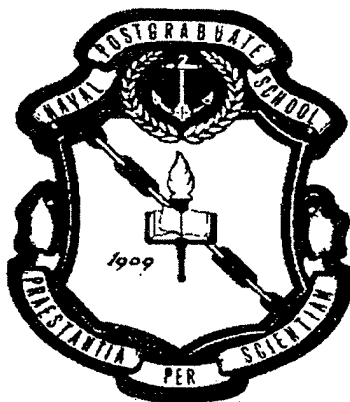


Naval Postgraduate School
Monterey, California 93943-5138

NPS-09-02-028



SUMMARY OF RESEARCH 2001



GRADUATE SCHOOL OF BUSINESS AND PUBLIC POLICY

**Douglas A. Brook
Dean**

**Shu S. Liao
Associate Dean for Research**

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RADM David R. Ellison, USN
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Richard Elster
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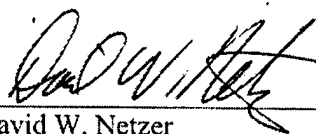
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Reviewed by:



Danielle Kuska
Director, Research Administration

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David W. Netzer
Associate Provost and
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THE NAVAL POSTGRADUATE SCHOOL MISSION

Increase the combat effectiveness of the U.S. and allied forces and enhance the security of the U.S.A. through advanced education and research programs focused on the technical, analytical, and managerial tools needed to confront defense related challenges of the future.



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PREFACE

Research at the Naval Postgraduate School is carried out by faculty in the four graduate schools (School of International Graduate Studies, Graduate School of Operations and Information Sciences, Graduate School of Engineering and Applied Sciences, and Graduate School of Business and Public Policy) and three Research Institutes (The Modeling, Virtual Environments, and Simulation (MOVES) Institute, Institute for Information Superiority and Innovation (I2SI), and Institute for Defense System Engineering and Analysis (IDSEA). This volume contains research summaries for the projects undