required to accommodate these differences. These changes and the various series E systems are described in detail in the Flight Test Program.

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GDA-AZC-27-670 059-REV-B/C

The Symposium was organized because of the continuing need for design data and principles relevant to the flight of aircraft and missiles at high angles of attack and the substantial efforts devoted to vehicles capable of controlled flight in that regime. Four sessions were held on (1) Studies of Configurations of Practical Application (10 Papers); (2) Mathematical Modelling and Supporting Investigations (12 Papers); (3) Design Methods (7 Papers), and (4) Air Intakes (2 Papers). Eight additional short presentations on these subjects are also documented. A Round Table Discussion on the state-of-art and recommendations for continuing effort in high-angle-of-attack aerodynamics is also documented in the report.

Conference  
proceedings

550 AGARD-CP-247

This report is a six part statistical summary of surface weather observations for McGhee-Tyson Airport, Tennessee. It contains the following parts: (A)Weather conditions; Atmospheric phenomena; (B)Precipitation, Snowfall and Snow Depth (daily amounts and extreme values); (C)Surface winds; (D)Ceiling versus visibility; sky cover; (E)Psychrometric Summaries (daily maximum and minimum temperatures, extreme maximum and minimum temperatures, psychrometric summary of wet-bulb temperature depression versus dry-bulb temperature, means and standard deviations of dry-bulb, wet bulb and dew point temperatures and relative humidity); and (F)Pressure Summary (means, standard, deviations, and observation counts of station pressure and sea-level pressure). Data in this report are presented in tabular form in most cases in percentage frequency of occurrence or cumulative percentage frequency of occurring tables.

Final rept.

USAFETAC/DS-  
84/006,SBI-AD-  
437 E850 614

Substantial evidence indicates that significant training gains can be made through the systematic application of learning principles in the design of learning packages. This report provides a handbook of format models, based on learning principles, for use in constructing training materials for the following types of tasks common to Navy jobs: performing procedures; recalling facts about equipment; applying rules and regulations; classifying objects and signals; and recognizing and drawing symbols. Each format model shows the kind of information to present for a specific class of task, how to format the information, and how to sequence it. The model serves as a specification for creating the types of pages required for efficient training. For each format model there are sample learning objectives, a description of the learning strategy incorporated in the model, and one or more sample instructional modules based on the page specifications. This handbook was specifically prepared for use in developing instructional material according to the Navy's Procedures for Instructional Systems Development.

Technical  
rept.,

166 TAEG-TR-129

null

Study no. 29

137 null

The definitions provided in this bilingual glossary are intended to serve as indicative explanations of the defined words and phrases, and not for purposes of interpreting any particular contract or international agreement. Approximately 100 terms appear with English and Romanian definitions.

Final rept.,

37 null

This document provides the functional specification of the Transmission Control Protocol (TCP) as used in the AUTODIN II packet switched network. TCP performs the mechanics of establishing, maintaining, and terminating a virtual connection through the AUTODIN II system. TCP controls the flow of data so that the users on either end of the virtual connection appear to be communicating via dedicated circuit. This document also contains many examples of the TCP design and implementation in the AUTODIN II Multiple Channel Control Unit.  
(Author)

Final rept.

SBI-AD-E100  
156 342

The ultrastructural lesions in the submaxillary glands of C3H mice chronically infected with the murine cytomegalovirus are reported. Virus was synthesized in the nucleus of acinar glandular cells. After passage into the cytoplasm, virus was located in large vesicles which were derived from the Golgi apparatus. These vesicles, which were periodic acid-Schiff positive, migrated to the apex of the cell and released virus into the acinar lumen or canaliculi. Conclusions drawn from electron microscope observations were that lymphocytes terminate chronic MCMV infection, that MCMV infection of acinar epithelium is not cytolytic and that normal cells also undergo necrosis during termination of chronic MCMV infection. It is postulated that lymphocytes in responding to infection release a cytotoxic substance which diffuses into the acini and causes indiscriminate necrosis of acinar cells.

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21 null

A method is developed in the present report for calculating the normal displacements in a very thin, pressurized cylindrical shell which is subjected to a concentrated normal load. The shell is treated as a membrane and the solution is obtained in the form of a single or one-dimensional Fourier series, the longitudinal coordinate being taken as the independent variable of the trigonometric terms, with the circumferential coordinate being absorbed into the Fourier coefficients.

null

GDA-ERR-AN-  
11 059A

Partial Contents: Biomedical Applications of Neural Networks; Commercial and Industrial Applications of Neural Networks; Application of Neural Networks in the Chemical Process Industries; Mind, Brain, and Consciousness; Machine Vision; Neural Fuzzy Systems; Neurocontrol and Robotics; Hardware Implementations; Mathematical Foundations; Biological Neural Networks; Signal Processing; Pattern Recognition; Supervised Learning.

null

806 null

This is a well illustrated handbook on field artillery weapons systems and ammunition. It includes information on parts and components and their functions. There are descriptions of 105 mm howitzers, M101A1 and M102 towed; 155mm howitzers, M114A1 and M114A2 towed. the 8-inch howitzer M110A2, and the 14.5mm artillery trainer M31. There is information on field artillery ammunition, with a general planning chart for field artillery ammunition and fuze information charts . All chapters contain good illustrations for gun maintenance and ammunition handling.

null

SBI-AD-F400-  
319 019

This publication contains a listing for each faculty member from each department indicating the conference presentations, contributions to books, Summary rept. published papers and technical reports and notes. FY 80,

NPS-012-81-  
272 005PR

constructed between 1929 and 1932. Problems have been experienced with accumulation of ice and debris at the intakes, air entrapment in the culverts of the filling and emptying system, excessive turbulence in the lock chamber during filling, and hazardous conditions downstream from the locks during emptying operations. Also, the stoney gates used for control of filling and emptying, the miter gates, and miter gate operating machinery are in bad condition. Various elements of the filling and emptying system were developed in a 1:25-scale hydraulic model for use in rehabilitating the locks. Both the landward and riverward locks were investigated and recommended design and modifications were furnished to accomplish rehabilitation of both locks although only the landward lock will be completely rehabilitated. Major modifications to the locks will include constructing new intake manifolds, lowering the roof of the filling and emptying culverts and changing their shape, constructing new sidewall ports, replacing the stoney gates with tainter valves, and constructing new culvert outlets. With the rehabilitated system, the lock could be filled in 10.2 min and emptied in 10.6 min with a 4-min valve time and a 37.8-ft lift.

Final rept. Jul  
1976-Feb 1978

WES/TR/HL-79-  
158 21

This is a Technical report resulting from the Proceedings of the Thirty-Seventh Conference on the Design of Experiments in Army Research Developments and Testing.

Proceedings

393 ARO-92-2

alternative includes the Route 1 alignment of the North Bay Aqueduct plus urban water conservation programs that will be implemented through enforceable institutional means. This alignment diverts Sacramento-San Joaquin Delta water for M and I use in Solano and Napa countries from Cache Slough in eastern Solano County by underground pipeline to tie into existing Phase I aqueduct facilities near Cordelia, California. The measures presented in these draft plans include measures currently implemented in the service areas and new measures suited to the character and needs of the service areas and new measures suited to the character and needs of the service area. Negotiations in progress between the Department of Water Resources and North Bay Aqueduct contracting agencies are designed to establish conservation programs that will be implemented through enforceable institutional means including goals or specific conservation measures. Such programs will be reasonable, practical, and economically achievable. The Final ES/EIR is divided into three sections. Section 1 is a general response to major comments on the Draft ES/EIR and a detailed explanation of all changes made to Chapter 3.0 of the Draft ES/EIR, which describes water needs and alternatives. Section 2

Final rept.

600 null

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51 null

This report describes in reasonable detail the Antenna Pattern Distortion Computer (DISTORT) so that any software maintenance or modification can be carried out without much difficulty. A description of every subsystem, program and subroutine as well as all the file requirements is given and is accompanied by detailed flow charts. (Author)

Phase rept.,

RADC-TR-78-  
158 264

The operational use of military aircraft in forward area situations has necessitated a comprehensive look at the critical factors which define the aircraft flotation performance and operations capability on semi- and unprepared soil runways. The investigation was directed primarily at defining the drag- sinkage response of multiple wheel landing gear on soil and the development of multiwheel flotation criteria to permit comparative evaluation of the relative merits of various landing gear configurations. The total multiwheel/soil interaction study consisted of four parts. Part 1 was an evaluation of existing full scale field test data from aircraft or test carts operating with multiple tire configurations (twin and tandem). The results of the study show that certain multiwheel configurations and spacing are beneficial in terms of sinkage-drag performance. The results of the multiwheel/soil interaction study were used to develop multiwheel flotation criteria (guidelines for evaluating performance). The flotation variable of braking was also studied on a preliminary basis. Braked tire/soil interaction equations suitable for defining the braking coefficient on soil were developed, and the results of a comparative study using these braked tire equations were favorable.

Technical  
rept., 17 Nov  
1969-17 Dec  
1970

AFFDL-TR-71-  
200 12-PT-1



A gradiometer-aided inertial navigation system is theoretically and statistically analysed to estimate its abilities to monitor geocentric cartesian coordinates. Having discussed the inertial instrumental units used on the moving platform and several reference coordinate frames applicable in all navigation systems, studies on the severe problem of the separability of the gravity gradients from the inertial disturbances are carried out. Simulation I presents how well the aided navigation system can produce inertial coordinates and how the newcomers of the inertial instrumentation, the gradiometers, perform on-board the moving vehicle. Quantization error studies are also analysed and presented for such a system. Simulation II includes besides the detailed analysis of the accelerometer and gradiometer error models used, the abilities of the system to estimate geocentric coordinates. Multipoint statistical analysis for the approximated inertial acceleration components shows that the navigation system under consideration behaves better as closer the reality is approached. (Author)

Final rept.,

244 null

implementing the Army Training and Evaluation Program (ARTEP) for a Tank/Mechanized Infantry Task Force. Principles of the ARTEP system need to be more fully developed before field units can use them to develop training and evaluation programs that effectively meet the goals of the ARTEP concept. Battalion field evaluation exercises should be planned with the ultimate goals of training diagnosis in mind. This means that significant emphasis must be placed on adequate training for evaluator/controllers. A three-volume report provides guidelines for meeting these requirements. The report is intended primarily for readers interested in collective training, particularly those working with development of ARTEPs. Volume I is of general interest to ARTEP developers, training managers, policy makers, and users. Volume II provides data analysis and recommendations for refining current ARTEP implementation; it will interest developers, training managers, and policy makers. Volume III is a prototype guide for battalion-level use of the ARTEP. It is based on the recommendations from Volume II and is of interest to senior commanders, their staff, and officers who train others to perform evaluations and exercise control functions in the field.

Technical rept.  
8 Nov 1976-31  
Jan 1978

HSR-RR-77/21-  
GE-VOL-1,ARI-  
62 TR-78-A26

performed to develop a method of designing high-speed power turbine rotors to (1) minimize rotor-induced dynamic loads under normal operating conditions, (2) minimize rotor tip- to-shroud clearance to maintain high flow-path efficiency, and (3) minimize rotor deflections due to sudden abusive imbalance loads associated with blade loss. A design/prediction system was established for both synchronous and nonsynchronous rotor whirl and the best compromise design for a rotor subjected to these excitations. Two mathematical models were developed in the course of the program. First, a squeeze film damper model and subsequent computer program were developed to quantify the effects of end-seal leakage and inlet feedback on damper performance. Secondly, a spline coupling friction mathematical model and computer program were developed to predict the destabilizing forces which excite rotor nonsynchronous whirl. To verify the accuracy of the analytical models developed in the program and other existing rotor dynamic models, a comprehensive test program was run. This program included: (1) a high speed film damper test rig, (2) bearing flexible support testing, (3) a synchronous response rotor rig, and (4) a nonsynchronous response rotor rig. Using the

Final technical  
rept.

FR-  
10632,USARTL-  
149 TR-79-2

A literature review was made to support an ongoing study to develop a method for evaluating airport pavements based on the layered elastic theory and using constants as determined from vibratory test results. The review covered the definitions and relations between elastic constants, methods used by various researchers for measuring elastic constants, and values of elastic constants found (or used) by various researchers. The review also included a study to determine the sensitivity of pavement responses to arbitrarily assigned values of elastic constants and an examination of the relationships between vibrator test results and elastic constants. The latter subject included a special preliminary examination of the relationship between the results from tests with the WES 16-kip vibrator and elastic constants. A summary discussion was given of the findings from the literature review and the special preliminary examination. Finally recommendations were made to facilitate further planning and implementation of the ongoing study mentioned. (Author)

Final rept.,

FAA-RD-76-  
141 138

This report presents a Landsat-derived land cover map of the northwest portion of the Arctic National Wildlife Refuge, Alaska. The report is divided into two parts. The first is devoted to the land cover map with detailed descriptions of the mapping methods and legend. The second part is a description of the study area. The classification system used for the maps is an improvement over existing methods of describing tundra vegetation. It is a comprehensive method of nomenclature that consistently applies the same criteria for all vegetation units. It is applicable for large- and small-scale mapping and is suitable for describing vegetation complexes, which are common in the patterned-ground terrain of the Alaskan Arctic. The system is applicable to Landsat-derived land cover classifications. The description of the study area focuses on five primary terrain types: flat thaw-lake plains, hilly coastal plains, foothills, mountainous terrain, and river flood plains. Topography, landforms, soils and vegetation are described for each terrain type. The report also contains area summaries for the Landsat-derived map categories. The area summaries are generated for the five terrain types and for the 89 townships within the study areas. Two land cover maps at 1:250,000 are included.

null

70 CRREL-82-37

Construction of glass-holder sealing equipment is under way. Tentative quartz resonator designs have been partially evaluated, and appear to be satisfactory.

Quarterly progress rept. no. 2, 1 July-30 Sep 1962

26 null

Final report received from a contractor working

Institute of High Temperatures RAS as follows:

Task 1: Renewed scientific interest has arisen throughout the world as to the potential application of Magneto Hydrodynamics (MHD) processes for advancement of flight. Among the areas of interest is the utilization of MHD as a means for enhancing the speed and range of scramjets through a concept known as MHD energy bypass. Currently, scramjet operation is limited to free stream flight Mach numbers around 10. This limitation arises from the excessive temperature that develops at high Mach conditions as a result of the slowing down of the propulsion drafted hypersonic air stream within the propulsion system inlet. The extra benefit of this proposed Project is the experimental facility to be used for experimental studies of MHD effects in hypervelocity flows that is an MHD assisted wind tunnel. Therefore, operation of this facility will provide valuable information on MHD interaction taking place in MHD accelerator. All experimental results can be and will be used to validate existing computer codes for such processes. Task 2: One of the main problems of stable combustion in high-speed flow is an effective mixing of gaseous fuel and oxidant providing full combustion during the resident time

Final rept. 1  
Jun 2002-31  
May 2006

ISTC-  
2196P,EOARD-  
236 01-7003

This Handbook incorporates guidance, doctrine and tactics required to plan and execute airmobile operations. It is specifically designed for resident and extension course students of the United States Army Infantry School to provide the student with a knowledge of how to apply the Army Airmobility Concept to enhance land combat effectiveness. This handbook deals with all aspects of airmobile operations, emphasizing the tactical employment of light observation (LOH), utility, and medium helicopters, both transport and armed. It also covers, in lesser detail, the tactical employment of heavy cargo helicopters, fixed wing aircraft, and organizations and equipment associated with Army aviation. It provides basic and general information, and detailed information where required, providing the student with the necessary background to plan and conduct airmobile operations from small patrol to brigade-size. Users of this Handbook are encouraged to submit recommended changes or comments for improvement. Comments should be forwarded to Director, Brigade and Battalion Operations Department, United States Army Infantry School, Fort Benning, Georgia 31905.

Handbook

246 null

This Interface Control Document (ICD) defines the electrical, mechanical, physical, thermal, and functional interfaces between the forward looking infrared (FLIR) mission payload system (FMPS) and the remotely piloted vehicle (RPV) system. The interfaces defined include those with specific air vehicles (AV) subsystems: flight controls electronic package (FCEP), attitude reference assembly (ARA), and the modular integrated command and navigation system (MICNS). Both a mission payload subsystem (MPS), as used in the daylight RPV system, and an FMPS are required for the Aquila RPV System (YMQM-105). The AV and other RPV subsystems must be common to both payloads and both payloads must be interchangeable among air vehicles. The FMPS must be fully interchangeable with the MPS.

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78 null

The INTACS Transition and Management Plan defined the Automated System Management Information (ASMI) concept. The ASMI process provides the operating guidelines, as well as the implementing and operating procedures within the Systems Integration Management Office (SIMO) by which all commands and agencies concerned with INTACS Transition will receive timely reports and schedules. In order to implement the ASMI concept, the procedures within SIMO as well as the interfaces with external commands and agencies must be defined and put into a standard operating procedure. The INTACS Automated Systems Management Information Processes was initiated to provide the link between the Automated Transition Plan and the implementers of this plan. Through this system users will receive basic packages of transition reports and schedules on a periodic basis and may request audit and reference information as required.

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106 null



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54

127

LTSS/44 studied 10 contaminant areas of interest to NATO's efforts to stop environmental pollution at the source. The study areas included: (1) Petroleum, Oils and Lubricants; (2) Munitions; (3) Fire Suppressants and (4) Refrigerants (Ozone Depleting Substances - ODS); (5) Solvents and Cleaners (Volatile Organic Compounds - VOC); (6) Organic and (7) Inorganic Surface Coatings; (8) Liquid Shipboard Wastes; (9) Solid Shipboard Wastes and (10) Pesticides. Each problem area was described in detail. The current situation, ongoing research and recommended directions to accelerate the phase out or elimination of each contaminant (area) by substitution, process change and management improvement was described in detail. Finally, LTSS/44 recommended a way forward for the Defence Research Group to embrace further study of the means to eliminate and prevent contamination while minimizing the impact of compliance with environmental regulations, laws and international agreements on the NATO military mission.

Technical  
rept.,

AC/243(LTSS)T  
211 R/44-VOL-1

Because it is highly toxic and carcinogenic to exposed workers, much recent interest has been expressed in identifying and quantifying small amounts of asbestos in many materials. To date, optical microscopy, x-ray diffraction, scanning electron microscopy coupled with energy-dispersive X-ray spectrometry (SEM-EDS), air particle counting, and Raman spectroscopy have all displayed limited applicability to samples of diverse origin. The present report shows that infrared spectroscopy can be used to identify absolutely microgram quantities of various asbestos types in all normally encountered samples. Its main advantages over other methods include ease of sample preparation, speed, and low cost of necessary equipment. When combined with simple purification procedures, it can be used for largely non-asbestos mixtures. Finally, when combined with present day microcomputer systems, automatic semiquantitative identification of mixtures of different asbestos types can be made. (Author)

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DREO-MAT-81-36 C

null

null

192 null

The objective of this project was to establish the theoretical foundations for applying higher order Rayleigh and interface modes to resonators for high stability sensors. Theoretical studies of the characteristics of Rayleigh waves in single and multi-layer structures were carried out for ST-cut Quartz substrates. Specified materials for this study were MgO, Y2O3, AlN, SiOx, Al2O3, and TiO2. Velocity dispersion and coupling to bulk modes were predicted and confirmed by comparison with experimental results for sputtered films. Stoneley (interfacial) waves were investigated as possible candidates for resonator structures because of their inherently stable and low cost geometry without any type of hermetic enclosure or package. A successful search technique was developed which accurately predicts the existence of Stoneley waves in general anisotropic (and piezoelectric) materials. Using this technique, Stoneley waves were for the first time predicted in single crystal quartz. Several useful orientations where Stoneley waves are well bound and piezoelectrically active were found to exist.

null

AFOSR-TR-90-  
92 0785

This paper traces the history of the phenomena of simulator sickness from the time it was first reported in 1957-58. Although the literature is sparse (less than 300 printed pages), a large body of anecdotal evidence has accumulated and a series of reports have been published. The focus of this document is to survey the available literature and to reproduce it to be easily accessible by engineers and scientists. The report is organized into three sections and an appendix. Section I is an introduction and serves to orient the readers to the remaining sections. Section II deals with the issue of motion sickness and its relationship to simulator sickness. Section III reviews the studies of simulator sickness and surfaces hypotheses for research. These suggestions in the form of research initiatives, have been offered to stimulate further discussion. Appendix A contains reproductions of articles dealing with simulator sickness, including reports of simulator sickness outcomes, provocation experiments, messages, dispatches, and documentations of the aftereffects. Much of this material was originally of limited distribution. The theme of this report, and others in the series, is that simulator sickness is a reaction to a transformed perceptual world.

Interim rept. 1  
Sep 1981-15  
Apr 1985

330 null

contract support, describes technical findings concerned with glass-ceramic dielectrics, semiconducting glasses, electronic and structural properties of semiconductors, near-degenerate pn junctions, and radiation studies on materials. In addition to the reporting of these technical findings, major additions to our experimental capability made during this period are summarized. Two detailed reportings are made concerning structure in glass-ceramic dielectrics: one concerning the kinetics of crystallization, studied by quantitative x-ray diffraction, and the other concerning structural changes resulting from thermal treatment, studied by electron microscopy, x-ray analysis, and dc and ac electrical properties. For semiconducting glasses, correlations are made concerning thermal treatment and structural changes, on the one hand, and dielectric and electronic properties, on the other. Results are reported from two studies aimed toward determining the structure of compound and elemental semiconductors. An expression for the diffusivity-mobility ratio is derived that is valid for degenerate as well as non-degenerate semiconductors, and is used to plot this ratio against carrier concentration. Brief disclosure is made concerning the radiation

null

SCIENTIFIC-  
1,AFCL-68-  
101 0185

The increasing awareness of environmental contamination and threats to human health from hazardous waste has prompted Congress to pass comprehensive legislation that calls for rigorous management of hazardous waste activities. To assist the Army in complying with the reporting requirements of numerous regulations, the U.S. Army Construction Engineering Research Laboratory (USA- CERL) compiled and analyzed the Federal, State, Department of Defense, and Army hazardous waste regulations. This analysis defined the hazardous waste data already available to Army environmental personnel. The analysis also defined the additional information needed to improve the Army hazardous waste management programs. The results were then used to develop the concept for a hazardous waste component for the Army Environmental Data Management System (AEDMS). Keywords: Hazmin; AEDMS; Hazardous materials; Waste management; Data management.

Final rept.

CERL-TR-N-  
114 88/23

... model canopy, significant model ...  
 developed to approximate the thermal behavior  
 of a vegetation canopy by a mathematical  
 abstraction of three horizontal layers of  
 vegetation. Canopy geometry within each layer is  
 quantitatively described by the foliage and branch  
 orientation distributions. Canopy geometry, solar  
 irradiance, air temperature, horizontal wind  
 velocity, relative humidity, and ground  
 temperature are used to calculate the energy  
 budgets of average leaves within each layer. The  
 resulting system of conservation equations is  
 solved for the average layer temperature. This  
 information, together with the angular  
 distributions of radiating elements, is then used to  
 calculate the thermal exitance as a function of  
 view angle above the canopy. Optical diffraction  
 techniques were developed and employed to  
 measure canopy geometry. Solar radiation  
 absorption with the vegetation terrain elements is  
 calculated using a modification of a Monte Carlo  
 model (SRVC) developed for the reflective energy  
 regime. The models were applied to a lodgepole  
 pine (*Pinus contorta*) canopy and the results for a  
 diurnal cycle are validated with radiometric  
 measurements. Simulated versus measured  
 radiometric average temperatures of Layer 2  
 correspond approximately within two degrees

Final rept.,

ARO-13444.2-  
 192 GS

null

Final site  
 investigation  
 rept.

718 null

null

null

AFCRL-TR57-  
 275 204

The Joint Tactical Information Display System (JTIDS) is a multiservice acquisition program being led by the US Air Force. JTIDS is designed to provide secure transmission of position, target track, and voice data between host terminals in a manner that is transparent to the user. The user or host terminal is any system which originates or receives digitized tactical information transmitted over the JTIDS secure radio links. The system was originally designed to provide communication between F-15 and Advance Warning and Control System (AWACS) aircraft and Combat Reporting Centers (CRC). The US Army recognized the potential for improved communication between Air Force and Army Air Defense Artillery (ADA) units, and within ADA units, and became part of the program well into the development process. The Army host terminals were to be TSQ-73s at the brigade and battalion levels for the HAWK fire units, the Platoon Command P9st (PCP) at the batteries, and the PATRIOT missile system.

Working paper

ARI-WP-FH-  
68 8807

The KC-135R is a modified KC-135A which has had, among other things, the engines changed from the J-57 to the new F-108-CF-100 engines. Shortly after the KC-135R began SAC flight operations, a noise problem perceived as a rumbling sound in the cabin area was found in various aircraft; i.e., Rumble. The Air Force, the aircraft manufacturer and the engine manufacturer studied the problem briefly developing a better definition of the general problem. The forcing function was determined to be the F-108 engine; however, the precise source of the noise and vibration, and the transmission path from the engine to the cabin were unknown. Keywords: Aircraft engine vibration; Low frequency vibration; Flight test; Acoustic intensity; Modal analysis; Engine vibration; Engine/airframe; Final rept. Oct Resonant coupling; Jet engines. (kt)

86-Jan 88,

UDR-TR-88-  
04,AFWAL-TR-  
242 88-4260



The objective of this report was to verify sufficient suitable areas for deployment of the MX system and to provide preliminary physical and engineering characteristics of the soils. Included are basic data consisting of boring and trench logs, seismic refraction surveys, sieve analyses, soil, electrical resistivity, depth to water, and depth to rock. (Author)

Final rept.

FN-TR-27-VOL-  
209 4

Objectives. The overall audit objective was to evaluate whether DoD adequately planned for and managed year 2000 risks to avoid disruptions to the U.S. Pacific Command's capability to execute its mission. Specifically, we reviewed efforts taken by U.S. forces in Japan to identify and mitigate year 2000 risks associated with hostnation support. Results. When initially audited in June 1999, actions by both the U.S. Forces Japan and the Services and Defense agencies (Components) to address the impact of the year 2000 problem on host nation support provided to U.S. forces in Japan needed improvement. Efforts to identify and mitigate the impact of year 2000 problems on host nation support could have been more comprehensive. Further, U.S. Forces Japan and the Components had not fully addressed the impact of potential year 2000 problems on host nation support in their contingency planning. U.S. Forces Japan and the Components subsequently took action to address those concerns. For details of the audit results, see the Finding section of the report.

Technical  
Report

41 null

null

null

OACSFOR-OT-  
61 UT-71B017

The technical feasibility of retrofitting existing machines with numerical controls has been further substantiated by this program. The four machines, varying widely as to design, age, and condition, were retrofitted in spite of various limitations relative to one or more of these factors. None of the technical problems encountered were insurmountable, even though the basic configuration had to be extensively altered in three of the four machines. All of these four machines have been given greatly enhanced capabilities by conversion to numerical control. All cutting motions, other machine functions, and certain auxiliary functions can now respond automatically to programmed instructions on tape Interim or other control media.

technical rept.

37 null

Radar target identification is an important problem to which much attention has been given in the past solution efforts relied predominately on linear signal processing techniques. There are two traditional approaches. In the one, high resolution images are formed to be examined and identified by human observers. In the second, target signatures (feature vectors) are formed for automated machine identification. The first approach is usually quite costly and has several practical limitations stemming from the high cost and large size of microwave imaging apertures. The second approach is yet to provide a reliable scheme. Motivated by the observation that the above approaches are primarily linear and that biological systems, which process information in a highly nonlinear, collective, and frequently iterative manner, are very adept at carrying out recognition, classification association, and optimization tasks, we elected to investigate the capabilities co collective nonlinear processing in target identification.

Final rept. 17  
Sep 1987-16  
Sep 1990

EO-MO-90-  
1,ARO-24898-  
124 9-EL

The purpose of this report is to document the computer programs that have been written to implement the prediction algorithm described in BBN Report 3653 by M. Moll, R. M. Zeskind and W. L. Scott entitled 'An Algorithm for Beam Noise Prediction'. The authors assume that the reader is already familiar with the contents of that report. null

88 BBN-3654

In 1974 the Army adopted the Officer Personnel Management System (OPMS). The US Army Concepts Analysis Agency (CAA), at the request of the Office of the Deputy Chief of Staff for Personnel (ODCSPER), Headquarters Department of the Army, developed the Officer Dual Specialty Allocation System (ODSAS), a computer-based system, to assist OPMS managers in satisfying Army officer personnel requirements. The ODSAS-derived solution is driven by requirements associated with any force structure specified by the user. The methodology employed computes the optimum number of officers for allocation to specific OPMS specialty pairings, consistent with the specified force structure requirements. The system treats officer grades from lieutenant through colonel, inclusively, over a period of time (up to 9 years). Final study rept.,

174 CAA-SR-76-6

This report describes 27 fire tests performed in a mockup (modified school bus) of an automated guideway transit vehicle. There were a number of significant findings relative to fire safety in this type of vehicle. First, Halon 1301 was found to be effective in extinguishing typical seat fires, but generated extremely high noise levels during discharge; however, significant reductions in noise were achieved by modifying the discharge nozzle. Another important finding was that in all tests fires, the photoelectric detector responded more quickly than did the ionization detector. Finally, by studying various seat fire ignition sources, it was concluded that the underseat fire was the most severe condition. (Author)

Final rept.  
May-Aug 76,

FAA-NA-76-52-  
REV,GIDEP-  
30 E091-1787

An earlier NRL report by A. Stamulis has been re-examined with more modern analytic and graphic presentation methods. The interaction of mustard gas with Navy alkyd paints as a function of temperature and wind speed was modeled as a second order polynomial with interaction terms through the use of response surface methodology techniques. The equations allowed prediction of mustard evaporation and paint absorption characteristics over the experimental range studied 30C to 50C, MPH (0.17 KPH) to 16.1 MPH (26.8 KPH). A recommendation is made in the report to re-examine current and planned tasks against the database of reformatted WWII and post WWII reports (using modern analytic techniques such as in this report) in order that research and live testing costs may be reduced.

Memorandum  
rept. Aug-Sep  
1988

26 NRL-MR-6401

unclassified reports on vehicle mobility published from 1945 through 1975 by the U. S. Army Engineer Waterways Experiment Station (WES). Most of the reports were prepared by personnel of or under contract to the Mobility and Environmental Systems Laboratory (MESL) of the WES; some of the reports were prepared by personnel of the Soils and Pavements Laboratory. Indexes are included by subject, personal author, corporate author of contract reports, region, and military base. One part contains Document Control Data - R and D or Report Documentation Page data (DD Form 1473) that include abstracts and other pertinent bibliographic information for each report. The reports include research and development material on ground vehicle mobility and trafficability of terrain as related generally to military materiel and operations. The reports deal with vehicle characteristics, vehicle-driver interactions, vehicle-terrain interactions, characteristics of the terrain over which the vehicle moves, and characteristics of weather that influence terrain. The reports relate to vehicle and soil test equipment, tests of prototype vehicles in the field and their component parts in the laboratory, and tests of soil and snow properties pertinent to trafficability.

null

434 PSTIAC-3

A study of the modifications produced by high power, high frequency (HF) waves in the F-region of a quiet (low solar cycle) polar ionosphere is presented. In the polar geometry, maximum Ohmic heating occurs producing significant changes to the zero order electron temperature and density profiles. The temporal and spatial aspects of these changes are calculated and their effects on relevant ionospheric parameters, such as the d.c. conductivity tensor, are found. An interesting finding is the generation of density cavities at the reflection point of the HF waves. A survey of the dependence of the various effects on HF pump parameters is made. (Author)

null

49 PPG-748

This report contains results of tests performed in an environment of multiple Discrete Address Beacon System (DABS) sensors, one each located at Clementon and Elwood, New Jersey, and the Federal Aviation Administration (FAA) Technical Center, Atlantic City Airport, New Jersey. These DABS sensors were tested in various degrees of intersensor communication that ranged from a full network of connected sensors to a fully nonnetted configuration. The multiple DABS sensors were tested in four major areas: network management, surveillance processing, data link processing, and intersensor communications. It is concluded that the performance of the DABS sensors in multisite configurations meets or exceeds the requirements specified in the DABS engineering requirement (FAA-ER-240-26).  
(Author)

Interim rept.  
Mar-Sep 80,

FAA-CT-81-  
9,FAA-RD-81-  
63 49

Except for participation in World War II when naval infantry units were formed to assist in the protection of the strategic flanks of the Red Army, naval infantry had not been part of the Soviet military force structure until 24 July 1964. On that date a 3,000 man naval infantry force was created. During the past 13 years, this force has grown to a five-regiment, 14,500 man force supported by modern amphibious shipping and associated hardware. Activation and maturation of this force coincided with the rapid expansion and increased capabilities of the Soviet Navy. During the past 15 years, the Soviet Navy has developed a global reach and is now capable of supporting military, economic, and political objectives far from the shores of the Soviet Union. What is the connection between the new blue-water Soviet Navy and her naval infantry force. What missions have been assigned to Soviet naval infantry in view of the new dimensions of the Soviet Navy.

Final rept.

137 null

	Monthly rept. no. 3, 16 Dec 1962-15 Jan 1963	
null		112 null

This workshop was jointly sponsored by NASA, NOAA, and FAA and brought together many disciplines of the aviation communities. The major objectives are to satisfy such needs of the sponsoring agencies as the expansion of our understanding and knowledge of the interaction of the atmosphere with aviation systems, the better definition and implementation of services to operators, and the collection and interpretation of data for establishing operational criteria, relating the total meteorological inputs from the atmospheric sciences to the needs of aviation communities. Full-length papers from invited speakers addressed the topics of Training, Flight Operations, Accident Investigation, Air Traffic Control, and Airports and are contained in the proceedings. Other committees examined: Winds and Wind Shear; Icing and Frost; Atmospheric Electricity and Lightning; Fog, Visibility and ceilings; and Turbulence. Committee chairmen's reports on the results and conclusions of the committee meetings are given.

Conference  
publication,

NASA-CP-  
2104,FAA/RD-  
191 79-49

A source of heat to extend survival time during search and rescue operations for downed airman in cold environments. The heat source is derived from the catalytic combustion of propane fuel with resultant release of chemical energy in the form of heat. The heat is picked up by a heat transfer fluid in heat exchangers, and pumped to the man via umbilicals on the DAPS to a tubulated under garment worn by the airman where the heat is dumped. The system is a closed loop, and therefore, after dumping its heat the fluid is returned to the DAPS where it picks up additional heat. The system is capable of supplying up to 250 thermal watts to the airman at fluid temperatures of approximately 100 to 105 F. The fluid flow rate is approximately .25 to .30 gallons per minute. The system also has a 12 VDG DC-DC converter used to power an emergency flasher or transmitter.

Final rept. 10  
Apr 76-10 Jan  
77,

ESC-0289-  
1FR,NADC-  
168 76045-40

The Air Traffic Rules and Procedures Service has distributed basic editions of FAA Orders 7110.10, 7110.65, 7210.3, and 7930.2, as well as the Pilot/Controller Glossary. These orders are being provided in advance of their normally scheduled dates to ensure for sufficient preparation for the Airspace Reclassification change. The orders and associated briefing guides shall serve as the fundamental training material to meet this preparatory requirement for Airspace Reclassification

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560 null



A variety of methods for a low-cost synthesis of the IMC curable monomer, 2,2'-bis(phenylethynyl)-4,4',5,5'-tetraaminobiphenyl, were explored without success. A low-cost route was found for the preparation of the IMC curable monomer, 2,2'-bis(phenylethynyl)-5,5'-diaminobiphenyl. Numerous model compounds with potential IMC reactions were prepared and characterized by thermal analysis. Some high molecular weight isoimide polymers were synthesized for study of the thermal rearrangement of the isoimide group to an imide group as an IMC-type reaction. (Author)

Final rept. Sep  
79-Jun 83,

AFWAL-TR-83-  
144 4063

A number of high-build vinyl anti-fouling shipbottom coatings, formulated both for airless hot spray and conventional spray application, have been evaluated in the laboratory and on service vessels. The main objective of the investigation was to find an underwater coating system with equivalent performance to the Maritime Force's specified vinyl system, but one requiring fewer coats of paint and therefore lower labor costs and a shorter application time. In this evaluation, the formulations for hot spray and airless hot-spray application proved better than those formulated for high-build application with conventional spray equipment. A four-coat system consisting of one coat of vinyl wash primer applied by conventional spray, followed by a high-build aluminum-vinyl primer, an intermediate high-build vinyl-aluminum anti-corrosive coat, and a coat of 1-GP-123 vinyl cuprous oxide anti-fouling, all applied by hot spray, achieved the required ten mil minimum total thickness and, on the basis of the laboratory and ship trial performance, can be considered for general use. (Author)

Materials  
rept.,

19 DREP-79-C

This report is a collection of information about the force-producing capabilities and characteristics of some hydrodynamic devices that could possibly be used for the control of submarine or surface ships. Emphasis is on the variety of concepts available for this purpose, something about the physical nature of how each device operates, and descriptions of the forces attainable. Out of all the devices considered, a preliminary judgment is formed of those devices that seem most likely to be of use in the immediate future. (Author)

Research and development  
rept.,

DTNSRDC-  
410 79/097

The application of high strength low alloy (HSLA) steels has been limited by the availability of suitable filler metals. Specifically, as the weld metal strength increases, the susceptibility to hydrogen-assisted cracking increases. To take full advantage of the developments in HSLA steel base metals, weld filler metals which minimize the effects of diffusible hydrogen and develop tough microstructures must be designed. The benefit of yttrium-containing inclusions to provide effective hydrogen traps and reduce diffusible hydrogen levels, as well as, to act as intragranular nucleation sites to produce tough microstructures has been demonstrated. Furthermore, fluoride-containing consumables have been demonstrated to reduce weld metal diffusible hydrogen levels through reactions within the arc atmosphere. The current research was undertaken to study the effects on welding characteristics and weld metal properties when these two concepts are integrated into a single welding consumable. Additionally, current methods of quantifying the amount of diffusible hydrogen in a steel weldment are destructive and are performed only after the weldment has been deposited.

Technical rept.  
1 Dec 2003-31  
Dec 2004

MT-CWJCR-  
005-006,ONR-  
470 332

Model experiments were performed to determine the head sea regular wave seakeeping characteristics of a Twin Cushion Surface Effect Vehicle. Experimental values of wave height, drag, cushion pressures and rigid body motions and accelerations are presented in graphical and tabular form. (Author)

Final rept.,

95 SPD-729-01

This collection of seven previously published papers performed under Grant No. FA8655-04-1-3003 provide the background for the development of a new version of the HPHall hybrid code (HPHallv.2) for the numerical modeling of Hall Thruster discharge and new insights on discharge physics obtained during the development.

Final rept.

119 null

Network and linear epoxy resins principally based on the diglycidyl ether of bisphenol-A and its oligomers have been prepared and studied. Both diamine and anhydride crosslinking agents were utilized. In addition some rubber modified epoxies and a carbon fiber reinforced composite was investigated. All of these materials display time-dependent changes in many of their properties when they are stored (following) quenching) at temperatures below their glass transition temperature (sub-T sub g annealing). For example, the degree of stress relaxation for a given time period is observed to decrease in a linear fashion with the logarithm of time during sub-T sub G annealing. Young's modulus and yield stress were also found to increase in physical aging. Solvent sorption experiments initiated after different sub-T sub G annealing times have demonstrated that the rate of solvent uptake can be indirectly related to the free volume of the epoxy resins. Water affecting the physical aging of these epoxy resins was not found to be a significant variable. Residual thermal stresses were also found to have little effect on the physical aging process, although this variable was not studied in detail.

Technical  
rept.,

33 TR-3

null

null

61 null

Contents: Dynamic analysis; Computers; Specifications; Contamination and cleaning; Reliability; Materials; Environments; Stress analysis; Component testing; Fluidics; Engineering data and conversion factors; and Revision record.

Technical  
documentary  
rept.

AFRPL-TDR-64-  
757 25-VOL-2D

This analysis will demonstrate that the Military Reserves have contributed to the Operational Force, and it is these contributions that should be sustained. As strategies develop to guide the Defense establishment through a period of reduced budgets and changing strategic conditions, it is important to understand how the Reserves contribute to the operational concept. Equally important is an understanding of how this force fits within the Total Force Policy. The study initially includes analysis across all the services to establish total, operational, and strategic concepts; however, it ultimately concentrates on the Army and its integration challenges.

Master's  
thesis

80 null

Elastic-plastic fracture mechanics (EPFM) may be applied to engineering problems to determine material properties related to crack initiation and propagation. Specifically, these concepts have been applied to a study of the as welded and temper embrittled weldments of HY 130 steel. The property relating the energy requirement for ductile crack initiation,  $J_{Ic}$  or  $K_{Ic}$ , is seen to be similar in both instances, although previous Charpy V-notch testing results have indicated large differences in toughness. The sensitivity to embrittlement is reflected, however, by a large difference in the crack propagation property, the tearing modulus,  $T$ . The data are also compared to crack initiation and crack propagation energies measured during instrumented impact tests.  
(Author)

Materials  
rept.,

21 DREP-82-M

Report contains Appendices I through J. Volume 3, Addendum report for operable units 4, 8, and 9. Quality Control Samples, Standard Matrix spikes, Natural matrix spikes, Gap rinse Blanks.

Final rept.

SFIM-AEC-RP-  
CR-97006-VOL-

952 3

<p>The annotated bibliography is one of a two-volume set on Civil Defense Systems: Preattack and Postattack (Nuclear Warfare). Documents contained in this volume deal primarily with emergency power source utilities, vulnerability of utilities, industry and transportation, radiation exposure control, control of diseases, capabilities of fire services, recovery and debris removal. Computer-generated indexes of corporate author-monitoring agency, subject, and contract are provided. (Author)</p>	<p>Report bibliography Mar 1960-Sep 1969</p>	<p>DDC-TAS-70- 195 44-1</p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------	---------------------------------

<p>Partial Contents: CAUTIONS AND WARNINGS; GENERAL DESCRIPTION OF THE EQUIPMENT AND THEORY OF OPERATION; OPERATING PROCEDURES; PLANNED MAINTENANCE SYSTEM SETTINGS AND REQUIRED UTILITIES</p>	<p>Final rept.,</p>	<p>615 null</p>
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the purpose and primary objectives of the study, to review the report on the Mississippi River and Tributaries project, and other pertinent reports, with a view to determining whether incorporating the local levee at the Louisiana State Penitentiary into the Federal levee system is advisable. Investigations during this study identified and analyzed, in addition to the alternative of 'no-action,' both nonstructural and structural alternatives for providing increased flood protection. They showed that feasible nonstructural measures were already part of the without-project condition and that only one of the preliminary structural alternatives (plan A) was economically justified. Plan A provides for raising and strengthening the existing mainline levee to provide protection from the Project Design Flood. This plan was carried into the detailed study stage. In the detailed study process, plan A was reanalyzed to determine if its potential adverse environmental impacts could be further minimized. A modified plan, plan A1, was developed. This plan is identical to plan A except that construction methods would be modified to avoid valuable wildlife habitat in locating new borrow pits. Plan A1 was designated as the least environmentally damaging plan in the detailed study process.

Final feasibility  
rept.

256 null

This report covers a very diverse effort to explore and develop the role of optical computing for SDI purposes. The effort was in two fields: Optical Algebra and Massive Parallel Holographic Interconnection. There was work on a variety of other activities such as pattern recognition, optical interconnection, and low energy optical computing. Optics has been suggested for algebra for many years, because there are geometry in configurations which permit it to be done extremely rapidly. The major problem with optical algebra has been that high accuracy was essentially unobtainable. This was to show that one could use low accuracy optics for the computationally intense part of algebraic computations and bootstrap the accuracy with moderately high accuracy digital electronics in very simple, hard-wired configurations. (JHD)

Final rept.

253 null

null

null

190 AID-60-25



Continuous Acquisition and Life-Cycle Support (CALS) Program is an initiative to develop the ability to transfer technical information in a neutral digitized format through an open systems architecture such that the data exchanged has utility to anyone with access. To accomplish this goal the data format and 'rules of language' for the data must be common to all parties. This calls for the use of specifications and standards currently approved and in use by the DoD, its contractors, and the general public. The CALS Program has adopted a set of standards and specifications to be used in the pursuit of this goal. Through proper application of these specifications and standards, data can be formatted, tagged, and organized so that transfer in an open systems environment is possible. The challenge is to have correct, complete, and unambiguous specifications and standards, and to apply them properly. The mission of the Air Force CALS Test Bed (AFCTB), as part of the larger Air Force CALS Test Network (AFCTN), is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. The AFCTB is chartered to carry out tests to accomplish its

Test rept.

AFCTN-TR-94-  
032,AFCTB-ID-  
182 94-004

semi conducting superlattices and microstructures. A focus of the work is a fundamental understanding of deep-level structures of impurities in semiconductors. Probably the most striking results in this area concern IV-VI semiconductors such as PbTe and SnTe, where we have originated the concept of false valence: In on a Te site in SnTe is a (triple) acceptor and has normal valence of -3 with respect to Te. But on a Te site in PbTe, In is a (triple) donor with a false valence of +3 with respect to Te because an In deep p-like one-electron level capable of trapping six electrons crosses the gap as x decreases in  $\text{Pb}_{1-x}\text{Sn}_x\text{Te}$ . This theory predicts that In is a donor in PbTe but an acceptor in SnTe; it argues that in IV-VI semiconductors impurities often occupy the intuitively wrong site or antisite; it shows that the relevant In occupies Te sites; it explains low doping efficiencies; and it shows promise for explaining solidus curves. This work on InN illustrates how our theory can be useful for the fabrication and doping of new electronic materials. The recent development of high-mobility InN raises the possibility of making UV sensors and even lasers out of this material. We have presented global predictions on the behavior

Final rept. 16  
Apr 84-30 Sep

90

436 null

measurements carried out on four different reactors under various irradiation conditions. These reactors were the Northrop TRIGA, SANDIA SPR II and ACPR, and the Aberdeen APRF reactor. The intercalibration was carried out by (a) measuring neutron spectra for a variety of basic and modified ('filtered') reactor neutron fields with a standard threshold-foil-activation neutron spectrometry method, (b) folding in each spectrum  $\phi(E)$  with the silicon damage function  $D(E)$  to obtain  $\phi_{\text{sub eq}}$ , the number of near-1 MeV neutrons required to produce the same damage, (c) irradiating a batch of 2N2222A transistors simultaneously with the neutron dosimetry stack and measuring the total damage  $D = K \phi$ , and (d) dividing  $D = K \phi$  by  $\phi_{\text{sub eq}}$  to obtain values of the damage coefficient  $K$  for the diverse neutron fields measured. This work is a continuation of a Defense Nuclear Agency (DNA) sponsored effort, initiated in 1974, in which several different spectra (WSMR FBR glory hole and leakage, and TRIGA leakage) were measured and variation studies carried out to determine the sensitivity of  $\phi_{\text{sub eq}}$  to the many possible sources of error. To make this report as complete as possible for the user, these previous results have been included as Appendix A. The

Final rept. 24  
Jan 1977-12  
Sep 1978

Aircraft afterbody design is still one of the most critical problems for industry, especially in fighter aircraft development. The flow around the rear part of the fuselage is characterized by the simultaneous occurrence of interfering physical phenomena such as thick turbulent boundary layers, viscous flow separation, hot jet interference at the base and the boat tail, and jet plume expansion in three-dimensional transonic and supersonic flow. Even experimental techniques hardly fulfill requirements for correct wind tunnel simulation of all effects. Drag prediction and drag minimization procedures for complex configurations are strongly dependent on the reliability of numerical and experimental flowfield simulation. This publication reports on the progress which has been made by the AGARD Fluid Dynamics Panel Working Group, established to evaluate the state-of-the-art in experimental and computational techniques for aircraft afterbodies. Keywords: Aerodynamic configurations; Aerodynamic characteristics; Afterbodies; Aerodynamic drag; Computational fluid dynamics; Navier Stokes equations; Jet simulation; Buffeting; Simulators; Wind tunnel tests; Error analysis.

null

AGARD-AR-  
349 226

pattern of expression of the five somatostatin receptor (SSTR1-5) isoforms in breast cancer, to determine which SSTR subtypes and signalling mechanisms mediate the antiproliferative effects of somatostatin (SST), whether the available SST analogs are effective in binding to these antiproliferative SSTR subtypes, and whether the pattern of SSTR expression in tumors can provide an independent prognostic marker. Towards these goals, we have characterized the pattern of expression and relative abundance of mRNA and proteins for SSTR1-5 in 101 primary breast cancers. All tumors expressed at least one SSTR and the majority expressed multiple SSTRs including subtypes 2, 3, and 5 which bind to octapeptide SST analogs. A good correlation was found between SSTR protein expression by immunocytochemistry and mRNA analysis by RT-PCR. SSTRs exert significant antitumor activity both by cytostatic and cytotoxic (apoptotic) actions in breast cancer cells. Apoptosis is dependent on estrogen receptor expression and is potentiated by tamoxifen. Apoptosis is induced uniquely via the SSTR subtype and is associated with induction of wild type p53 and of Bax and endonuclease 2. By contrast, the other four SSTR subtypes signal cell cycle arrest with the following

Annual rept.  
12 Aug 96-11  
Aug 97

74 null

This project was a descriptive study, conducted as one component of the evaluation by the Center Discharge Planning Committee of a newly implemented Discharge Planning Program at Brooke Army Medical Center (BAMC). The study was designed to evaluate use of the Nursing Admission Assessment forms as a valid mechanism for determining the presence of one or more indicators of the need for discharge planning. The discharge Planning Committee selected three trial wards to participate in a six-month study of the use of multidisciplinary rounds to effect a coordinated discharge plan for patients who demonstrated one or more of the indicators of the need for discharge planning as defined in the BAMC Memorandum - Discharge Planning. The study was unable to determine which specific indicators caused referral to discharge planning rounds, but the most frequently identified indicators obtained from the nursing assessment were those pertaining to catastrophic illness and associated functional disability. This study was quantitative rather than qualitative and concluded with recommendations to educate the staff about the discharge planning process, to critically evaluate the use of indicators as a screen for determining which patients need discharge planning, and to improve the quality of the

Final rept. Jul  
 1986-Jul 1987

120 HCA-66-89

This report cites results of a technical investigation as to the dam's adequacy. The inspection and evaluation of the dam is as prescribed by the National Dam Inspection Act, Public Law 92-367. The technical investigation includes visual inspection, review of available design and construction records, and preliminary structural and hydraulic and hydrologic calculations, as applicable. An assessment of the dam's general condition is included in the report. (Author)

Final rept.,

DAEN/NAP-  
 53842/NJ0033  
 82 4-80/09

The USAF Occupational and Environmental Health Laboratory conducted an on site wastewater treatment plant evaluation survey at Otis Air National Guard Base from 16-21 Mar 84. The survey was requested because the base is negotiating a National Pollutant Discharge Elimination System (NPDES) permit with the State of Massachusetts, Division of Water Pollution Control. Data was needed to show the current operating efficiency of the plant. Specific concerns of the base were disinfection of the effluent and plant removal of nutrients such as nitrogen and phosphorus. Results of the survey indicate that the plant is able to meet current effluent limitation except for total coliform bacteria. However, future limitation which will include forms of nitrogen may not be met during the winter months when low temperatures adversely affects oxidation of nitrogen. Recommendations were made to: (1) provide a contact chlorination tank for adequate disinfection; and (2) consider methods to increase the organic content of wastewater reaching the trickling filter.

Final rept.,

OEHL-  
45 296EQ305HSB

null

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200 null

This thesis examines the use of an artificial intelligence technique, hierarchical planning, to solve the problem of generating an aircraft route and finding a path through various hostile environments. A route or path, is evaluated by the number and type of threats the aircraft encounters on the route and the route length. An algorithm using hierarchical planning is presented and tested against several hostile environments. Specifically, the algorithms will divide the problem space or grid, into smaller spaces or boxes. These boxes are then assigned values based upon the input hostile environment. Block paths are then constructed and evaluated based on the values in the boxes. An exhaustive search is performed on the two best block paths to find a flight path for the aircraft. Test results are compared to previous results obtained using heuristic search and indicate an improvement in solution quality. Although specific plans are incorporated into the algorithm to obtain test results, many other plans within the realm of hierarchical planning certainly exist and could be used to solve this problem.

Master's  
thesis,

AFIT/CI/NR-85-  
265 37T



identification for many years. Their performance is chiefly limited by clutter. New techniques in high resolution radars, millimeter wave systems, polarimetric analysis, bistatic radars, adaptive filtering are being developed. Recent advances in computing speed have enhanced enormously the radars' capability in differentiating targets from clutter. But ultimate performance of these new systems depends on more complex knowledge of clutter and target scattering. Efforts for improving models and their experimental verification are underway concerning the clutter and target characteristics and their impact on radar systems. These issues were addressed during the symposium in the following topics: Models for surface scattering; ground and sea clutter. Models for volume scattering: atmospheric, ionospheric, chaff. Models for target scattering; RCS reduction or modification techniques. Methods of experimental characterization of clutter and targets: calibration procedures. Combined scattering and propagation effects on system performance. Processing for target to clutter enhancement: coding, and modulation, adaptive beam forming and nulling; polarimetric techniques, imaging, interferometric techniques. Conference Processing for target identification. Practical signal proceedings

AGARD-CP-  
501,ISBN-92-  
332 835-0633-2

The author presents Russian research results from factories and State Institutes. Micrometry, artificial incision, profilometry, and tracer methods of evaluating wear are all found to be useful, and plots are given. Plots of oil consumption, gas blow-by deformation, fuel consumption, effective power, and standard test rpm are among other techniques used in combination to evaluate engine condition. Quality control and tolerances of parts, volume uniformity among cylinders, mixture distribution uniformity, and cleanness of piston grooves are cited as the crucial non-operational factors.

null

FSTC-HT-23-  
138 1902-72

Theoretical and analytical investigations are aimed at determining the key characteristics and parameters of a system to enable the use of military communications equipment over difficult paths. The technique being investigated is the use of a radio relay installed in a high altitude platform, for the purpose of extending the range of remote area radio communications. The operational parameters considered were: traffic, transmission range, terrain, foliage, frequency range, modulation, and types of relay capabilities. The equipment parameters considered were: relay control, transmission modes, size and weight, radio frequency power levels, receiver sensitivities, power requirements, operational life, interference, jamming, platform performance, platform payloads, compatibility, basing, availability, and costs. The goal was to define the best relay-platform configurations for extending jungle communications ranges over difficult terrain. Within this context, the effort was one of synthesis, study, and selection of appropriate configurations, finalizing in a system design plan for implementation of the selected systems.

Semiannual  
rept. Aug 1966-  
Feb 1967

323 ECOM-0006-1

A summary of VLF, magnetometer, riometer, and 5577A photometer ten-minute averaged data from the Geopole Observatory, Thule Air Base, Greenland, for the period 01 July 1974 - 31 March 1976, is presented along with a thirty-second data survey for the same sensors of energetic particle and magnetic disturbance events for the winter seasons 1973-74, 1974-75, and 1975-76. The occurrence of these events in relation to the interplanetary magnetic field sector structure and Godhavn 30 MHz riometer absorption, is discussed. Five energetic particle events are examined in greater detail. An analysis of the 5577A night airglow in the northern Polar Cap is discussed. (Author)

Final rept. 1  
Jul 73-30 Jun  
76,

Scientific-  
2,AFGL-TR-76-  
93 0197

Detailed quarterly studies at North Inlet, South Carolina, have shown variation in wave parameters, beach and inlet morphology, and tidal hydraulics which are related to seasonal climatic patterns. Wind magnitude and direction, occurrence of northeast storms, and brackish water influx from adjacent Winyah Bay are significant process variables. Over 800 unique visual wave observations indicate that annual resultant wave energy flux is directed to the south. Beach profiles at 11 locations show that erosion is primarily due to northeast storms and that the shoreline is transgressive. A maximum of 7 meters of foredune retreat was observed during the winter of 1972-73, contributing abundant sediment to the ebb tidal delta, which has a present volume of over 35,700,000 cubic meters. The only beach not severely eroding lies immediately south of the inlet where the ebb tidal delta affords protection from northeast storm wave approach, and onshore migration of swash bars provides sediment to the longshore transport reversal.

Final rept.,

191 WES-GITI-10

Contents: Welding and Riveting; and Materials. null

NISC-TRANS-  
116 3998

radioprotection by aminothiols have been investigated through the use of cultured mammalian (CHO) cells and a whole-animal model, specific-pathogen free mice. For each of these systems, detailed structure-activity relationships were determined relating the effects of the different drugs on various endpoints for the survival of clonogenic cells and on the induction and repair of several types of DNA lesions in these same cells. The data with cultured cells have been used as a means of understanding or predicting the effects of the phosphate-blocked derivatives of these thiols on tissues. The major finding from the in vitro studies is the fact that the modulation of cell survival and DNA double-strand break induction correlates closely for a series of structurally-different thiols and aminothiols. The in vivo studies suggest that tissue oxygenation plays an important role in determining both the extent and mechanism of protection, and that understanding the interrelationships between oxygen, aminothiols and radiation sensitivity will be a crucial step in our ability to utilize such drugs effectively. Keywords: RA V; Radiation protection; Drugs; Drug screen; Mice; DNA damage; Animal survival; Cell survival; Bone marrow; Jejunun; Cultured cells; Aminothiols; Radioprotection.

Final rept. 1  
Feb 1986-30  
Sep 1988

54 null

Olcott Harbor is located in Olcott, a village of the town of Newfane, NY, at the mouth of Eighteenmile Creek at lake Ontario. A report, completed in 1978, recommended modifications to the harbor, including the construction of various lakeshore facilities. Construction was authorized to begin in 1986, but due to legislative, technical, and physical changes the project was reevaluated. This General Reevaluation Report documents technical studies. As a result of the reevaluation a plan called the Refined Plan 10A Modified was selected. This plan met all economic, engineering, and environmental criteria. However, due to current policy constraints the plan could not be approved and the current recommended plan is no Federal action.

Final rept.

965 null

In the past year, we have made considerable progress in pursuing the specific aims of our proposal. We have investigated interaction of HIV with monocyte-macrophages. We have successfully identified responsive elements in the long terminal repeat (LTR) of HIV which interact with steroid hormone receptors that function as transcription factors. Importantly, we have characterized the differential response in monocyte-macrophages compared to T cells which depends upon expression of such receptors. In addition, we have begun to pursue transduction of monocyte-macrophages using the adeno-associated virus vector system for purposes of introducing anti-HIV gene.

Annual rept.  
28 Sep 92-27  
Sep 93,

58 null

Contents: Aeromedical Support In Military Helicopter Operations - Introduction And Overview; Stressful Mission Profiles, Part I; Stressful Mission Profiles, Part II - Workload And Fatigue; Visual Problems in Helicopter Operations; Disorientation In Helicopter Flight; Hearing Loss Associated With Helicopter Flight; Thermal Control Problems In Military Helicopters; Medical Aspects Of Helicopter Safety And Crashworthiness; Back Pain In Helicopter Flight Operations; and Aeromedical Support Of Helicopter Medical Evacuation And Rescue; Operations.

Lecture series.

99 AGARD-LS-134

The report discusses the results of original research by the authors on the structure of the detonation front and the limit conditions of excitation and propagation of detonation in condensed media. Much attention is also paid to the general state of the theory of detonation. The book is designed for technical and engineering personnel and scientific workers, involved with research and the use of explosives.

null

FTD-HT-23-  
242 1889-71

This report, Part A of Phase I, recommends that the chemical sections of the commands considered be increased to provide these chemical sections with an acceptable CBR operational readiness capability. In addition to the chemical sections at division, corps, and field army levels, this report considers and recommends the reorganization of the chemical sections of the logistical and missile commands. This report also recommends that the current cellular team, 'LA,' Radiological Center, be redesignated a Chemical, Biological, and Radiological Team and that its mission be expanded to include chemical and biological functions.

Final rept.

80 null

The U.S. Navy has long been assigned the mission of helping to protect the Sea Lines of Communication (SLOCs) of Southeast Asia. During the Cold War, the mission was viewed in strategic military terms: the U.S. needed to be able to move military supplies through the region in crises, and deny the SLOCs to the Soviets. Now that the Soviet threat has diminished, what national economic interests are at stake? In early 1995, Secretary of State Christopher issued a warning to the nations quarreling over the Spratly Islands. The U.S. does not take sides in this dispute, but will not accept the disruption of trade passing through the South China Sea. This study shows that the American position is based on direct national economic interest, as well as quasi-altruistic concern for the welfare of other nations. Final rept.,

28 CAB-96-0005

All around the country photovoltaic systems are providing reliable power for lighting, communications, remote site electrification, remote monitoring, warning signs, water pumping, restroom facilities, vehicle battery charging, cathodic protection and facility power. It is no wonder that photovoltaic power supplies are now the standard for many agencies. The U.S. Coast Guard uses photovoltaic power exclusively for its remote navigation aids. The National Park Service (NPS) is rapidly increasing the number of installed photovoltaic systems at its remote facilities because they are compatible with the NPS's objective of sustainable design. The list goes on! The demand for photovoltaic modules increases each year. In 1993, approximately 20 megawatts of U.S. supplied collectors were installed in stand-alone photovoltaic systems like the ones described in this publication.

Revised rept.

37 null

Appendix I, Digest of Public Hearings, contains a record of oral and written testimony presented at initial public hearings held at the beginning of the Comprehensive Water and Related Land Resources Study of Puget Sound and Adjacent Waters and at public hearings held at the conclusion of the study. Volume II, 1970 Hearings, presents testimony received in May and June of 1970.

null

381 null

This Volume of the Final Environment Impact Statement (EIS) includes comments and responses on the Draft EIS for the Peacekeeper Rail Garrison program at F.E. Warren Air Force Base (AFB), Wyoming and ten candidate deployment installations; all original written comment documents; and public hearing transcripts (comments sections only) as recorded by court reporters for each of the 11 public hearings held on the Draft EIS. Keywords: Guided missile launchers, Guided missile silos, Air Force planning, Air Force facilities.

Final rept.

838 null

null

null

683 null

Henceforth the standard donor in the NOL large scale gap test will be 50/50 pentolite pellets pressed to a density of 1.56 g/cc instead of the tetryl pellets previously used. The pentolite donors will be supplied by NAD, Crane, Indiana. This report gives the current calibration curve for the large scale gap test with the pentolite donors. null

17 NOLTR-70-25

The growing interest in high performance ships, such as hydrofoils, has necessitated a corresponding interest in high strength materials. These materials, which have a high strength to weight ratio, must meet specific requirements, such as ease of fabrication, high toughness at low temperatures, and good resistance to environmental cracking. While there are several types of alloys which can meet the requirements for strength, low temperature toughness, and ease of fabrication, the selection becomes much more limited when the resistance to environmental cracking is considered. The first high performance ship in the Canadian Navy was the hydrofoil HMCS BRAS d'OR. The cracking that occurred in the 1700 MPa (250 ksi) Maraging Steel foils of this ship severely limited the evaluation of the hydrofoil concept. The cracking resulted from unexpectedly high residual welding stresses and a low resistance of the welded material to crack initiation under both the freely corroding and the cathodically protected conditions. (Author) Materials rept.,

26 DREP-78-E



investigate the effects of a nuclear explosion on various structures and systems. Systems, Science and Software fielded an experiment to demonstrate the feasibility of mounting pressure gauges with built-in electronics in a manner to effectively isolate the ground shock and permit continuous output (pressure reading) for a period starting prior to zero time and continuing until power is terminated at the recording trailers. The shock isolation package was mounted to the end-of-stemming bulkhead located in the TAPS crosscut (the cross-drift leading to the TAPS from the by-pass drift). To evaluate the effectiveness of the shock isolation system, two high g rated accelerometers were attached to the stemming bulkhead and two lower rated accelerometers were attached inside the package. Continuous signals were recorded from each of the four accelerometers as well as from the two pressure gauges from minus two minutes until the recording trailer power was terminated at plus five minutes. The two bulkhead-mounted accelerometers showed good agreement with groundshock arrival at 72 ms after zero time and a peak acceleration of 71g. Inside the shock isolated package the first acceleration was recorded at 77 ms and the peak acceleration was 10.8g. The two

Final rept. 20  
Jun 77-30 Nov  
78,

SSS-R-79-  
3863,DNA-  
4807F,SBI-AD-  
31 E300 720

The AGARD Multilingual Aeronautical Dictionary (MAD), second edition, published in 1980, contained 7,300 technical terms defined in English but also translated into nine other languages. The preparation work was performed by some 250 scientists and engineers who were members of AGARD and involved the translation skills of staff in many of the NATO nations. Nearly all the compilation and setting work for the book was done by computer and automatic photo-composition, a task of great complexity and one which is unique. The purpose of this publication is to record how the task was approached, in terms of management planning; to state frankly what went wrong, so that these errors will not be repeated; and to make some modest reference to the successes of the programme. It does not deal in great detail with the technical aspects of the task. (Author)

null

46 AGARD-R-684

This paper examines Clausewitz's concept of the culminating point of victory (CPV) to analyze the World War II North African campaigns of Rommel and Montgomery. The goal of the paper was to determine how CPV is seen in the conditions under which these commanders waged their campaigns. A framework of analysis, based largely upon the ideas of Clausewitz and to a much lesser extent on Rommel, was developed to determine the status of CPV for each major battle. This framework consisted of ascertaining the state of (1) personnel, (2) fixed assets, (3) ground, (4) supplies, (5) cohesion, (6) allies, (7) morale, (8) leadership, (9) vigor, and (10) time at appropriate periods. For the campaigns under analysis, vigor and supplies were found to be the most critical variables- -with supply having the greatest influence upon the outcome in North Africa.

Student essay

32 null

SHARP (Ships Analysis and Retrieval Program) is a self-contained generalized Data Base Management System developed and operational on DTNSRDC's CDC 6700 SCOPE 3.4 Computer System. Data bases may be constructed, maintained, and queried interactively from remote terminals. English-like user oriented languages are used for data base definition, report definition, and query specifications. Sharp is also operational on the IBM 370, UNIVAC 70/45, UNIVAC 1108, and NOVA ECLIPSE Computers. null

DTNSRDC-TM-  
212 188-76-1

This thesis deals with some selection and ranking procedures for restricted families of probability distributions. A selection rule is proposed for distributions which are convex-ordered with respect to a specified distribution  $G$ . Some properties of this selection rule are derived. The asymptotic relative efficiencies of this rule with respect to other selection rules are evaluated. A selection rule is also proposed and studied for distributions which are  $s$ -ordered with respect to  $G$ . Some interval estimation problems for the unknown parameters of the  $k$  populations are studied. The infimum of the probability that a given confidence interval (based on suitably chosen order statistics) contains at least one good population is obtained. Different modifications and variations of this problem are also studied. The selection procedures are discussed in terms of majorization and weak majorization. The parameter is partially ordered by means of majorization or weak majorization. A class of procedures  $R_{\text{sub } h}$  for selecting the best population is defined.

Technical rept.

MIMEOGRAPH-  
123 SER-464

The purpose of this report is to give a general 'feeling' for what the U.S. Navy accomplished in Vietnam during January 1966. January 1966 contents: Coastal Surveillance; 'Chinese Nationalist' trawler, Junk Interception at PhuQuoc, Coastal Group 33 Incident; VC ACTIONS: Base Harassment at Coastal Group 16, Minings and a V.C. Defector; U.S. Actions: Operation ANDANG, SAR operations, DER/WPB/PCF Combined Operations, Task Force 116, Coast Guard, Navy Chaplains and Doctors, Military Sea Transport Service, Naval Advisory Effort; Enclosures: (1) Extracts of Chaplain's Report, III MAF, (2) Extracts from Senior Medical Officer, Danang, (3) Reports from Senior Medical Officer, Advisory Team 54, (4) MSTs Reports.

Summary rept.

85 null

Theoretical efforts at understanding the band structure of, and hence electron transport in, alloy semiconductor materials are described. In particular, calculations of band structure and transient and equilibrated velocity-field relationships are being performed for  $\text{Ga}(x)\text{In}(1-x)\text{As}$  and  $\text{Ga}(x)\text{In}(1-x)\text{As}_y\text{P}(1-y)$ , materials which may be suitable for fast logic or microwave devices. Methods for describing pseudopotential variations and chemical disorder in alloys are discussed. (Author)

Final rept. for period ending 31 Jan 79.

AFOSR-TR-79-22 0928

The effects of increasing failure and of individual differences in the complexity of conceptual structure on dyad decision-making teams were examined. A complex experimental simulation environment was used as the research method. It was found that simple subjects engaged in more delegated information search than complex subjects, probably due to the influence of social desirability. No differences between simple and complex groups of subjects were found in self-initiated information search. This form of search increased with initial increasing (lower) failure levels, and remained fairly constant under higher failure levels. Two measures of integrative information utilization were employed. The number of information search moves later utilized in integrative (strategic) decision making produced an inverted U- shaped curve with optimal levels under moderate failure conditions. Efficiency of information utilization showed a general decrease as failure increased. Complex groups of subjects exceeded simple groups on both measures of information utilization. The data produced only limited support for complexity theory, and did support, where applicable, the information search theory of Feather.

Technical rept.

31 TR-18

A methodology has been developed at DRDC Valcartier for the calibration of infrared (IR) cameras when taking IR signature measurements of military targets. This methodology is the basis of WinISAS (Windows Infrared Signature Analysis Software) developed at DRDC Valcartier for the radiometric analysis of IR imagery and consists of a radiometric calibration of the grey levels in the image, using extended reference blackbody sources. The methodology has been developed and used mainly for the IR signature analysis of extended targets, fully resolved by the camera IR sensor. The purpose of this memorandum is to demonstrate that the same methodology and WinISAS software can be applied to the measurement of point targets, which are targets with an angular coverage smaller than the individual detector element angular coverage in an image acquired from a two-dimensional IR focal plane array camera.

null

DRDC-  
VALCARTIER-  
32 TM-2004-076

Central problems in the performance evaluation of computer systems are the description of the behavior of the system and characterization of the workload. One approach to these problems comprises the interactive combination of data-analytic procedures with probability modelling. This paper describes methods, both old and new, for the statistical analysis of non-stationary univariate stochastic point processes and sequences of positive random variables. Such processes are frequently encountered in computer systems. As an illustration of the methodology an analysis is given of the stochastic point process of transactions initiated in a running data base system. On the basis of the statistical analysis, a non-homogeneous Poisson process model for the transaction initiation process is postulated for periods of high system activity and found to be an adequate characterization of the data. For periods of lower system activity, the transaction initiation process has a complex structure, with more clustering evident. Overall models of this type have application to the validation of proposed data base (sub) system models.

null

NPS-  
56 55LW76092

This report summarizes work that quantifies the benefits of composite patch repairs on cracked metallic aircraft structures. The first chapter describes a data base on bonding methods and repair materials that can be used in design and analysis. In the second chapter, analytical models are derived for the stress intensity factor of cracks in metallic sheets with bonded orthotropic repairs. Specific configurations included through-the-thickness center cracks, through-the-thickness cracks at a loaded fastener hole, surface cracks, and surface cracks at a hole. These analyses can be used in calculations of crack growth life extension resulting from the bonded repairs. Four types of specimens were tested in fatigue to verify the increase in fatigue life. The four configurations were edge crack specimens, surface specimens with multiple site damage (MSD).

Final rept. Oct  
1990-Feb 1992

DOT/FAA/CT-  
188 92/32



The Long Term Resource Monitoring Program (LTRMP) completed 2,797 collections of fishes from stratified random and permanently fixed sampling locations in six study reaches of the Upper Mississippi River System during 1997. Collection methods included day and night electrofishing, hoop netting, fyke netting (two net sizes), gill netting, seining, and trawling in select aquatic area classes. The six LTRMP study reaches are Pools 4 (excluding lake Pepin), 8, 13, and 26 of the Upper Mississippi River, an unimpounded reach of the Mississippi River near Cape Girardeau, Missouri, and the La Grange Pool of the Illinois River. A total of 66-76 fish species were detected in each study reach. For each of the six LTRMP study reaches, this report contains summaries of: (1) sampling efforts for each combination of gear type and aquatic area class, (2) total catches of each species from each gear type, (3) mean catch-per-unit of effort statistics and standard errors for common species from each combination of aquatic area class and selected gear type, and (4) length distributions of common species from selected gear types.

null

259 98-P008

This report cites results of a technical investigation as to the dam's adequacy. The inspection and evaluation of the dam is as prescribed by the National Dam Inspection Act, Public Law 92-367. The technical investigation includes visual inspection, review of available design and construction records, and preliminary structural and hydraulic and hydrologic calculations, as applicable. An assessment of the dam's general condition is included in the report. Based on visual inspection, available records, calculations and past operational performance, Clove Lake Dam, initially listed as a high hazard potential structure but reduced to a low hazard potential structure as a result of this inspection, is judged to be in fair overall condition and the spillway is considered adequate. The low hazard potential classification means that in the event of failure of the dam, no loss of life and only minimal economic loss is expected. For the same reasons no further studies are recommended.

Final rept.,

DAEN/NAP-  
53842/NJ0025  
127 9-81/08

An evaluation was made on the effects of using antimisting kerosene (AMK) on the performance of the components from the fuel system and the combustor of a current in-service JT8D aircraft engine. The objectives were to identify problems associated with using antimisting kerosene and to determine the extent of shearing or degradation required to allow the engine components to achieve satisfactory operation. The program consisted of a literature survey and a test program which evaluated the antimisting kerosene fuel in laboratory and bench component testing, and assessed the performance of the combustor in a high pressure facility and in an altitude relight/cold ignition facility. Performance of the fuel pump and control system was evaluated in an open loop simulation. Thus far, results of the program would not preclude the use of antimisting kerosene in a jet engine application. Final rept. Sep (Author)

79-Nov 80,

PWA-5697-  
29,FAA-CT-81-  
58,NASA-CR-  
53 165258

The collective model of ferromagnetism is applied to various models for the upper third of the 3d band profile of bcc alloys of transition metals. In the first band profile, a rectangular subband with rounded lower and upper edges is considered, assuming an intra-atomic exchange integral just large enough to produce ferromagnetism. The low-temperature specific heat coefficient has a sharp peak at the electron concentration where ferromagnetism starts (almost empty sub-band), and a deep minimum at the concentration with largest saturation magnetization (half-filled sub-band).

null

38 TR24

In support of Project 7744 - Motion Drive Signals for Flight Simulators, a review of the literature concerning motion simulation was conducted. Abstracts were included for 682 references. A primary objective of this review was to compare data from the various studies to identify general trends on the effects of motion on performance and training. The publications were listed alphabetically by author, chronologically, and also grouped into eight major categories as follows: reviews and bibliographies; equipment descriptions; requirements; algorithms and drive techniques; effects of motion; evaluation; vertical motion, and cost effectiveness. (Author)

Final rept. 30  
Sep 77-30 Jun  
78,

NAVTRAEQUIP  
749 C-IH-298

but it is still necessary to speculate about the details of the processes. Roughness elements and contact areas must be characterized before the basic processes can be well understood. These parameters change with movement over snow and, in fresh snow, probably change along the length of the slider. Friction results from a mixture of processes: dry, lubricated, and possibly capillary. Dry rubbing occurs at low speeds, loads, and/or temperatures and is characterized by solid-to-solid interactions requiring solid deformation. With small quantities of meltwater present, elastohydrodynamics must be used to account for processes at partially separated surfaces and, when too much water is present, the contact area increases and there may be capillary attachments. Static charging probably occurs and may attract dirt that, even in the size range of micrometers, could complicate the processes. Slider thermal conductivity and even color are very important. Heat is generated by friction and solar radiation absorption but some is conducted away by the slider and ice particles. The remaining heat is available to generate meltwater, which acts as a lubricant. Polyethylene bases offer many advantages including low ice adhesion, high hydrophobicity, high hardness and elasticity, good

Monograph  
 rept.

CRREL-MONO-  
 48 92-2

This paper provides the conceptual foundation for stochastic-duels and then develops a modest extension to more realistic combat situations. Simple Stochastic models for the fundamental duel and the classical duel are reviewed. A modest extension is developed for the theory of multiple duels: when all firing times are continuous random variables, an expression for the probability of winning such a duel is derived by using the theory of continuous-time Markov chains. (Author)

Master's  
 thesis,

44 null

Included are both the technical history of training devices and the issues which currently confront their design and use. These subjects are discussed by a group of distinguished scientists and engineers to commemorate a quarter of a century of progress in military training. A blend of human factors and engineering papers reflects the twin thrusts that make up the educational tools that are training device systems.

null

NAVTRADEVCE  
245 N-IH-223

One of the main problems in digital filter implementation is that all practical devices are of finite precision. Therefore, the finite word length effect of digital filters is an area of high interest. There are various types of digital filter structures. Due to the effect of finite word length registers, each digital filter structure gives a slightly different output response for the same transfer function. Therefore, it is important to find the best filter structure which has the lowest affect on the output response for the same transfer function. In this paper, six IIR (Infinite Impulse Response) digital filters and six FIR (Finite Impulse Response) digital filters are investigated, theoretically, for the low sensitivity due to a finite work length register. In addition, the six FIR digital filters are simulated by computer to obtain practical results. Finally, it will be shown that NS (Nested Structure) digital filter produce the 'best' response if minimum sensitivity is the figure of merit. (Author)

Master's  
thesis,

AFIT/GE/EE/83  
238 D-32

This study outlines the design, implementation, and testing of the General Control Model as applied to the Future Theater-Level Model (FTLM) for the control of Joint and Allied Forces for all operational sides. The study develops a notion of battlefield control and describes the characteristics necessary to represent this notion of control in a computer simulation. Central to the implementation of the General Control Model is the robust capability for the user-analyst to describe any control relationship of research interest and to do so without having to alter the programming code. The user-analyst is provided the capability to determine the cause and effect relationship of different control representations in a simulation. A full description of the model is complimented by an explanation of the implementation to facilitate the use of the General Control Model. A discussion of the initial test results leads to a more rigorous test which confirms the intended behavior of the General Control Model in FTLM. Lastly, recommendations for future improvements to the General Control Model and FTLM are outlined to assist future research endeavors.

Master's  
thesis

125 null

The Final Proceedings for 24th European Conference on Laser Interaction with Matter, 3June 1996 - 7 June 1996 Inertial Confinement Fusion, Hydrodynamic Instabilities, Coronal Interactions, Physics of High-Density Matter, Radiation Transfer, X-Ray Laser, Short-Pulse Interactions, Laser-Driven Experiments, Laser-Driven Reactor Concepts, and Laser Developments.

null

EOARD-CSP-98-  
698 1021

A 7-in. diameter, 98-ft-long air gun has been installed at the Harry Diamond Laboratories (HDL) for use in fuze testing. The air gun is bidirectionally interfaced to a timeshare computer that acts as the test controller and promptly records test data. Streak photographs taken of the simulated ballistic environment are reduced by a computer-controlled microdensitometer. The resulting digital data are further computer analyzed to provide velocity versus time and acceleration versus time profiles of the test environment. This report details the purchase, inspection, acceptance, and construction of the 7-in. air gun. Instrumentation and data reduction procedures are described. To date, 34 air-gun shots have been made. Projectile velocities up to 530 ft/sec have been attained. Average impact test accelerations of 15 g from 1.2 to 1.5 msec in duration have been achieved. Technical memo.

51 HDL-TM-75-13

the cockpit of each new generation of fighter aircraft is becoming more and more cluttered, and the workload imposed on the aircrew more and more formidable. Heavy loads of information from the different aircraft sensors must be assimilated and managed in a timely and efficient manner. Severe physiological stresses are imposed by the environment of rapid onset, high sustained-G-accelerations in which the aircraft operate. Such heavy demands may well limit the ability of aircrew to perform their required tasks. As a result, there is a compelling need to obtain more objective measures of the effects of such factors as workload, fatigue, physiological stress, drugs and diseases on operator effectiveness in the high stress environment of the future cockpit, if performance is to be meaningfully assessed. A variety of new or upgraded techniques for studying the function of the central nervous system (CNS) is now available; they may allow the objective assessment of aircrew in terms of selection, performance, training and medical care. Many of these techniques rely on extracting and interpreting the electrical potentials and magnetic fields that can be recorded from the brain with scalp sensors. The purpose of this Symposium was to examine the value of these CNS measures in understanding human performance in individuals null



Crew fatigue associated with successive and unaugmented 36 h missions was evaluated in B-1B simulators. Data were obtained from 32 operationally qualified crewmembers. All crewmembers completed three consecutive, long duration missions, each preceded by 33 to 35 h of crew rest. Oral temperature, salivary melatonin and cortisol, as well as actigraph and subjective measures, were collected during all missions. Temperature and melatonin data indicate that crews maintained their local home base circadian cycles. Elevated cortisol and subjective fatigue during the first mission indicate that it was the most difficult of the three. Furthermore, quality and duration of sleep were lowest during the first mission. These findings emphasize the need for realistic training in long duration fatigue management to improve the safety and effectiveness of the first and subsequent missions. Interim rept. Sustained operations, Global research, Global Power, Melatonin cortisol, Temperature.

15 Oct 1992-	
15 Mar 1993	8 null

An analytical method is outlined, and a related computer program Viscoplastic Beam Analysis (VPBA) is discussed, for prediction of response of a viscoplastic cantilever beam to ground shock. Some beams, which could be built using standard piping, are designed and analyzed using inputs typical of those on the floating shock barge. (Author)

Rept. no. 2 (Final) 1 Jan-31 Dec 76,	112 null
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The organization, program and research accomplishments of the Air Force Office of Scientific Research, a unit of the Office of Aerospace Research, USAF, are described. Emphasis is placed upon the role of AFOSR in procuring and managing a program of basic research in the sciences, carried out at university, industrial and non-profit research organizations worldwide, in response to current and long range Air Force technological interests and requirements. The research program is presented to enable Air Force user organizations and DOD research administrators and managers to gain immediate access to on-going research of direct and related interest, and to gain more detailed understanding of all AFOSR activities, and particularly those designed to couple research and research applications.

null

AFOSR-67-  
228 0300

null

null

ABMA-DV-TR-  
167 2-60

Command and Control Technology) project is to improve data processing capability for shipboard Command and Control Information Systems (CCISs) by developing a multiprocessor testbed. The general purpose of the ASCACT testbed is for the integration of high performance Commercial Off-The-Shelf (COTS) products into the shipboard CCIS in order to resolve the envisioned high speed, high throughput, data base intensive applications of the future. The ASCACT testbed will allow investigations to occur on any combination of these requirements. To fulfill the objective of an ongoing task sponsored by the Directorate Maritime Ship Support (DMSS 8), the Defence Research Establishment Valcartier (DREV) is currently providing consulting services in support of the ASCACT project. The content of this document responds to the requirements of Activity 1 of the task. In that respect, the document identifies and describes the R&D work conducted at DREV in the areas of Multi-Sensor Data Fusion (MSDF), Situation and Threat Assessment (STA), and Resource Management (RM) that can potentially be used in the ASCACT testbed. It also discusses the level of effort to port that technology to ASCACT. In addition, an overview of the ASCACT project, a discussion of

Technical  
memo

DREV-TM-  
128 9518

energy loss were computed for different values of electron temperature and density. These coefficients and the neutral density yield the rates for net ion production and radiative energy loss from all sources except the resonance lines. Energy loss from resonance lines and the ion production cost are considered separately. The following general conclusions can be drawn: (1) the area within 0.4 mm of the emitter is a source of ion-electron pairs, the rest of the plasma being a sink; (2) inelastic energy losses decrease monotonically from the emitter to the collector; and (3) these effects are relatively independent of cesium pressure, but are generally proportional to output density. Furthermore, the differential equations governing the transport of particles, momentum, and energy in the plasma between the electrodes of a thermionic converter were more completely formulated. Specific advances are the inclusion of more exact coefficients for electron transport and for ion production and radiative energy loss in the plasma volume. In diode experiments, the electron temperature was determined from measurement of the continuum emitted by radiative recombination to the 6P states of cesium, and the electron density was determined from Stark broadening of the

Final rept. 1  
Dec 1966-30  
Nov 1967

69 SRRC-CR-68-4

magnetic filter in tandem magnetic multicusp  
 negative hydrogen ion sources was conducted to  
 determine the mechanism of thermal electron  
 diffusion, explain thermal electron cooling,  
 describe the transport of primary electrons  
 through the filter, and model positive ion species  
 transport. The thermal electron flux was shown to  
 exceed its classical value by one to three orders of  
 magnitude. The flux variation with temperature  
 was best described using a Coulomb-like  
 temperature gradient drag term, consistent with  
 diffusion due to ion-sound-like turbulence.  
 Thermal electron energy flux loss was shown to  
 be dominated by inelastic collisions at low values  
 of the particle flux. Consequently, an equation  
 was derived which correctly reproduces the  
 observed variation in the ratio of source to  
 extraction chamber densities as a function of the  
 ratio of source to extraction chamber electron  
 temperatures. The primary electron flux was  
 found to be one order of magnitude higher than  
 the classical collisional rate. Positive ion species  
 transport was modelled assuming ballistic flow.  
 Ion production and loss mechanisms were used in  
 conjunction with transport to calculate extracted  
 positive ion species percentages. Results were  
 found to be in reasonable agreement with

Doctoral  
 thesis,

AFIT/DS/ENP/  
 242 91-02

These appendices concern remedial investigations  
 at Fort Devens Sudbury Training Annex in  
 Maynard, Massachusetts. Items shown are  
 geotechnical data, geophysical surveys, water  
 level measurements, groundwater elevation data,  
 aquifer hydraulic characterization, groundwater  
 model report, Sudbury background data,  
 ecological investigation field forms, and water  
 quality parameters.

Final rept.

640 null

null

Conference  
 proceedings

397 null

DREV is investigating concepts for the development of a computer based, real time decision support system that can provide combat system operators with advanced support capabilities for countering the current and anticipated threat to the Canadian Patrol Frigate. Among its principal roles, this system will continuously take in data from the ship's sensors and other information sources; support the formulation, maintenance and display of an accurate tactical picture derived by fusing all available data, leading to enhanced situation awareness; and assist in determining and selecting a response to anticipated or actual threats. This document examines a range of concepts for the design of the system, focusing on automation, cognitive and methodological issues. It also exposes preliminary ideas of a novel model based framework that is being developed to support design.

Technical rept.

88 DREV-R-9801

The Field Ion Microscope has the highest resolution yet attainable; its magnification power being of the order of 1,000,000 X. A review of technique and theory shows that the microscope has a built-in capability of searching a specimen along a third dimension by removal of surface atom layers. Using the FIM to study the tungsten-carbon alloy system, this technique of evaporation allows one to investigate the distribution of carbon about slip bands and the distortion of the tungsten host lattice due to the presence of the carbon interstitial. A model is presented for determining carbon content in carburized specimens. The presence of carbides is discussed along with the effect of the interstitial atom on the tungsten surface layer. Suggestions for improvement and extended work are presented.

Doctoral thesis

71 ARPA-E-33

This report is a summary of the proceedings of a conference on Atomization, Sprays, and Droplets sponsored by SQUID at Northwestern Technological Institute in September 1953.

Seventeen papers and discussions were presented. Abstracts or references to each are given. Four of the papers are given in entirety.

Technical rept.

121 TR-NTI-1-C

The factors which govern the distribution of electrons and ions in the earth's exosphere are discussed. The theory takes into account the effect of the electric field which arises from charge separation, the centrifugal force arising from the rotation of the earth and the effect of the earth's gravitational field. It is assumed that the charged particles are constrained to move only along the direction of the earth's magnetic lines of force. The modifications that result in the electron and ion distributions when a temperature variation is assumed along a line of force are also considered. The results predicted by the theory are compared with actual experimental observations of the exospheric plasma which have been obtained in recent years using whistlers and using topside ionograms made by the Alouette satellite.

Technical rept.  
no. 4

SU-SEL-63-  
107 110,TR-3412-3

This report describes the results of a limited effort to extend the capabilities of the interferometric strain gage (ISG) to high temperatures at high heating rates on graphite and tungsten. The specified temperature limit was 2500 F, which was to be reached in a time of approximately two seconds. Experiments were conducted using a specially constructed furnace at Michigan State University to evaluate various facets of the technique, and the high heating rate experiments were conducted at Southern Research Institute. The ISG is based on the motion of laser-generated interference patterns from the specimen surface. If suitable reflecting surfaces can be made that will withstand the high temperature environment, then the technique has great potential. Details of the techniques and instrumentation, as well as descriptions of the various evaluative experiments, are included in this report.

Final technical  
rept. 1 May 75-  
31 Mar 76,

AFML-TR-76-  
63,GIDEP-E140-  
72 2625

Four contemporary sound ranging techniques are examined in an environment chosen to insure optimal performance characteristics for each. A data base is employed which is free of external contamination so that effects of truncation of arrival times and variations among algorithms are the sole contributors to observed differences in behavior. Noteworthy is the interplay which emerges between truncation effects and system response to meteorological errors. In addition, a direct comparison of techniques is given in context. (Author)

Research and  
development  
technical rept.,

ERADCOM/ASL-  
71 TR-0018



During the period September-December 1944 the US XX Corps encircled and reduced Metz as a preliminary move to enhance the continued attack eastward of the US Third Army. Recognizing the strategic and political importance of the city, seizure by US forces was strongly contested by elements of the German First Army. The Battle is an excellent example of a Corps sized operation against a well fortified and defended strong point, as well as combat in urban terrain.

Student paper

CSI-  
BATTLEBOOK-  
84 13-A

null

Final rept.

496 null

This report is a six part statistical summary of surface weather observations for Jacksonville IAP, Florida. It contains the following parts: (A) Weather Conditions; Atmospheric Phenomena; (B) Precipitation, Snowfall and Snow Depth (daily amounts and extreme values); (C) Surface winds; (D) Ceiling versus Visibility; Sky Cover; (E) Psychrometric Summaries (daily maximum and minimum temperatures, psychrometric summary of wet-bulb temperature depression versus dry bulb temperature, means and standard deviations of dry-bulb, wet bulb and dew point temperatures and relative humidity); and (F) Pressure Summary (means, standard, deviations, and observation counts of station pressure and sea-level pressure). Data in this report are presented in tabular form in most cases in percentage frequency of occurrence or cumulative percentage frequency of occurring tables.

Final rept.

USAFETAC/DS-  
82/004,SBI-AD-  
445 E850 138

null

null

Perrins Marsh Dam, which is also known as Brown's Pond Dam or Schoonover's Lake, consists of a six-foot-high stone wall, backed by earth fill on the upstream side. In its present configuration, the dam appears to be about 50 to 60 feet long, with a 28-foot-long segment forming the overflow section of the dam. The overflow section is capped with a six-foot-wide concrete slab which appears to be about one foot thick. The earth fills flanking the overflow section gradually merge into the natural abutments with no discernible embankment-abutment junction. The dam does not appear to have any low level outlet facilities. It appears that this dam was constructed at the outlet of a natural lake to raise the lake level. The dam is classified to be in the significant hazard category. Below the dam, Whitelock Creek flows about 150 feet, falls over a stone wall, then flows under a bridge. A house located downstream of the bridge is considered to be in the floodplain of the creek. The stream flows adjacent to a rural residential area for approximately one mile, and then discharges to an essentially uninhabited valley. It is estimated that a failure of this dam would likely cause damage to the downstream bridges and property in the rural residential area. Loss of a few lives is considered possible.

null

55 null

Stage 2 investigation was conducted at MacDill AFB and Avon Park AFR, Florida, to confirm the presence or absence of contamination at twelve sites. Eight of the twelve sites were previously investigated under Phase II, Stage 1 efforts. Four sites had not previously been investigated under Phase II efforts. A field program was conducted, consisting of geophysical surveys, the drilling and installation of 28 monitoring wells, an aquifer pumping test in the surficial aquifer, and the collection and analysis of groundwater, surface water, and sediment samples. At MacDill AFB, no significant contaminants were found at two of the sites. These sites were recommended for no further action. At three other sites no significant contamination was found but other evidence suggested that additional study should be considered before specific action at these sites is recommended. Significant contamination was found at three sites and these sites were recommended for additional investigation. One site at MacDill AFB was recommended for remedial action. At Avon Park AFR, all three sites showed no significant contamination and were recommended for no further action. Keywords: Water pollution, Hazardous wastes, Hydrogeology, Monitoring, Tables(Data).

Final rept. Jun  
1986-Jul 1988

656 null

Partial Contents: Solid State Physics, Electronics and Optics: Materials and Fabrication: Heterostructures for High Performance Devices; High-Frequency InAlAs/InGaAs Metal-Insulator-Doped Semiconductor Field-Effect Transistors (MIDFETs) for Telecommunications; Chemical Beam Epitaxy of Compound Semiconductors; Focused Ion Beam Microfabrication; Quantum-Effect Devices; Statistical Mechanics of Quantum Dots; Single Electron Transistors; Differential Resistance Through a Quantum Dot: Signature of Kondo Correlation; Submicron and Nanometer Structures Technology and Research; Optics and Devices: Optics and Quantum Electronics; Optical Propagation and Communication; and High-Frequency (>100 GHz) Electronic Devices

Technical rept.  
1 Jan-31 Dec  
92

ARO-28925.58-  
400 EL

This report furnishes airport activity of the large Certificated Route Air Carriers. Included in the detailed data contained in Table 6 are passenger enplanements, tons of enplaned freight, express, and mail. Both scheduled and non-scheduled service, and domestic and international operations are included. These data are shown by airport and carrier. Table 7 includes departures by airport, carrier and type of operation, and type of aircraft. Keywords: Departures; Scheduled service; Non-scheduled service; Domestic; and International.

null

365 null

A method for the detection and identification of fuel components in diesel lubricating oil is described. The method uses a capillary gas chromatograph coupled to a quadrupole mass spectrometer to separate, detect and identify diluents in the oil. A typical analysis takes 40 minutes. Accurate determination of the level of fuel dilution of a diesel lubricating oil sample using GC/MS is shown to be dependent upon a number of factors including the source of the fuel, the age of the fuel, the thermal history of the fuel diluted diesel oil sample and the availability of a suitable sample of fuel to prepare standard response versus concentration curves. Canada.

Technical  
memo.

DREA-TM-  
31 89/203

null

null

162 TS-7-2-36-V-2

The primary task of the study was to develop alternative hospital system designs, using current state-of-the-art concepts, technology, and management procedures with the objective of designing the most efficient hospital for construction commencing in mid-1972. The secondary task was the definition of system improvements arising from R + D opportunities available in time for prototype construction in the 1975-1980 period.

Final rept. 25  
Jun 1969-24  
Nov 1970 on  
Phase 1

563 null

null

Final rept.

765 null

The equations of motion for steady incompressible flow in an annulus with fluid removal or injection at the porous walls have been reduced to a pair of ordinary differential equations by Terrill. The solution of the related problem of a plane channel with a moving wall can be expressed in terms of the corresponding results for a stationary wall. That solution is obtained in the present work. The solution is used to determine the drag on the moving wall. Preliminary experimental results with an apparatus consisting of a porous outer cylinder and a solid rotating shaft indicate satisfactory agreement with the theoretical calculations for the case of fluid injection.

Master's  
thesis

57 EM-72-2

This survey is prepared by the Central Intelligence Agency from lists received through the cooperation of US government agencies and includes translations prepared by such agencies, private industry, universities, research institutions, and commercial translation organizations. It is a compilation of foreign documentary projects completed or started during the preceding month. Translations are listed by area and subject category. Scientific projects are grouped as a section regardless of geographic area. Title in English, author, foreign language title of source of material, date of publication identification of the completed projects are given when available. Tables of contents of journals translated cover-to-cover are reproduced from the current publications.

null

343 null

This report describes work done under DNA Contract 001-79-C-0189 from February 1982 to June 1983, and some more recent work. Part I includes treatments of a simple zero-D implosion code, analytic but very approximate scaling laws for radiation, and a discussion of preliminary work on nonlinear field penetration of plasma. Part II contains a discussion of electrodiffusive 1D modeling of annular plasma implosions. The thermoelectrical field, its role in field penetrations, the nonlocal constraints required in field diffusion (and some arising from field diffusion), flux limits and the acceleration process for annular plasmas are discussed.

Technical rept.  
Feb 82-Jun 83,

JAYCOR-J800-  
83-003,DNA-  
6304F,SBI-AD-

132 E301 681

null

null

309 null

The 'stress-corrosion-fatigue' performance of several high strength- aluminum alloys was investigated by tests of hydraulic cylinders and other types of specimens. Specimens were prepared from forgings and forging stock of alloys 2014-T6, 7075-T6, 7075-T73, 7079-T6, and X7080-T7 and from premium castings of alloy CH70-T7. Alloy 7075-T73 rated best in the corrosion-fatigue tests; no stress-corrosion cracking occurred in this alloy, and the lives of forged cylinders subjected to repeated loadings to 80% of design stress in a corrosive environment were at least 10 times as long for this alloy as for forged cylinders of alloys 2014-T6, 7075-T6, or 7079-T6. Fractographic examination showed that stress-corrosion cracking as well as fatigue cracking occurred in alloys 2014-T6, 7075-T6, and 7079-T6 in the stress-corrosion-fatigue tests. The investigation demonstrated that stress corrosion and fatigue can interact under certain conditions to produce failures in shorter times and fewer cycles than for either phenomenon occurring by itself.

Final rept. Jun  
1967-Nov  
1970

AFML-TR-70-  
140 259

null

null

12 null

The basic Jungle Canopy Platform system consists of two support net assemblies, a means of transporting and laying the nets, a platform for emplacement on the nets and various items of auxiliary equipment. The system has a variety of uses for handling troops and cargo.

Final rept.,

72 null

A method is derived for finding the linear response and loading transfer functions for the lateral aerodynamic case of airship flight through atmospheric turbulence. The functions obtained are in a form that can be applied to the various spectral analysis methods used to predict survivability currently employed by designers. A numerical example using the USS AKRON (ZR-4) is presented. The results show that peak motion response and loading occur when the encountered spectral component has a wavelength equal to the airship length, and that simple feedback of heading angle does not significantly decrease this peak.

Master's  
thesis

151 null

Contents: The Soviet Military Establishment; Forces for Global Warfare; Theater Forces; Sustainability, Readiness, and Mobility; Soviet Military-Industrial Complex; Research and Development; The Global Challenge.

3RD EDITION.

139 null

Much progress was made in characterizing the principal plasma physics phenomena involved in the plasma 3 wave mixing scheme under experimental investigation by Dr Bob Schumacher of Hughes Research Labs. Bennett pinching was found to be extremely important in focussing the counterstreaming electron beams in the device. The ion modulation instability was identified as the crucial remaining issue to be studied for improving the signal purity of this millimeter wave source.

Final rept. 1  
May 1986-30  
Sep 1988

JAYCOR-J530-  
88-  
664/2473,AFO  
92 SR-TR-89-0134



The purpose of this study was to identify various state-of-the-art techniques and approaches which could be integrated to provide a system suitable for the storage, retrieval, and handling of a wide variety of graphic materials proposed as a data base for a Reconnaissance Technical Squadron. The study was performed by detailing the definition of the problem; reviewing current practices in organizations concerned with graphic materials; surveying available equipments having potential application; reviewing techniques and approaches as revealed in current literature; testing representative types of storage equipment; analyzing factors related to indexing and organization as they affect material storage; and synthesizing a representative solution for the types and volumes of graphic materials assumed - all with simplicity of design and manual handling as study objectives. The results obtained included rating information on different techniques of storage; selection of representative equipment types; layout of a storage area to accommodate the estimated volume; and selection of a material storage addressing method.

Final rept.

R-3001-  
4,RADC-TDR-  
530 64-202

in this paper we attempt to identify and eliminate various approaches to synthesizing fully testable sequential circuits that can be modeled as finite state machines (FSMs). We first identify classes of redundancies and isolate equivalent-state redundancies as those most difficult to eliminate. We then show that the essential problem behind equivalent-state redundancies is the creation of valid/invalid state pairs. We devote the remainder of the paper to techniques for developing differentiating sequences for valid/invalid state pairs created by a fault, as well as to techniques for retaining these sequences in the presence of that fault. A variety of techniques have been proposed to address this problem. At one end of the spectrum there are optimal synthesis procedures that ensure full testability by eliminating redundancies via the use of appropriate don't care sets. At the other end of the spectrum there are constrained synthesis procedures that produce fully and easily testable sequential circuits by restricting the implementation of the logic. The optimal synthesis procedures require fewer constraints on the logic but increase the expense of logic optimization to the point that CPU time requirements may be unacceptable. The constrained synthesis procedures require

null

VLSI-MEMO-  
11 89-570

The MRS symposium on In-Situ Patterning: Selective Area Deposition and Etching brought together a wide selection of microfabrication technologies and detailed studies of their enabling mechanisms. The common thread through the invited and contributed papers is the chemical and/or physical alteration of surfaces by the actions of ion, electron, or photon energy. The applications ranged from state-of-the-art lithographic techniques, to direct processing of semiconductor surfaces, aiming to obviate lithography in device fabrication. This direct processing encompasses patterned deposition of metallic conductors and insulating films, as well as local etching and doping of device structures. The work demonstrated in this symposium ranged from the detailed atomic behavior of treated surfaces, to nuts-and-bolts packaging techniques for the high-density descendants of today's printed circuit boards.

Final rept. 22  
Nov 1989-21  
Nov 1990

AFOSR-TR-90-  
485 1058

This bibliography is designed to be helpful to the  
 researcher and manager engaged in the  
 developing technology within the discipline areas  
 of the Large Space Systems Technology (LSST).  
 Also, the designers of large space systems for  
 approved missions (in the future) will utilize the  
 technology described in the documents  
 referenced herein. This literature survey lists 512  
 reports, articles and other documents announced  
 between January 1, 1987 and June 30, 1987 in  
 Scientific and Technical Aerospace Reports (STAR),  
 and International Aerospace Abstracts (IAA). The  
 coverage includes documents that define specific  
 missions that will require large space structures to  
 achieve their objectives. The methods of  
 integrating advanced technology into system  
 configurations and ascertaining the resulting  
 capabilities is also addressed. A wide range of  
 structural concepts are identified. These include  
 erectable structures which are earth fabricated  
 and space assembled, deployable antennas which  
 are fabricated, assembled, and packaged on Earth  
 with automatic deployment in space, and space  
 fabricated structures which use pre-processed  
 materials to build the structure in orbit. The  
 supportive technology that is necessary for full  
 utilization of these concepts is also included.  
 These technologies are identified as analysis and    null

NASA-SP-  
 140 7046(17)

null

Conference  
 paper

50 null

This report contains a frequency count of the basic vocabulary contained in the Army Soldier's Manual for the MOS/Skill Level designated in the title (item 4). This frequency count reflects only skill levels 1/2 and excludes the common tasks and those sections which are redundant/incidental to vocabulary analysis (e.g. table of contents, appendices, references, charts, etc). This vocabulary is only a sampling of the entire MOS vocabulary and is subject to change with MOS changes. (Author)

Final rept.,

45 MOS-82C

Waterborne Transportation Lines of the United States contains information of the vessel operators and their American flag vessels operating or available for operation on 1 October 1987 in the transportation of freight and passengers. A summary of the information contained follows: Table 1 - Operators, addresses; Table 2 - Vessels, type and construction, net registered tonnage, length, breadth, draft, horsepower, carry capacity, etc.; Table 3 - Description of operations, type of service, principal commodities carried and localities served.

Rept. for 1 Oct  
1987-31 Aug  
1988

947 WRSC-TL-87

This thesis involved the development of a microcomputer program to help tailor Logistic Support Analysis (LSA), Mil-Std-1388-1A, requirements for contractual efforts. It is referred to as the LSA Decision Support System (DSS) Program. This program is intended to aid working level logisticians in developing good first-cut LSA requirements. There are four main features in the program: (1) Mil-Std-1388-1A task and subtask descriptions with added notes from LSA experts, (2) a replication of the applicability matrix in Mil-Std-1388-1A, (3) a unique tailoring portion with notes from LSA experts, and (4) the AFALC LSA Lessons Learned as of July 1988. The programming language used is dBASE III PLUS; it is required to run the LSA DSS program. The program was structured to be easily updated and expanded. Keywords: Menu; Computer program documentation; Computer program files.

Master's  
thesis

AFIT/GLM/LSY  
225 /88S-17

We live in an age that is driven by information. Technological breakthroughs... are changing the face of war and how we prepare for war. Information war has no front line. Potential battlefields are anywhere networked systems allow access to oil and as pipelines, for example, electric power grids, telephone switching networks. In sum, the U.S. homeland may no longer provide a sanctuary from outside attack. A panel of Defense Department experts recently warned the nation about the prospect of an electronic Pearl Harbor, a crippling sneak attack on the nation's defense and civilian information systems in which cyberterrorists" and other unknown assailants cripple the nation's

null

85 null

Dames and Moore has conducted a Remedial Investigation (RI) of the Presidio of San Francisco (PSF), CA. The objectives of the RI included the determination of the nature and extent of contamination of PSF and to quantify both the human health and ecological risk posed by that contamination. The report concludes that, in general, the Presidio does not pose a significant risk to either human health or the environment. There are, however, a number of locations where elevated risks are present. The remedial actions to abate those risks will be identified in a follow-on document called the Presidio Main Installation

Final rept.

SFIM-AEC-ER-  
CR-98018-VOL-

428 6

This final report documents the Helicopter Payload Position Sensors Program. This program was an 8-mo investigation of techniques for determining position and motion of helicopter slung loads. Initial program tasks included a review of slung load dynamics due to: (1) aerodynamic instabilities in the higher speed range, and (2) vehicle-load interactions during low-speed maneuvers and hover. This review and an analysis of current and projected load stabilization concepts, provided the basic performance requirements for the payload position sensor. The investigation included the influence of suspension systems configurations and load types.

Final rept. 1  
May 1973-1  
Apr 1974

74-  
10379,USAAM  
115 RDL-TR-74-71

This study involved the analyses, parametric studies, simulations, preliminary design efforts, and planning necessary to develop meaningful definitions of the experiments and experimental hardware required to fulfill the objectives of the MOL program. Volume I summarizes the entire study. Volume II presents the results of an elemental simulation program conducted to assess man's ability to perform the planned experiments.

Final rept.

SSD-TR-64-237-  
195 VOL-1

severe that they threaten its democracy and present a major challenge to United States security policy. With the economy in a desperate state, and social tensions dividing its people, Peru is plagued by rising insurgency. The country is heavily dependent on the income from the production of coca, from which the majority of the world's cocaine is derived. The United States wishes to reduce coca production, but the Peruvian government resists demands to make meaningful inroads into the industry, recognizing the threat to its fragile democracy from alienating the one million people who depend on it; a concern also shared by the United States. A fresh approach is required by the supporting power, which would recognize the financial realities, and provide suitable support and advisory structure. With the adoption by President Fujimori of a counterinsurgency strategy modeled on British experience in Malaya, and the United States an unchallenged position on the world stage, the moment seems ideal to embark on a new approach. However, disparity of interests between the Administration and Congress, the legacy of Vietnam, and domestic pressures in an election year, prejudice the implementation of a suitable strategy.

Study project

71 null



~~These approaches to computer image~~

segmentation group sets of pixels according to visible features of an image such as edges, color, brightness, and curvature. Such approaches exploit specialized object properties to obtain satisfactory groupings, which can force those techniques to be domain specific. Furthermore, they do not provide a physical explanation for the image, nor do they group regions that have a single physical structure yet differing visible features. This paper presents a new approach to segmentation using explicit hypotheses about the physics that creates images. We propose an initial segmentation that identifies image regions exhibiting constant color, but possibly varying intensity. For each region, hypotheses are proposed that specifically model the illumination, reflectance, and shape of the 3-D patch which caused that region. An image region may have many hypotheses simultaneously, and each hypothesis represents a distinct, plausible explanation for the color and intensity variation of that patch. Hypotheses for adjacent patches can be compared for similarity and merged when appropriate, resulting in more global hypotheses for grouping elementary regions. This approach to segmentation has the potential to provide a list of possible explanations for a given image; to group

Technical rept.

CMU-RI-TR-93-  
36 29

We have been studying animal/plant symbiosis using a model system of a single cell plant, the symbiotic dinoflagellate Symbiodinium. We have cultured the two partners as a consortium as well as independently. We have been describing the life history of the newly isolated and poorly known amoeba, and investigating its interactions, with several species of these symbiotic dinoflagellates.

Final rept. Jun  
88-May 91,

101 null

Methods were investigated, both theoretically and experimentally, for production of liquid-solid mixtures of hydrogen ('hydrogen slush'). Small scale experiments were conducted to determine the feasibility of a number of techniques; the practicability and costs for these methods were determined theoretically. The theoretical analyses showed that techniques for producing hydrogen slush by vacuum pumping appeared most practical in view of capital investment and operating costs. Injection of cold helium gas was determined to be the most promising method for upgrading the solid content of slush mixtures after transfer to flight vehicle tankage. The theoretical analyses were verified within expectable error by large scale experiments in a low heat leak apparatus that permitted visual observation of experiments through a periscopic device. Liquid-solid hydrogen mixtures were produced having solid contents ranging from 20 percent to 55 percent. A number of characteristics were noted which varied with the production techniques used and with attempts to upgrade the quality of the slush produced. Some mixtures were flowable, and others were not.

Final rept. 15  
Nov 1962-15  
Dec 1963

262 AFAPL-TDR-64

null

null

462 F-TS-7068-RE

null

Operational  
rept. for  
quarterly  
period ending  
31 Jul 1969

OACSFOR-OT-  
16 UT-693182

recreational boating accidents is presented. Its development and application are described. The model is used to estimate the benefits of regulatory programs in four recovery problem areas. Methods and problems in benefit estimation are described and recommendations for further development of ARM are offered. An investigation of the causes of sudden and unexplained drownings is reported, including a review of the biomedical literature and an analysis of boating accident reports. Development of the Life-Saving Index (LSI) is described, and its application to the approval of personal flotation devices (PFDs) is discussed. Past mathematical modeling efforts related to PFD effectiveness are discussed. A pilot experiment is reported and alternative empirical methods for evaluating PFD effectiveness are presented. A large-scale observational study of PFD wear and accessibility, and a study of PFD-related attitudes and preferences are reported. A preliminary index of PFD wearability is formulated. Initial data on PFD quality control and reliability problems are presented. Procedures for evaluating PFD reliability are outlined. Functions which future PFD designs could fulfill and features of inflatable and hybrid devices are reviewed. Tests of two

Final rept. Jul  
75-Jul 76,

MSR-76-  
43,USCG-D-3-  
348 77

The Final Proceedings for NATO Advanced Research Workshop on Nanostructured Films and Coatings, 28 June 1999 - 30 June 1999. This is an interdisciplinary conference. Topics include nanostructure synthesis and processing, modeling, characterization and properties (mechanical, biological, chemical, electronic and magnetic), and applications.

Conference  
proceedings

EOARD-CSP-99-  
381 5023

The study describes the development of an innovative wide-beam plasma burner which avoids the hitherto commonly found limitations in plasma burners and might open up new fields of application as well. The new plasma burner is compared to its predecessors in chapters two and three, the latter of which also includes a description of the usage parameters and potential of reactive plasma gases. Important characteristics of the arc discharge are discussed in chapter four. The stability of the arc discharge and the quality of the plasma lame are examined in chapter five by means of adapted electrical, magnetic, optical, acoustic, and calorimetric processes of measuring. The new burner shows marked improvement in safety, work conditions, and process gas composition.

Dissertation  
rept.

123 null

In the spring of 1849, the rebel Hungarians defeated the Austrian army and liberated their country. The leaders of this struggle were Louis Kossuth, one of Hungary's most brilliant statesmen, and Arthur Gorgey, one of Hungary's most talented generals. Franz Joseph I of Austria begged for help to Nicholas I, the Russian Tsar, who, in the name of the Holy Alliance, sent 200,000 soldiers to put down the Hungarian revolution. The two great patriots, Kossuth and Gorgey, had different strategies for waging a war against such heavy odds. The politician intervened into military operations while the general wanted to dictate national policy. They clashed when Hungary had no time for the luxury of internal conflicts. The Hungarian War of Independence did not fail due to domestic challenges, but it was eventually defeated by the combined Russo-Austrian offensive. This thesis presents a concise history of the Hungarian War of Independence, with a focus on the relationship between Governor-President Louis Kossuth and General Arthur Gorgey.

Master's  
thesis

100 null

outlines the hurricane submodel theoretical development and numerical implementation. The theoretical development of the long and short wave equations is presented in PART III. Detailed numerical implementation of the hydrodynamic relations is given in PART IV. A seiche calibration and verification of the bottom friction mechanics in the hydrodynamics are developed independent from surface wind stress effects in PART V. In PART VI, the wind stress in the hydrodynamics and hurricane model is calibrated using the August 1949 hurricane. Both the planetary boundary layer and standard project hurricane windfield formulations are considered. In PART VII, the October 1950 hurricane is used to further substantiate the hydrodynamics employing the standard project hurricane approach. In PART VIII, Hurricane David is simulated with the present levee configuration again using the standard project hurricane approach. In PART IX, design hurricane conditions are developed. A representative levee breach is simulated under probable maximum hurricane conditions to demonstrate the model's capability to predict flooding potential. In PART X, major study results are collected, conclusions drawn, and technology transfer efforts itemized. Appendices A and B

Miscellaneous  
paper,

CERC-MP-86-  
227 12

Report contains Appendices A through H.  
Addendum reports for Operable units 4, 8 and 9. Final rept.

SFIM-AEC-RP-  
CR-97006-VOL-  
801 2

The purpose of this thesis is to identify the functions and responsibilities of the Naval Postgraduate School personnel who routinely manage operating and research funds; and to develop a comprehensive, entry level financial management guide to assist cost center personnel in effectively managing these financial resources. The management guide provides an introductory background to the key financial concepts and terms associated with the Navy's Resource Management System (RMS), followed by a description of the procedures necessary to prepare the financial documents commonly used at the Naval Postgraduate School. The guide then depicts the basic flow of the School's financial documents, and concludes with recommended procedures for preparing, maintaining and reconciling sub-cost center accounting records. The guide is primarily intended for use in the cost and sub-cost centers of the Naval Postgraduate School, Monterey, California.

Master's  
thesis

330 null

The papers in this book stem from the Third Topical Meeting on Photonic Switching organized by the Optical Society of America and held in Salt Lake City in March of 1991. The papers in this book consist of extended and enhanced submissions from authors who participated at the meeting. The papers have been grouped into eight sections: Space-Division Switching (guided-wave), Space-Division Switching (freespace), Time-Division Switching, Wavelength- Division Switching, Multi-Divisional Switching, Logic and Control, Optical Interconnection, and Novel Devices. Finally, the papers contained within this volume represent the leading edge of research in photonic switching, therefore, the reader should gain a reasonably balanced overview of the current state of photonic switching.

Final rept.,

AFOSR-TR-92-  
290 0518

arXiv:1607.08010v1 [astro-ph] 27 Jul 2016

multicomponent plasma conservation equations of mass, momentum, and energy, as well as the expressions for the associated multicomponent transport fluxes and coefficients. The multicomponent Navier-Stokes regime is reached for the heavy particles and is coupled to first-order drift-diffusion equations for the electrons. We deal here with first-order equations for electrons, thus one order beyond the expansion commonly investigated in the literature. The derivation relies on kinetic theory and is based on the ansatz that the particles of the plasma are inert and only possess translational degrees of freedom. The electromagnetic field influence is accounted for. In Section 2, we introduce the Boltzmann equation, derive the H-theorem and the Maxwell transfer equations. In Section 3, we express the Boltzmann equation in the heavy-particle velocity frame. This step is essential to establish a formalism where the electrons follow the bulk movement of the plasma. Then, we define the reference quantities of the system in order to derive the scaling of the Boltzmann equation from a dimensional analysis. The multiscale aspect occurs in both the streaming operator and collision operator of the Boltzmann equation. We use a Chapman-Enskog method to

Conference paper

41 null

We report the detection of far-IR CO rotational emission from the prototypical Seyfert 2 galaxy NGC 1068. Using Herschel-PACS, we have detected 11 transitions in the  $J(\text{upper}) = 14\text{--}30$  ( $E(\text{upper})/k_B = 580\text{--}2565$  K) range, all of which are consistent with arising from within the central 10 (700 pc). The detected transitions are modeled as arising from two different components: a moderate-excitation (ME) component close to the galaxy systemic velocity and a high-excitation (HE) component that is blueshifted by approx.  $80 \text{ km s}^{-1}$ . We employ a large velocity gradient model and derive  $\text{E}(\text{H}_2)$  approx.  $10(5.6) \text{ cm}^{-3}$

Journal article

21 null

To help develop more awareness about bird strikes and bird strike reduction techniques, this thesis compiled all relevant information through an extensive literature search, review of base-level documents, and personal interviews. The final product--A Bird Strike Handbook for Base-Level Managers-- provides information on bird strike statistics, methods to reduce the strike hazards, and means to obtain additional assistance. The handbook is organized for use by six major base agencies: Maintenance, Civil Engineering, Operations, Air Field Management, Safety, and Air Traffic Control. An appendix follows at the end.

Master's  
thesis

AFIT/GLM/LS  
223 M/84S-52

null

Technical rept.

60 NACA-TN-896

Advances in artificial intelligence (AI) will enable future fighter / attack aircraft to have a rather unique crew -- one human and one electronic. The objective of the workshop was to bring together AI specialist and cockpit designers in order to exchange ideas relative to 1) the state of the art in aircraft applications of AI technology and 2) the impact on the cockpit of the human/electronic crew. This meeting provided a valuable forum for the experts of several countries to exchange ideas, concepts, and data relative to hardware and software capabilities that can be included in an aircraft system design to aid the human operator in performing the mission. Keywords: Electronic crewmember; Artificial intelligence; Pilots; Man computer interface.

null

WRDC-TR-89-  
172 7008



This report results from a contract tasking Radio Physical Research Institute (NIRFI) as follows: The objectives of the project were: (i) integrated experimental, theoretical and computer simulation studies of non-linear plasma phenomena, produced in the upper ionosphere by powerful HF radiation and giving rise to plasma density irregularities with a wide range of cross-field (relatively to geomagnetic field lines) scales from centimeters to tens of kilometers, (ii) investigation of an influence of these irregularities on characteristics of HF and VHF radio waves passed through the ionosphere disturbed volume, and (iii) control for long distance propagation of HF radio waves through an ionosphere wave-guide channel by means of radio wave scattering from small-scale field-aligned irregularities.

Final rept. 1  
Apr 2003-3  
Apr 2007

EOARD-CRDF-  
164 02-9001

Two hundred and five (205) technical reports written during the period 1 July 1954 - 30 June 1955 are abstracted. These reports cover the following areas of research: adhesives, metallurgy, analysis and measurement, biochemistry, textiles, petroleum products, plastics, packaging protective treatments and rubber. In Section 2 are listed ten (10) reports issued during July 1952 - June 1954 which were not mentioned previously. As a final summary, a corrected numerical index of all the technical reports issued during the period March 1923 - June 1955 is provided.

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WADC-TR-53-  
373-SUPPL-  
2,WADC-TR-53-  
139 373-S-2

investigate the robustness to departures from independence of methods currently in use in reliability studies when competing failure modes or competing causes of failure associated with a single mode are present in a series system. The first specific aim is to examine the error one makes in modeling a series system by a model which assumes statistically independent component lifetimes when in fact the component lifetimes follow some multivariate distribution. The second specific aim is to assess the effects of the independence assumption on the error in estimating component parameters from life tests on series systems. In both cases, estimates of such errors will be determined via mathematical analysis and computer simulations for several prominent multivariate distributions. A graphical display of the errors for representative distributions will be made available to researchers who wish to assess the possible erroneous assumption of independent competing risks. A third aim is to tighten the bounds on estimates of component reliability when the risks belong to a general dependence class of distributions (for example, positive quadrant dependence, positive regression dependence, etc.). Keywords: Scenes(Mathematics); and Mathematical models.

Annual rept. 1  
Oct 84-31 Oct  
85,

AFOSR-TR-85-  
133 1215

Stress corrosion cracking of high strength, structural aluminum alloys, such as 7075 in the T6 temper, is a commonly encountered problem. Recently, an alternative heat treatment, known as retrogression and reaging, has been proposed. It is purported that this heat treatment imparts a stress corrosion cracking resistance for 7075-T6 equal to that of the T73 temper, with only a negligible decrease in yield strength. In order to fully characterize this heat treatment, the plane strain fracture toughness,  $K_{Ic}$ , and the resistance to fatigue crack growth were compared to those of the same alloy in the normal T6 condition. Small increases in each of these mechanical properties were detected. The acoustic emission (AE) response to crack growth during testing was also investigated. It was determined that the number of AE signals is proportional to the crack length or total crack area. This response is consistent with proposed mechanisms for acoustic emission in this material. It is further noted that no significant difference exists in the AE response of 7075-T6 in the normal and retrogression-reaged conditions. (Author)

Materials  
rept.,

20 DREP-82-C

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National Airspace System (NAS) users, the Federal Government is implementing the Next Generation Air Transportation System (NextGen). The success of NextGen will rely, in part, on the ability to provide the right information to the users that need it, when they need it. NextGen is implementing a net-centric environment to ensure that relevant, accurate, timely, and well-understood information is available to any authorized consumer and irrelevant information is filtered out. The ability to precisely direct information to users is accomplished through the use of ontologies and semantic technologies. An ontology is a set of terms, arranged hierarchically, that represent the real world objects and processes within a given domain (e.g., weather, surveillance, and safety) that has been encoded in a formal, machine-readable language. Within the context of information sharing, the ontology is used to more precisely define the meaning of an organization's data elements and attributes. The ontology provides the basis for a semantic search capability that goes well beyond simple keyword searches to searches that take into consideration the meanings of the search term (e.g. a search for dog should find items that contain the word canine since they mean the same thing).

null

27 null

Research on dissemination of solid and liquid BW agents was directed towards the development of weapon systems for the dissemination of these agents as a line source from high speed low-flying manned and unmanned aircraft. The results of experiments on feeding of finely divided solid materials with helical screws and piston devices are presented. Experiments on dissemination and deagglomeration are described including preliminary investigations of aerosol generation by erosion and also with a liquid CO2 system. Deagglomeration experiments were in a high-subsonic wind tunnel. Characteristics of finely divided materials are given. Aerodynamic data for wingmounted external stores and the effects of the external geometry and the pylon design on the incremental drag coefficients are discussed.

Quarterly progress rept. no. 2, 4 Sep-4 Dec 1960

110

2161

CONTENTS: Brief Historical Outline of Physiological Space Research; Transmission of Physiological Information from Spacecraft to Earth; Contemporary Physiological Measurement Systems on Spacecraft; Design Principles of Physiological Measurement and Information Systems for Use on Long-Term, Long-Range Space Flights; On-Board Automatic Physiological Information Processing Systems; Some Problems of Physiological Measurement in Interplanetary Flights; Cardiovascular Research Methods; Research on the External Respiratory Function; Methods for Studying the Neuromuscular System and Working Capacity; Methods for Studying the Vestibular Apparatus; Future Trends in the Development of Physiological Research in Astronautics.

null

310 FTD-MT-66-42

CU-1019-A1,AFOSR-TR-76-1116-

null

Final rept.,

25 Attach-1

This Western Europe Report contains articles on Political, Military and Economic Issues.

null

JPRS-WER-86-  
96 051

The Bibliography on Cold Regions Science and Technology was first published in 1951 and is a continuing publication of the Cold Regions Bibliography Project in the Science and Technology Division of the Library of Congress. It is sponsored by and prepared for the Cold Regions Research and Engineering Laboratory. Volumes 1-15 were issued as the Bibliography on Snow, Ice and Permafrost, SIPRE Report 12. Beginning with volume 16 the designation was changed to CRREL Report 12. With volume 20 the title was changed to Bibliography on Snow, Ice and Frozen Ground, with Abstracts, and with volume 23 the current title was adopted. The present volume contains material accessioned between October 1980 and September 1981. It contains the full citation of 4341 items, in many cases with abstracts. Pt. 2 is an index section divided into author and subject indexes.

null

181 null

This paper describes the computer-aided design and manufacture of a prototype core model for a new protective glove. The computer system and software are described as are the design processes in geometry and CNC machining. The construction of sculptured surfaces, machine tool paths and postprocessing software for the shape are laid out and the problems of manufacture of complex geometric parts analysed. The final product was machined on a Matsuura/Fanuc computer-numerical control machine and controller.

null

65 DREO-1054

One of the main elements of the work of the AGARD Technical Information Panel (TIP) is to assist NATO's aerospace research and development activities by improving the effectiveness of scientific and technical information systems which exist in aerospace and defense fields in the various member nations of the Alliance. The choice of theme for this 1979 Specialists' Meeting stems from consideration of this aspect of TIP's work, particularly in relation to the host country, Greece. This document contains(preprints) of eleven papers to be delivered at the conference. Topics of the four sessions are Official Access Facilities for Aerospace Information; Requirements and Tools for International Cooperation and Data Exchange; Problems of Utilization of Aerospace Literature; and Non-literature Data in Aerospace and Development.

Conference  
preprint.

AGARD-CPP-  
49 279

The work of this program has involved comprehensive studies designed to evaluate the feasibility of defeating the mission of an intercontinental ballistic missile by fragment impact and/or by subsequent re-entry heating effects. These effects include: direct kill by impact, extent of aggravation or increase in damage caused by aerothermal effects on an R/V during re-entry, aerodynamic instability of nose cones caused by damage to the heat shield and structure, impact and thermal damage to internal components and warheads, and perturbations on the performance of ICBM booster vehicles.

Progress rept.  
no. 17 for  
period ending  
30 Sep 1964

NRL-6265-VOL-  
152 1

The objectives of Task 37 are to locate, examine, and properly close wells on RMA that may be allowing, or could potentially allow, migration of contamination from upper aquifers to deep aquifers. The technical approach was structured in such a way that unused wells were closed on a prioritized basis according to potential to adversely impact deep aquifers. The study area was limited to those areas of RMA that are within or down-gradient of potential sources of contamination. A total of 39 wells were closed under Task 37. Closure methods followed standard procedures in current use. Information in this report includes: criteria for prioritization; procedures for closure; well location and coordinates; well logs; and well closure logs.

Final draft  
rept.

344 null

The regulatory controls for testing military materiel under adverse environmental conditions of the world deserts are delineated. The desert environment is described and specific characteristics of the major world deserts delineated. Adverse effects of the desert environment on military equipment and materials are discussed. The U.S. Army Yuma Proving Ground is discussed in terms of its facilities and capabilities for evaluating the suitability of military material for operations in analogous areas of the deserts of the world. Desert testing methodology for specific types of Army material is discussed in terms of development and execution of test plans.

Final rept.,

164 null



U.S. entry into Iraq. Since the March 20, 2003, invasion, the Congress has appropriated \$51 billion in foreign aid for relief and reconstruction efforts that have touched every aspect of Iraqi society, from training and equipping its security forces to improving the delivery of essential services. These tens of billions in taxpayer dollars were provided chiefly to four major funds: the Iraq Relief and Reconstruction Fund (\$20.86 billion), the Iraq Security Forces Fund (\$18.04 billion), the Economic Support Fund (\$3.74 billion), and the Commander's Emergency Response Program (\$3.5 billion). As of March 31, 2009, the United States had obligated \$42.16 billion and expended \$37.89 billion for Iraq reconstruction. Several landmark events shaped continuing relief and reconstruction efforts this quarter: Governance. On January 31, 2009, the Government of Iraq (GOI) conducted longawaited provincial elections in 14 of Iraq's 18 provinces, choosing new Provincial Councils that will play increasingly important roles in Iraq's reconstruction. In several ethnically and denominationally mixed provinces, election results corrected representational imbalances caused by the Sunni boycott of the 2005 provincial elections. Moreover, the provincial

Quarterly rept. 225 null

The collection consists of four divisions. The first division covers the questions of sensitivity of explosives to mechanical influences, considered on the basis of new presentations about the appearance of an explosion during shock. Articles in the second division are devoted to the results of the investigation of the thermal disintegration of different nitro esters and certain nitrocompounds. In the third division there is research on the ignition and detonation of explosives. In the fourth division are articles referring to different questions of the theory of explosives.

null FTD-MT-63-824 254

Three computer programs were written with the objective of predicting the structural weight of aircraft through analytical methods. The first program, the structural weight estimation program (SWEET), is a completely integrated program including routines for airloads, loads spectra, skin temperatures, material properties, flutter stiffness requirements, fatigue life, structural sizing, and for weight estimation of each of the major aircraft structural components. The program produces first-order weight estimates and indicates trends when parameters are varied. This volume (Volume 9) contains the instructions and input descriptions for use of the integrated SWEET program.

Technical rept.

ASD/XR-74-10-  
300 VOL-9-APP-A

In this work an attempt was undertaken from the positions of Marxist- Leninist philosophy and Soviet military science to discuss the philosophical bases of cybernetics and the methodology of its application in military affairs. The most important philosophical questions of cybernetics are the clarification of its object, method, volume and content of basic concepts, future of development, and its social (including military) value. The examination of methodological problems of the application of cybernetics in the military affairs proposes the discussion of questions of the specific nature of the sphere of control of a weapon and troops, of the paths for the perfection of systems and processes of control, of contradictions in this area, of automation as means of resolution of these contradictions, of the relationship of man and technology in the automated systems of control of troops, etc.

Journal article

FTD-MT-24-  
168 315-70

Contents: Lunar Program; Ranger, (Systems, engineering mechanics, propulsion, lunar capsule, high resolution TV experiment) and Surveyor (System design summary, scientific instrument payload, system analysis, flight control, electronics, electrical power supply, thermal control, engineering mechanics, propulsion, spacecraft vehicle and mechanisms, reliability and system test, mission operations, and scientific experiments). Planetary-interplanetary program; Mariner R, (Systems, engineering mechanics, and propulsion) Mariner B, (Spacecraft design), Voyager. Advanced Development; lunar, (Ultrahigh-speed optical system, sun simulator) and planetary-interplanetary, (Synopsis, space sciences, spacecraft secondary power, engineering mechanics, and propulsion).

null

NASA-CR-  
256 136577

The LONG BINH/SAIGON TET Campaign was both an offensive and defensive operation designed to preclude rocket/mortar attacks and ground assaults on the LONG BINH/SAIGON areas.

Rept. for  
period ending  
19 Feb 1968

OACSFOR-OT-  
105 RD-68X018

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21 USAMRL-276

...this report presents the results of a study,  
program undertaken to perform a comparative  
analysis of several approaches to the generation  
of high electrical power by storing tens to  
hundreds of kilojoules of energy in a compact,  
superconducting inductive system with efficient  
extraction in short bursts at high repetition rates.  
The critical factors for the comparison were the  
weight, volume, dissipation and reliability of the  
system and components for various operating  
regimes characterized by pulse power, repetition  
rate and pulse shape. Research and development  
work hitherto undertaken in the U.S. and abroad  
indicate the engineering feasibility of operating  
inductive storage systems storing ten to perhaps  
one hundred kilojoules of energy with extraction  
rates of tens of pulses per second at pulse  
durations of the order of a few hundred  
microseconds with state-of-the-art technology.  
The major effort of this study was directed  
towards developing analytical tools to predict the  
performance of superconducting coils at  
repetition rates of 100 - 1000 pps with pulse  
discharge times of 20 - 40 microseconds and to  
evaluate the relative merits of different circuit  
configurations for storage and extraction of  
energy at high average power (3 - 10 MW). At  
frequencies of a few hundred pulses per second, it

Final rept. Jan  
74-Feb 77,

AFAPL-TR-77-  
250 15

Cryocooler Technology Developments at USAF Phillips Laboratory; JPL Cryocooler Development and Test Program Overview; Development and Demonstration of a Diaphragm Stirling 65 K standard Spacecraft Cryocooler; Stirling Space Cooler; Thermal, Vibration, and Reliability Test Results for a Balanced 80 K Cryocooler; Spacecraft Cooler Characterization; Performance of a Long Life Reverse Brayton Cryocooler; SDI cryocooler Producibility Program; Miniature Pulse Tube Cooler; Flow Patterns Intrinsic to the Pulse Tube Refrigerator; Experimental Investigation of the Regenerative Magnetic Refrigerator Operating Between 4.2 K and 1.8 K; A 4 K gifford-McMahon Refrigerator for Radio Astronomy; A Stirling Cycle Cryocooler for 4 K Applications; Regenerator Performance and Refrigeration Mechanism for 4 K GM Refrigerator Using Rare Earth Compound Regenerator Materials; Superfluid Stirling Refrigerator with a Counterflow Regenerator; Graded and Nongraded Regenerator Performance; Evolution of the 10 K Periodic Sorption Refrigerator Concept; Development of a Periodic 10 K Sorption Cryocooler; Assessment of a Hydrogen Joule-Thomson Expander and Vanadium Hydride Sorption Beds for 20 K cryocoolers; Design of a Metal Hydride Sorption

Final rept.

PL-CP-93-1001-  
PT-1,SBI-AD-  
316 E201 515

During the course of research on how to enhance nuclear and chemical warfare training at the National Training Center, a need was identified for field simulators which provide appropriate indications of the simulated environment. Part of the current research is to provide preliminary designs for simulators of the IM-174 radiacmeter, the IM-93 or 185 dosimeter, and the M-43 chemical detector. A method of remotely controlling these simulators by using off-the-shelf commercial pagers appeared to be cost-effective. There appeared to be a significant risk; however, in the ability of a transmission system, constrained by acceptable power levels and frequencies, to communicate with pagers throughout areas of interest at Fort Irwin. The purpose of the test was to verify the capability of commercial off-the-shelf Motorola paging system to communicate throughout an adequate area of Fort Irwin, so that the system could be used to provide remote control of nuclear and chemical field simulators. A secondary objective was to provide a mapping of the pager communications coverage from selected transmission sites at Fort Irwin. Keywords: Army facilities.

Technical rept.  
13 Jun 1983-  
30 Dec 1984

SAIC-R-LJF-84-  
019-APP-  
G,DNA-TR-85-  
67 13-APP-G

This study is part of a broader project on the future of the U.S. Army in Europe conducted within the Policy and Strategy Studies Program of RAND's Arroyo Center. The study assesses the political, economic, and security ramifications of German unification and the future of German-American relations. It should be of interest to U.S. government officials dealing with NATO and Central European affairs. The author would like to thank Daniel Hamilton and F. Stephen Larrabee for their comments on an earlier draft of this report. A special word of thanks also goes to Gerhard Herdegen from the Allensbach Institute for Public Opinion and to Nancy Walker from the United States Information Agency for their assistance in providing the public opinion data used in this report. Research was concluded in September 1990.

null

RAND/R-4021-  
103 A

This extensive work covers a large amount of theoretical territory, beginning with the emergence of the United States as a world power in the mid-nineteenth century, and its inevitable foray into the Asia-Pacific region. The following subjects are then discussed: the definition and status of Asian-American"; the economic difficulties involved in doing business with countries in the Asia-Pacific region; the three major Asia-Pacific wars (WWII

Series  
publication,  
no. 21

175 null

Final report, February 89--Damping of

precision metal matrix trusses, Low modulus  
damping material for precision mounting  
platforms, and Complex stiffness test data for  
three viscoelastic materials by the direct complex  
stiffness method; Viscoelastic material  
measurements--Direct measurement of the  
dynamic material properties of polymers for low  
frequencies, Correlation of complex modulus data  
by direct stiffness and indirect resonant beam test  
techniques, Constitutive modeling of nonlinear  
damping materials, Round robin test series results  
to evaluate complex moduli of a selected damping  
material; Analysis and design--Techniques of  
design and using viscoelastic dampers, and Strong  
criterion for testing proportionally damped  
systems; Applications--The PACOSS dynamic test  
article, Damping design for a disk drive head  
flexure, Characterization of viscoelastic damping  
in an antenna structure, and Laminar blade  
damper; DAMMPS2--Evaluation of damping  
concepts for precision mounting platforms, and  
Three element viscoelastic isolator, Noise and  
acoustics-- Reduction of acoustic responses using  
viscoelastic damping materials, Civil structures--  
Earthquake simulator testing of two damping  
systems for multistory structures; Analysis and  
damping mechanisms--Eddy current-based

Final rept. Feb  
89-Feb 91.

WL-TR-91-  
563 3078-VOL-2



United States strategic interests in Asia and the Pacific have grown substantially and will continue to grow in the future. Central to the continued prosperity and security of the area is the viability of the US-Japan alliance. This essay examines that alliance in terms of overall Japanese policy, to include domestic political constraints, the one percent of the GNP (Gross National Product) defense spending barrier, and a slow but steady trend toward increased Japanese security awareness over the past decade. It concludes that there are several avenues available which, if pursued, will increase the effectiveness of US-Japan defense cooperation while avoiding the difficult domestic and multilateral issues which would be raised by a remilitarized Japan. These avenues include an approach which deemphasizes pressures on Japan to increase defense spending but encourages force improvement, expanded roles and missions for the Japan Self Defense Force(JSDF), increased joint and combined training, and expanded technological exchange. The essay concludes that substantial improvements in JSDF capabilities must be addressed in a multilateral context in order to reach the full potential of the US-Japan alliance.

Student essay,

25 null

The Terminal Access Control System (TACS) is designed to make efficient usage of 25-kHz-wide satellite transponder channels, such as those available on FLEETSAT, GAPSAT, LEASAT. It does so by applying time division multiple access and automated demand assignment techniques to these channels, allowing a significant increase in both data throughput and supportable user population, as compared to the initial, single network per transponder FLEETSAT operating mode. The Terminal Technology Group of Lincoln Laboratory Division 6 has built prototypes of all of the TACS ground segment equipment, as well as special-purpose test equipment used to demonstrate and quantify the performance of TACS. This report describes the implementation details of components of the TACS Central Control Facility as configured for testing at the Laboratory. The components described are: the Multiple access Controller, the Call Simulator, the System Operator's Console, and the Scenario Generator. All differences in implementation/configuration between the testing environment and a full-scale operational environment are noted in the report.

(Author)

Technical  
rept.,

TR-542,ESD-TR-  
182 81-1

The air community has long had a need for a new vulnerability/ lethality (V/L) methodology, one usable by the triservice community. Current models range from manual calculations of total vulnerable area (Av) to complex models of incendiary functioning, fragment penetration, and fire initiation with component fault tree damage modes. Most, if not all, of these models make use of expected value, or deterministic, methods which do not accurately reflect the actual, observed phenomenology. In addition, technological advances in system design and weapon lethality have outpaced the growth of these models. While the community has tried to come to grips with these more complex systems and phenomenology, clearly, the existing models have not. The purpose of this report is to describe the rationale behind the development of a new stochastic, point- burst vulnerability model for air systems which supports the myriad of analyses the air community must perform, as well as to discuss, in general, the technical requirements which generated this need. Aircraft vulnerability, Vulnerability methodology, Models, MAVEN, MUVES, Vulnerability.

Final rept. Jan-  
Jun 1994

29 ARL-TR-581

A task was undertaken to determine possible inadequacies if FAA design standards and guidelines set forth in the Helicopter Design Advisory Circular (AC 150/5390-2). This report is based upon the results of an analysis of helicopter mishaps which occurred within a 1 mile radius of various landing sites, including heliports, airports, and unimproved sites. NTSB and U.S. Army reports describing mishaps that occurred at or near a facility were used. The focus of the analysis was to determine the manner in which facility design may contribute to mishaps. Particular attention was given to issues concerning the size, obstruction clearance, and adequacy of facility protected airspace and operational areas. Mishap type and location, as well as the applicable design issues, were analyzed from the reports and are discussed. This study concludes that overall, the Heliport Design Advisory Circular provides very good guidelines for heliport design and is a valid instrument. Several areas for possible improvement within the document have been identified. Recommendations include areas addressing obstruction marking, facility maintenance, wind indicator location, and guidelines for operations at airports.

Final rept.

SCT-90RR-  
46, DOT/FAA/R  
79 D-90/8

Austro-Hungarian forces from capturing all of Albania in 1916. The Montenegrin-Albanian campaign was executed unilaterally by Austro-Hungarian forces but in a joint environment. In November 1915 the Central Powers decisively defeated the Serbian Army, and Austria-Hungary was keen on continuing the Balkan offensive. This campaign consist of three elements; the Montenegrin operation, the Albanian operation and the supporting naval operation. Montenegro was a small country, but its mountainous terrain and fierce soldiers made their defeat challenging. The decisive factor was the use of artillery and a good plan. Montenegro fell in twelve days. The naval operation designed to prevent the Serbian Army's evacuation failed due to the passivity of the Austro-Hungarian Navy's leadership. During the Albanian operation the advancing troops had extreme difficulties with the terrain, weather and the supply. As the forces reached the Vojusa River, the Austro-Hungarian forces logistically culminated. The frontline stabilized for two years. The campaign was successful, although many opportunities were lost. As a consequence, the Serbian forces were rebuilt, later decisively influencing the Balkan theatre. Furthermore, the Entente Powers built up the Otranto barrage, a

Master's  
thesis

140 null

null

Within the Defense research program V401 'Information Operations for the Army' TNO Human Factors conducts research on the knowledge-based needs and the necessary development of fundamental knowledge for PSYOPS purposes. The ultimate goal of this report was to review current developments in the scientific field of persuasion and influencing behavior.

Rept. for 1 Jan  
1976-1 Sep  
1986

273 null

Final rept.

TN-DV-2006-  
A211,TDCK-  
48 TD2006-0027

In preparation for a major field experiment this report addresses the development of acoustic arrays which are needed in order to make carefully controlled and well-documented measurements of bottom reverberation. The purpose of these measurements is to study the physics of the backscattering process and to quantify backscattering characteristics as a function of physically meaningful parameters (e.g. ensonified area, grazing angle, bottom material properties, bottom roughness, etc.). Specific array systems which are addressed include the following: (a) towed horizontal array, (b) horizontal and vertical array, (c) ship-tethered 64-element vertical array, and (d) self-contained, 16-element vertical array.

Final rept.

21 MPL-U-20/90

The Chemical Hazard Response Information System (CHRIS) is designed to provide information needed for decision-making by responsible Coast Guard personnel during emergencies that occur during the water transport of hazardous chemicals. CHRIS also provides much information that can be used by the Coast Guard in its efforts to achieve better safety procedures and to prevent accidents. CHRIS consists of four handbooks or manuals, a hazard assessment computer system (HACS), and technical support personnel located at Coast Guard headquarters. These components and their relations to one another are described in Section 2 of this manual. null

USCG-  
COMDTINST-  
1034 M16465.12

The need for development of the tool evolved from the fact that current USAF firefighting equipment does not provide rapid access to aircraft fires occurring in airframe voids where access ports are either limited or not provided. This report covers development and construction of an aircraft skin penetrator device to provide rapid penetration and allow placement of a suitable fire suppressing agent onto the base of an aircraft fire. Volume I discusses in detail the research conducted on the development of the proposed working model of the Aircraft Skin Penetrator/Agent Applicator. The report contains photographs of the different concepts considered. Volume II has detailed drawings showing the construction of the working model Penetrator and sketches which show how the Penetrator may be used to fight aircraft fires. Originator supplied

keywords include: Penetrator; Agent; Halon 1211; Final rept. 17  
Trigger turn on; Retention; Functional; Plume; Sep 82-15 Mar  
PMS; Mechanical drawings. 83,

AFESC/ESL-TR-  
33 84-12-VOL-2

Surface pressure variations for turbulent flow over solid wavy surfaces with a wavelength of 2 inches were studied. Measurements were made over waves of two amplitudes, 0.0123 inches and 0.03125 inches. The water flow rate and viscosity were varied so that a range of dimensionless wave numbers (scaled with the friction velocity and the kinematic viscosity) of  $\alpha^+ = 0.0011$  to 0.020 were covered. Pressure profiles are described using a three harmonic fit. A linear response, for which only a single harmonic is needed, was observed for all  $\alpha^+$  for the small amplitude wave and for small  $\alpha^+$  for the large amplitude wave. Of particular interest is the large phase shift of the pressure profile observed with increasing  $\alpha^+$ . These results are used to test the quasi-laminar model for flow over wavy surfaces, widely used to predict wave generation and drag on small amplitude waves. Keywords: Surface pressure; Turbulence; Wavy surfaces.

Progress rept.  
no.8

107 null

Two related silicon compilers developed at MIT's Lincoln Laboratory with a common layout language are examined. The simpler one, the Lincoln Boolean Synthesizer (LBS), is a Complementary Metal Oxide (CMOS) technology based program for generating chips out of arbitrary boolean expressions. MacPitts, on the other hand, can implement advanced programming language constructs in N-Channel (NMOS) technology. A study of their layout language, Lincoln Laboratory's LISP-based Layout Language (L5), and its implementation is presented. In addition, there is also a brief discussion of how Macpitts's functional repertoire can be changed.

Master's  
thesis,

208 null



This compendium of digital SSI/MSI microcircuit device reliability is separated into two volumes. Part I deals with general summaries and detailed listings which address the various aspects of burn-in and environmental/ screening tests at the component level. Devices are classified according to test types and are arranged by test source, device function, operational type, device manufacturer, and commercial part number. Part II contains summaries of failure analysis data based upon failure indicators, failure modes, failure defects, failure defect causes, and failure activating stresses, as well as a detailed listing of verified failure events as derived from device- and equipment-level testing.

null

RAC-MDR-15-  
765 PT-1/2

An extension of the Bock-Samejima model for multiple choice items is introduced. The model provides for varying probabilities of the response alternative when the examinee guesses. A marginal maximum likelihood method is devised for estimating the item parameters, and likelihood ratio tests for comparing more and less constrained forms of the model are provided. Applications of the model are illustrated with item response data for the work knowledge and general science subtests of the Armed Services Vocational Aptitude Battery. (Author)

Psychometric  
technical rept.,

51 TR-1

knowledge of the three-dimensional electron density distribution and the plasma drift in the earth's ionosphere is needed for the radio communication engineer and the geophysicist. The combination of global models, e.g. the International Reference Ionosphere (IRI), modern digital ionosondes, and relatively powerful micro-computers provide the capabilities to overcome the limitations that have heretofore prevented real time ionospheric specification and improved forecasting techniques. The developing network of digital ionosondes provides an improved ionogram data set. The cumbersome evaluation of electron density profiles (EDP), from the ionograms, has been eased with automatic ionogram scaling and related micro-computer based algorithms for calculating EDPs. The purpose of this Scientific Report is to summarize the evolving network of digital ionosondes based on the Digisonde 256 technology and to present techniques that have been developed for calculating electron density profiles and determining the drift velocities. In addition, examples are presented to illustrate related data summaries that can be developed and tailored to the needs of the communication or radar system manager and to the needs of the geophysicist involved in basic and applied research in solar-

Technical rept.  
Jul 87-Jun 88,

ULRF-  
442/CAR,SCIE  
NTIFIC-2,AFGL-  
31 TR-88-0233

The investigation was an attempt to assess the convergent and discriminant validity of the key variables of influence, affect, and activity in small group research by conducting a systematic study which followed and extended a multitrait-multimethod paradigm. Analyses disclosed widespread method variance among all rating methodologies. The implications of the findings for small group research and for research in social and psychological stress are discussed.

Technical rept.

AFOSR-69-  
132 2059TR

This specification establishes design and performance requirements for the Pratt and Whitney Aircraft JTF17A-21B turbofan engine to be certificated in Phase 4 of the Supersonic Transport Program. Significant differences in the design and performance of the Phase 3 Flight Test Status engines for airplane flight testing are noted.

null

96 SPEC-2710

atmospheric pressure has been studied spectroscopically and the existence of a non-local thermodynamic state has been determined. The spectroscopic data consist of several argon neutral and ion line emissions used to spatially resolve electronic energy level population densities in each plasma species. A hydrogen seed is added to the argon flow for the purpose of determining electron number density by Stark broadening analysis of the Balmer series alpha line. Neutral and ionic argon electronic excitation temperatures are calculated from the spectroscopic data. Electron and heavy particle kinetic temperatures are calculated through the use of an appropriate nonequilibrium model which includes multitemperature gas state, and ionization equations. The dominant nonequilibrium effect in this plasma is kinetic nonequilibrium where the electron kinetic temperature can be more than twice the heavy particle kinetic temperature in high laser power flux regions. It is found that a local thermodynamic equilibrium (LTE) analysis of an ion upper energy level population density leads to an excellent prediction of ion number density. This is determined by comparison of the ion number density to the electron number density

Final technical  
rept. 16 Mar  
1991-16 Jun  
1992

UILU-ND-92-  
208 4016

This engineering dissertation investigates the impact of typical supersonic intake disturbances on the performance of a turbojet engine. Wind tunnel experiments are used to calculate the effects of Mach numbers and Reynold's numbers on a model-sized subsonic diffuser. A simulator is used to find ways to improve the performance of a turbo jet engine under supersonic conditions.

Dissertation

191 null

This report presents the first semi-empirical solution suggested to describe the traction versus slip relationship for rigid wheels. The kinematics of a slipping wheel are analyzed and the results are used to express the shear deformation as a function of slip which in turn is utilized in a new shear stress-strain relationship. The shear stresses are expressed at every point of the tire-soil interface surface and integrated to obtain the traction. Other established information is also briefly discussed, in order to complete the description of the state-of-the-art.

null

8091,ATAC-  
8091,ATAC-  
66 LL84

SECDEF Stresses Quality and Absolute Integrity; Taking a Better Aim at Cost Realism Measures; Financial Condition and Contractor Pricing Strategy; Chopping Back the Systems Acquisition Process; Unraveling the Productivity Maze; Channeling Data; Vanguard: AFSC's and Formal Long-Range Planning Process; Software Acquisition Management.

null

52 DSMC-80

This is the final report for Naval Air Systems Command Contract on the mutual coupling effect in a conformal array. It contains a brief administrative summary plus three attachments which give the technical details. (Author)

Final rept. 16  
Nov 77-15 Jan  
79,

UIEM-79-  
2,UILU-ENG-79-  
196 2541

XONICS acoustic echosounder and wind-sensor system has the capability of simultaneously measuring temperature fluctuations in the lower atmosphere and the three wind components as a function of altitude. Reliable wind measurements are rarely obtainable. (Author)

Test and evaluation rept.,

36 NELC/TR-1997

dielectric walls of a Hall thruster has been presented. It accounts for partial thermalization of the electron population through a single parameter  $3/4$  and includes a two-population, four-parameter model for SEE. Analytical expressions are obtained for the main parameters characterizing that interaction, such as the particle and energy fluxes to the walls and sheaths, which are needed as boundary conditions of quasineutral models of the full discharge. The behavior for low thermalization is shown to differ greatly from the commonly-used, high-thermalization case. This is very relevant for Hall thrusters, where there is a growing conviction that electron thermalization is low. At low thermalization, energy losses are close to its minimum, the charge saturation limit is not attainable, and the sheath potential is small; the different roles of beam and primary electrons on these characteristics have been analyzed. Significant decreases of the parallel temperature of primary electrons and, therefore, of the plasma flux into the sheath take place only at the very-low thermalization limit. The investigation of the emission model for secondary electrons has shown that the presence of a relevant fraction of elastically reflected electrons affects greatly the

Final rept. 1  
Aug 2006-1  
Aug 2007

EOARD-06-  
116 3032

The computer simulation code MINI has been developed to study microwave interaction with nitrogen. MINI has self-consistent wave optics, nitrogen chemistry and hydrodynamic effects included. A number of simulations have been performed and compared to experiment showing reasonable agreement. Keywords: Microwave, N2 Breakdown, Air breakdown, Coupling, Interaction, Absorption, Reflection, and High power.

Final rept. 21  
Jan 81-20 Jan  
82

MRC/WDC-R-  
95 025

1) Adventures with accelerators; 2) Demonstration of Plasma Beat Wave Acceleration of Electrons from 2 MeV to 20 MeV; 3) Laser Wakefield Accelerator Experiments using 1ps 30TW Nd:glass Laser; 4) Photonic Band Gap Resonators for High Energy Accelerators; 5) Update on the ATF Inverse Cerenkov Laser Acceleration Experiment.	Conference Papers, 17-20 May 1993	742 null
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Most of the formulas and data in this collection are well known and for all practical purposes are in the public domain. The books and articles cited are intended primarily not for the purpose of giving credit to the original workers, but (i) to guide the reader to sources containing related material and (ii) to indicate where derivations, explanations, examples, etc., omitted from this compilation can be found. Additional material can also be found in D.L. Book, NRL Memorandum Report 3332 (1977).	null	NRL-MR-3332-SUPPL,SBI-AD-61 E000 552
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------	--------------------------------------

The Chinese Communist Army (CCA) does indeed offer a target for psychological operations. It is a tough, well-armored target; but it is not impenetrable. The most promising point of entry to Chinese troops both at home and abroad appears to be through local Chinese civilians. Information thus introduced would circulate within each rank and to some degree between ranks, although neither as rapidly nor as widely as among civilians. Furthermore, the CCA appears vulnerable to intensive leaflet and loudspeaker bombardment, particularly if this provides convincing news of the military situation or of home and family.	null	156 null
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This document describes Diana, a Descriptive Intermediate Attributed Notation for Ada, being both an introduction and reference manual for it. Diana is an abstract data type such that each object of the type is a representation of an intermediate form of an Ada program. Although the initial uses of this form were for communication between the Front and Back Ends of an Ada compiler, it is also intended to be suitable for use with other tools in an Ada programming environment. Diana resulted from a merger of the best properties of two earlier similar intermediate forms: TCOL and AIDA.  
(Author)

null

208 TL-83-4

This book contains refereed papers presented at the Fifth IEEE NWorkshop on Neural Networks for Signal Processing (NNSP'95) at the Royal Sonesta Hotel Cambridge MA on August 31st - September 2nd 1995. NNSP'95 was sponsored by the Neural Networks Technical Committee of the IEEE Signal Processing Society in cooperation with the IEEE Neural Network Council and with co-sponsorship from ONRIARPA and NSF (through CIICE the Center for Biological and Computational Learning at MIT). The Workshop is designed to serve as a regular forum for researchers from universities and industry who are interested in interdisciplinary research on neural networks for signal processing applications. NNSP '95 offers a showcase for current research results in key areas including learning algorithms, network architectures, speech processing, image processing, computer vision, adaptive signal processing, medical signal processing, digital communications and other applications.

null

635 null

shallow subtidal sand-bottom infaunal populations in response to the addition of approximately 765,000 cubic meters of dredged material added to an eroded beach at Imperial Beach, California. A sampling design utilizing small sampling units and extensive replication was effective in generating reliable numerical estimates of infaunal densities and diversity. The dredged material had a high proportion of fine material with lesser amounts of shell fragments. Fine sediments were rapidly transported offshore while shells persisted on the beach. Measured beach effects were short term (5 weeks or less) involving increases in abundance mostly of motile crustacean species which brood their young. Planktonic recruitment of polychaetes was evident during this period. As the fine sediments worked offshore, silt and fine sand fractions increased in the bottom sediments. At subtidal depths, there was a positive correlation between the silt-clay fraction and number of species and abundance. Overall abundance and diversity of the benthos were not adversely affected by beach replenishment. In response to an unpredictable, changing environment (erosion-deposition), most of the resident biota are short-lived, opportunistic species which are typically patchy in distribution

Miscellaneous  
rept.,

129 CERC-MR-78-4

null

Final rept. 1  
Nov 1988-31  
Oct 1990

AFOSR-TR-91-  
32 0193



Accurate crack size measurements are required for fracture mechanics' solution to component life predictions. Usual methods have limitations and the developement of a real-time crack measurement technique would be of great value. The operation and accuracy of the 'Fractomat' device for crack growth measurement is assessed during its normal application to standard fracture mechanics specimens. The technique is found to be at least as accurate as surface microscopic examination. The further application of this technique to crack measurement of in-service flaw location and orientation are known. The potential application is then demonstrated by examination of crack growth during the laboratory fatigue fracture of a typical aircraft structural component, the forward wing trunnion of the CF-100 aircraft. (Author)

Materials  
rept.,

19 DREP-82-E

This report presents a novel Kalman filtering approach to the suppression of narrowband interference from direct sequence spread spectrum communications systems. The algorithm is based on the digital phase-locked loop Kalman filter. Because the interference is assumed to be much stronger than either the signal or noise, the Kalman filter locks onto a function related to the interference. The net result is an estimate of the phase of the interference and its amplitude. The algorithm is characterized through computer simulation for the case of narrowband Gaussian noise interference. Examples of the phase- and envelope-tracking capabilities of the algorithm are presented, followed by bit error rate curves for interference bandwidths ranging from 0.5% to 5.0% of the chip rate of the spread spectrum signal. The report concludes with three adaptive architectures. -The first is suitable for constant envelope interference; the second is a more general structure; and the third incorporate a decision-feedback structure accompanied with a training sequence.

Technical  
rept.,

37 DREO-1118

This study investigated the major schools of thought on various aspects of quality management and quality improvement. Areas covered included definitions of waste and quality, views on the cost of quality, tools and techniques used for quality improvement, and management philosophies and frameworks for continuous improvement. In addition, this study analyzed the structure and training content of the current Total Quality Management program at Aeronautical Systems Division (ASD). Pre- and post-test surveys on employee attitudes toward organizational effective were analyzed from the Advanced Cruise Missile System Program Office (SPO), the F-15 SPO, and the ASD Deputy Chief of Staff for Human Resources (ASD/DP). Data was supplemented with semi-structured, personal interviews with ASD personnel involved in TQM. Survey analysis showed that the ACM SPO significantly improved, ASD/DP significantly digressed, and the F-15 SPO remained basically consistent. This led to the conclusion that ASD allows too much flexibility in the implementation of TQM in the three-letter organizations.

Master's  
thesis,

AFIT/GSM/LSG  
145 /91S-6

The Second Artificial Intelligence (AI) and Simulation Workshop was held during the National Conference on Artificial Intelligence on July 14, 1987 at the University of Washington, Seattle. the abstracts and papers pertain to such topics as: Artificial Intelligence; Computer Science; Copmputer Simulation Modeling; Expert Systems; Knowledge Based Simulation; Computer Modeling ; Operations Research; Qualitative Simulation; and Simulation.

null

140 null

The design, development and implementation of a user-oriented graphics software system is described. The over-all considerations involved in such a design process are discussed, along with the major factors affecting design decisions. The object display system is a RAMTEK GX-100A hosted by a PDP-11/50 computer.

Implementation techniques are also presented. A detailed user's manual is appended, and recommendations for further system expansion are offered. (Author)

Master's thesis,

211 AFIT-CI-78-41

A crisis relocation, as well as other types of civilian evacuation, presents an environment for increased criminal activity. Alternative methods of preventing crime can reduce the opportunity for criminal activity, increase the likelihood of apprehending a criminal, and increase or conserve law enforcement resources. Similarly, alternatives to the usual disposition of prisoners in risk areas can reduce demand on facilities and law enforcement personnel workload. This Guide, prepared for use by law enforcement and crisis relocation planning personnel, describes crime prevention techniques and prisoner disposition alternatives potentially useful in crisis relocation periods. (Author)

Final rept.,

119 null

This handbook is designed to provide a ready reference for use by students at the United States Army Infantry School and in future assignment.

2nd edition

136 null

A numerical listing of all current standardization documents in order by document identifier number, plus all standardization documents cancelled since the last basic DODISS.

null

946 null

Holographic measurements of clay aggregates settling through a density/viscosity gradient revealed that the aggregate pore waters are flushed, affecting the aggregate density and settling speed. The flushed pore waters provide a low viscosity conduit in which subsequent particles settle as much as 25% faster than they would in the surrounding fluid. This conduit is holographically recorded due to its reduced refractive index relative to the surrounding medium. Regions where this phenomenon may play an important role are at river mouths and in shelf/slope density-gradient environments for clay aggregates, and in sea-ice-melt regions and in the microstructure of the thermoclines for low-density biogenous particles. (Author)

Final rept. 1  
Nov 82-29 Feb  
84,

40 null

United States since the early 1980s. During the past decade the PBR technology has advanced to the degree that the Air Force, in carrying out its mission to investigate promising technologies for military applications, proposes to conduct validation testing of the PBR technology for space propulsion as part of its Space nuclear Thermal Propulsion (SNTTP) program. This environmental impact statement has been prepared in accordance with the National Environmental Policy Act to analyze the potential environmental consequences of the proposed PBR construction and testing activities. The document analyzes the potential environmental impacts at two candidate test locations, the Saddle Mountain Test Station at the Nevada Test Site, and the Contained Test Facility at the Idaho National Engineering Laboratory, as well as the impacts of the No-Action Alternative. The analyses include infrastructure, land use, transportation, hazardous materials and hazardous waste management, biological resources, cultural resources, geology and soil, noise, water resources, and health and safety. Anticipated issues related to health and safety will be addressed in facility designs and safety procedures so that applicable statutes, regulations, and permits are met or exceeded.

null

671 null

The dike, an earth embankment, was found to be in good condition. The dike is intermediate in size and its hazard potential is high. Because of this, the test flood for the dam is the Probable Maximum Flood.

null

97 null

This study surveyed the attitudes and perceptions of all USAF commanders in the grades of 01-06. It was the 5th in a series of Quality of Air Force Life surveys conducted by the authors. A questionnaire containing 149 attitudinal and demographic questions was distributed to the entire population (about 3400) of USAF officers possessing either the Commander's Air Force Specialty Code (AFSC) or the A-prefix to other functional AFSC's. There was about a total of 2695 questionnaires were completed and returned in sufficient time to be included in the analysis which forms the basis of this report. This constituted about a 79% return rate. Qualitative comments provided by 753 respondents were also analyzed. A large majority reported that their jobs are challenging and that they have sufficient authority to carry out their responsibilities. Their job satisfaction was substantially higher than that of a 1975 AF-wide sample of officers. Almost half reported that their current organizations had experienced manning reductions since they assumed command. A larger percentage reported experiencing an increase in administrative procedures and reporting.

Final technical  
rept. Dec 76-  
Jan 77,

256 AFIT-TR-77-2

Elements of the Brigade were involved in combat operations during the entire reporting period with the exception of 26-30 October 1966. Training was conducted concurrent with combat operations and during periods when units were refitting and preparing for operations.

Operational  
rept. for  
quarterly  
period ending  
31 Oct 1966

OACSFOR-OT-  
102 UT-660508

This annotated bibliography presents a compilation of literature describing the design, construction, operation, and maintenance of pipelines in the ocean and rivers. These pipelines may range in diameter from a few inches to more than 15 feet and may be short or more than 100 miles long. The problems encountered in installing and reaping pipelines are discussed. (Author) Miscellaneous rept.,

61 CERC-MR-77-2

In modern day explosive manufacturing and LAP facilities, many of the structural steel buildings will be required to provide protection for personnel and/or equipment against the effects of HE-type explosions. Therefore, computer program entitled 'Dynamic Nonlinear Frame Analysis' (DYNFA) has been developed whereby the responses of frame structures subjected to blast loadings can be determined. This report contains the background for the development of DYNFA as well as the equations and procedures necessary for its use. The report also contains example problems illustrating the use of DYNFA for the design of blast-resistant frame structure. (Author) Final rept.

ARLCD-CR-  
451 77008

This volume presents the methods used to collect, tabulate, and analyze basic data on the surface geometry of selected areas in Thailand. The descriptions of surface geometry features are so designed that the descriptive values can be used directly as input to an analytical model for predicting the cross-country speed of selected military vehicles. A method for classifying, interpreting, and mapping surface geometry factors from aerial photographs (air photos) was developed. Utilizing the field data collected and the air-photo interpretation methods developed, 25 surface geometry factor-family maps were prepared, together covering six selected study areas (Nakhon Sawan, Lop Buri, Chiang Mai, Pran Buri, Khon Kaen, and Chanthaburi). These maps are presented in Volume VIII of this report. Air-photo interpretation methods for predicting and mapping surface geometry factors were largely successful. However, the degree of accuracy achieved for each of these factors varied considerably, being a function of the scale, quality, and vintage of the existing photography. It is recommended that studies be continued to develop air-photo interpretation techniques to improve the reliability of estimation of surface geometry factor values.

Technical rept.  
Jun 1964-Nov  
1965

AEWES-TR-3-  
202 726-VOL-3

This report furnishes airport activity of the Certificated Route Air Carriers. Included in the data contained in Table 6 are passenger enplanements, tons of enplaned freight, express, and mail. Both scheduled and non-scheduled service, and domestic and international operations are included. These data are shown by airport and carrier. Table 7 includes departures by airport, carrier and type of operation, and type of aircraft. (Author)

Semi-Annual  
rept.

613 null



This report summarizes the work performed during the tenth quarter of this contract, from March 15, 1984 to June 14, 1984. The work in this quarter concentrated in three areas: simulations of our real-time bidding algorithms, non-traditional architectures studies for real-time systems, and scheduling tasks with resource requirements in hard real-time systems. Section 2 of this report describes the progress made in each of these areas. Significant results have been obtained which provides insight into the effectiveness of the algorithm. An improvement over the basic algorithm has been found. The improvement uses the prediction of future surplus time instead of the current surplus time in modifying bids. This report describes the basic algorithm and then describes the simulation results.

Quarterly rept.  
15 Mar-14 Jun  
84,

55 null

Contents: Hydrology and Hydraulic Design; Flood Damages and Benefits; Conservation Benefits; Plans of Improvements and Estimates of Cost; Plan Formulation and Cost Allocation; Non-Federal Alternatives; and Geotechnical Aspects.

Final rept.

488 null

annual precipitation is more than adequate to meet both present and future water supply needs, there is a definite need for further development and management of water sources to keep abreast of the increasing demands of anticipated population growth and urban and industrial development. The potential plight of the Region's water supply situation was brought into proper, if somewhat startling, perspective during the five-year drought that ended in 1967. Many sectors of the NAR experienced critical water supply shortages, and some 14 million people, about 28% of the REgion's population, were subjected to water-use restrictions. That drought is now history, but it provided a stark reminder that the NAR's water supplies are barely adequate to meet present needs under traditional unlimited or unrestrained use patterns. The urgency of this situation is magnified when we look into the future. The population of the Region, approximately 50 million, is growing and projected to double by 2020. While the population increases, individual use of water is also increasing. The analysis in this Appendix has been divided into two major categories: public water supply, including all water supplied from central systems, both public and private; and

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... and space research, is the second in a series of Chinese-English technical dictionaries under preparation by the Foreign Technology Division, United States Air Force Systems Command. The purpose of the series is to provide rapid reference tools for translators, abstracters, and research analysts concerned with scientific and technical materials from Mainland China. This dictionary contains about 28,000 terms selected from sources published in Mainland China. The terms included relate not only to general aviation, aeronautical engineering, rocket engines, astronavigation, etc., but incorporate vocabulary from the basic sciences and the auxiliary technologies closely associated with aviation and space, such as, telecommunications, metallurgy, welding, aircraft construction, etc. The special features of this dictionary are Mainland Chinese practice in regard to: (1) terminology, (2) style of characters, (3) complete alphabetic lookup by means of the 'pinyin' spelling. Characters in some of the terms have been regrouped for optimum clearness and suitability for computer processing. The terms in this dictionary also incorporate those from Aviation and Space, Volume I, compiled at the Library of Congress. Other subject areas in the series will cover general and nuclear physics, electronics and telecommunications, rocketry,

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This report contains a summary of the research projects of the Armed Forces Radiobiology Research Institute for the period 1 October 1980 through 30 September 1981.

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125 AFRRRI-ARR-15

This document has been prepared to provide information on the Strategic Defense Initiative Organization (SDIO) Research, Development, Test and Evaluation (RDT&E) program to the congressional committees during the FY 1990/FY 1991 budget hearings. The descriptive summaries provide narrative and fiscal information on the SDIO program elements and the projects contained therein.

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USAFETAC	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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DRDC-A	A - 01	Approved for public release; distribution is unlimited.	U
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BR-28288,TRC	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRDC	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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NTME	A - 01	null	U
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NRL	A - 01	Approved for public release; distribution is unlimited.	U
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19367.36-MA	A - 01	null	U
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Approved for public  
release; distribution  
is unlimited.

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TR-80-0167

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COE/WV/HD

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Approved for public  
release; distribution  
is unlimited.

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ARO	A - 01	Approved for public release; distribution is unlimited.	U
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null	A - 01	Availability: Document partially illegible.	U
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FPO-1-85(6)	A - 01	null	U
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NORDA	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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RIA	A - 01	Availability: Document partially illegible.	U
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TRECOM

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release; distribution  
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AFOSR	A - 01	Approved for public release; distribution is unlimited.	U	and for which several celebrated '
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release; distribution  
is unlimited.

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TR-76-102	A - 01	null	U
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RMA	A - 01	null	U
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AMC	A - 01	null	U
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TPS*	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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TRADOC	A - 01	Approved for public release; distribution is unlimited.	U
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BIB-VOL-5,HEL	A - 01	Approved for public release; distribution is unlimited.	U
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NPS	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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TR-1172,ARI	A - 01	Approved for public release; distribution is unlimited.	U
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CR-97006-V2- PT2,USAEC	A - 01	null	U
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LRT	A - 01	Availability: Document partially illegible.	U
SM-ALC	A - 01	Approved for public release; distribution is unlimited.	U



ONR	A - 01	Approved for public release; distribution is unlimited.	U
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ONR	A - 01	Availability: Hard copy available from Law of the Sea Inst., Rhode Island Univ., Kingston, R. I. \$5.50. Document partially illegible.	U
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USACE	A - 01	Approved for public release; distribution is unlimited.	U
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CEL	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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TD-1287	A - 01	null	U
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CEL	A - 01	Approved for public release; distribution is unlimited.	U
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62 900	A - 01	null	U
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TR-91- 0776,AFOSR	A - 01	null	U
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ONR

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Approved for public  
release; distribution  
is unlimited.

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TDR-63-  
116,RADC

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Approved for public  
release; distribution  
is unlimited.

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TR-66-195-VOL-  
1,AFFDL

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Approved for public  
release; distribution  
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BESRL

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Approved for public  
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CSP-99- 5023,EOARD	A - 01	null	U
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TR-90-0019,AFOSR	A - 01	Approved for public release; distribution is unlimited.	U
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AGARD/FR	A - 01	Approved for public release; distribution is unlimited.	U
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TR-84-0830

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CR-97056,SFIM- AEC-RP	A - 01	null	U
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JPDO/DC	A - 01	Approved for public release; distribution is unlimited.	U
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XD	A - 01	null	U
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Jun-81 A - 01	null	U
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Jan-84 A - 01	null	U
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ONR	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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TR-84-174,AD- E301 695	A - 01	null	U
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TR-78-0348	A - 01	null	U
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TR-81-3157	A - 01	null	U
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NOC/MS	A - 01	Approved for public release; distribution is unlimited.	U
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AFMC	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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TR-85-234	A - 01	Availability: Document partially illegible.	U
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X5	A - 01	Availability: Document partially illegible.	U
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92510,NAVPERS	A - 01	null	U
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TR-92- 0740,AFOSR	A - 01	Approved for public release; distribution is unlimited.	U
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ARO	A - 01	Approved for public release; distribution is unlimited.	U
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20-93,USCG	A - 01	Approved for public release; distribution is unlimited.	U
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TR-65-171,AFML	A - 01	Approved for public release; distribution is unlimited.	U
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AGARD	A - 01	Availability: Document partially illegible., NATO	U
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USAMRDC	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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TR-81-02	A - 01	null	U
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HDL	A - 01	Approved for public release; distribution is unlimited.	U
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TR-77-0166	A - 01	null	U
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28661.1-EL-CF-  
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TR-90-0526	A - 01	Approved for public release; distribution is unlimited.	U
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TECOM	A - 01	Approved for public release; distribution is unlimited.	U
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RP-80-16,ARI	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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AFESC/ESL	A - 01	null	U
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LWL	A - 01	Approved for public release; distribution is unlimited.	U
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TR-2005- 1061,AFRL-VS- HA	A - 01	Approved for public release; distribution is unlimited.	U
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NAS-NRC	A - 01	Approved for public release; distribution is unlimited.	U
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CR-85.003	A - 01	null	U	
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SAMSO	A - 01	Approved for public release; distribution is unlimited.	U	
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USAMRMC

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TR-87-1926	A - 01	null	U
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OT-UT- 691324,OACSFO R	A - 01	Approved for public release; distribution is unlimited.	U
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OT-RD- 670834,OACSF R	A - 01	Approved for public release; distribution is unlimited	U
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NOCD-NC	A - 01	Approved for public release; distribution is unlimited.	U
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DTRA	A - 01	Approved for public release; distribution unlimited	U
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SAMSO	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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AGARD	A - 01	Approved for public release; distribution is unlimited. NATO.	U
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AD-E850 614	A - 01	null	U
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AGF/HS	A - 01	null	U
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AD-E100 342	A - 01	Availability: Document partially illegible.	U
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AFIP	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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AD-F400- 019,USAFAS	A - 01	null	U
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COE/SPD	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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TR-78-264	A - 01	Availabilty: Document partially illegible.	U
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TR-71-12-PT-  
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TR-78-A26,ARI    A - 01

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TR-79-2,USARTL A - 01

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82-37	A - 01	null	U
		Approved for public release; distribution is unlimited.	
SCEL	A - 01	Document partially illegible.	U

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CIA	A - 01	Availability: Document partially illegible.	U
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TR-90-  
0785, AFOSR

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NAVAIR

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Approved for public  
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68-0185,AFCRL A - 01

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13444.2-GS	A - 01	null	U
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ANG/DC	A - 01	Approved for public release; distribution is unlimited.	U
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TR57-204,AFCRL	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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NAVWEPS	A - 01	Approved for public release; distribution is unlimited.	U
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24898-9-EL,ARO	A - 01	Approved for public release; distribution is unlimited.	U
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E091-1787	A - 01	null	U
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NRL	A - 01	Approved for public release; distribution is unlimited.	U
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WES	A - 01	Approved for public release; distribution is unlimited.	U
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USACGSC	A - 01	null	U
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76045-40	A - 01	null	U
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FAA	A - 01	Approved for public release; distribution is unlimited.	U
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TR-83-4063	A - 01	null	U
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332,ONR	A - 01	Approved for public release; distribution is unlimited.	U
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EOARD	A - 01	Approved for public release; distribution is unlimited.	U
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XC	A - 01	Approved for public release; distribution is unlimited.	U
TDR-64-25-VOL-2D,AFRPL	A - 01	Approved for public release; distribution unlimited., Availability: Document partially illegible.	U

NDU/JAWS	A - 01	Approved for public release; distribution is unlimited.	U
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CR-97006-VOL- 3,USAEC	A - 01	null	U
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DOD	A - 01	Approved for public release; distribution is unlimited.	U
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USAEC	A - 01	null	U
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ONR	A - 01	Approved for public release; distribution is unlimited.	U
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60-25,LOC/AID	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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ESC/ENCB

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HCA	A - 01	Approved for public release; distribution is unlimited.	U
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53842/NJ00334- 80/09	A - 01	null	U
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6610-CH-02,R/D	A - 01	Approved for public release; distribution is unlimited.	U
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CRREL	A - 01	Approved for public release; distribution is unlimited.	U
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AGARD/FR	A - 01	Approved for public release; distribution is unlimited. NATO.	U
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AMC	A - 01	Approved for public release; distribution is unlimited.	U
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0006-1,ECOM	A - 01	null	U
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TR-76-0197	A - 01	null	U
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GITI-10	A - 01	null	U
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USAMRDC	A - 01	null	U
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COE/NY	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRDC	A - 01	Approved for public release; distribution is unlimited.	U
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NAVORD	A - 01	Approved for public release; distribution is unlimited.	U
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OCNR

A - 01

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release; distribution  
is unlimited.

U

92/32, DOT/FAA/  
CT

A - 01

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is unlimited.

U

XD

A - 01

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53842/NJ00259-  
81/08

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81-58,CR-165258 A - 01

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ONR	A - 01	Approved for public release; distribution is unlimited.	U
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NAVTRADEV	CEN	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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NPS	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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CSP-98- 1021,EOARD	A - 01	null	U
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AGARD

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ABMA	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U



DREV

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ONR

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AFIT	A - 01	Approved for public release; distribution is unlimited.	U
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USAEC	A - 01	Approved for public release; distribution is unlimited.	U
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XD	A - 01	null	U
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E-33,ARPA	A - 01	Approved for public release; distribution is unlimited.	U
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AFOSR	A - 01	Approved for public release; distribution is unlimited.	U
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TR-76-63,E140- 2625	A - 01	null	U
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DA	A - 01	Approved for public release; distribution is unlimited.	U
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AD-E850 138	A - 01	null	U
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BUSHIPS	A - 01	Approved for public release; distribution is unlimited.	U
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USAFOEHL	A - 01	Approved for public release; distribution is unlimited.	U
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28925.58- EL,ARO	A - 01	Approved for public release; distribution is unlimited.	U
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USAF	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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CIA	A - 01	null	U
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USAMRDC	A - 01	Approved for public release; distribution is unlimited.	U
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TR-70-259,AFML	A - 01	Availability: Document partially illegible.	U
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TR-89-0134,AFOSR	A - 01	Approved for public release; distribution is unlimited.	U
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TDR-64-  
202,RADC

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CR-98018-VOL-6,SFIM-AEC-ER	A - 01	Approved for public release; distribution is unlimited.	U	Feasibility Study.""
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TR-74-71,USAAMRDL	A - 01	Approved for public release; distribution is unlimited.	U	
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TR-64-237-VOL-1,SSD	A - 01	Approved for public release; distribution is unlimited.	U	
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OT-UT- 693182,OACSFO R	A - 01	Approved for public release; distribution is unlimited.	U
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D-3-77	A - 01	null	U
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CSP-99- 5023,EOARD	A - 01	null	U
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USACGSC	A - 01	Approved for public release; distribution is unlimited.	U
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CR-97006-VOL- 2,USAEC	A - 01	null	U
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NPS	A - 01	Approved for public release; distribution is unlimited.	U
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TR-92- 0518, AFOSR	A - 01	Approved for public release; distribution is unlimited.	U
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CRDF-02- 9001,EOARD	A - 01	Approved for public release; distribution is unlimited.	U
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TR-53-373-S- 2,WADC	A - 01	null	U
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74-10-VOL-9-APP-  
A,ASD/XR      A - 01

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OT-RD- 68X018,DA	A - 01	Approved for public release; distribution is unlimited.	U
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USAMRL	A - 01	null	U
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AD-E201  
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TR-81-1

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USACGSC	A - 01	Approved for public release; distribution is unlimited.	U
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TD2006- 0027,TDCK	A - 01	Approved for public release; distribution is unlimited.	U
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TR-88-0233	A - 01	null	U
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69- 2059TR,AFOSR	A - 01	Approved for public release; distribution is unlimited.	U
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FAA	A - 01	Availability: Document partially illegible.	U
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06-3032,EOARD	A - 01	Approved for public release; distribution is unlimited.	U
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MR-78-4	A - 01	null	U
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CI-78-41	A - 01	Availability: Microfiche copies only.	U
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USAF	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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OT-UT- 660508,OACSFO R	A - 01	Availability: Document partially illegible.	U
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MR-77-2	A - 01	null	U
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CR-77008,ARLCD	A - 01	null	U
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SDIO	A - 01	Approved for public release; distribution is unlimited. Document partially illegible.	U
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1 the subsequent headings: overview and differentiation of career paths; the influence of military service































































































































































































































"Kharitonov-type" results have been proven."





































































































on the books laws passed by Congress that in practice do sanction the abridgement of speech rights of s



































ethod was restricted due to its high computational expenses. The "Hybrid Approximation" presented in



































ace Support Operations led by these two international organizations. In the last seven years

































































































































































































































l on the discrete wavelet transform (DWT) and multiresolution analysis are used to develop a robust clas





communications



















(6.7) M for the ME component and  $\eta(\text{H}_2)$  approx.  $10^{6.4} \text{ cm}^{-3}$ )





















Prime Minister Nouri al-Maliki's governing coalition."







































































































































































e on a civilian career; the influence of education and transitional measures; and on the necessity of an a







































































































































































































































































































































ervice members when military necessity so dictates.' Such laws flow from prudent constitutional provisi



































this report





































































































































































































































































ssification algorithm that reliably discriminates between launch and impact artillery and/or mortar even























































































































































































































dditional requirement for the development of personnel in the course of officer study."





































































































































































































































































































































ions for Congress to make rules for the government and regulation of the armed forces (Art. 1











































































































































































































































































































ts via acoustic signals produced during detonation. Distinct characteristics are found within the acoustic









































































































































































































































































































































































































































































































































































































































































































































































































































































signatures since impact events emphasize concussive and shrapnel effects, while launch events are sim







































































































































































































































































































































































































































































































































































































































































































































































































































































ilar to explosions, designed to expel and propel artillery round from a gun. The ensuing blast waves are i









































































































































































































































































































































































































































































































































































































































































































































































































































































readily characterized by variations in the corresponding peak pressure and rise time of the waveform, di









































































































































































































































































































































































































































































































































































































































































































































































































































































ifferences in the ratio of positive pressure amplitude to the negative amplitude, variations in the promir









































































































































































































































































































































































































































































































































































































































































































































































































































































rent frequencies associated with the varying blast events and variations in the overall duration of the re:







































































































































































































































































































































































































































































































































































































































































































































































































































































sulting waveform. Unique attributes can also be identified that depend upon the properties of the gun t









































































































































































































































































































































































































































































































































































































































































































































































































































































ube, projectile speed at the muzzle, and the explosive/c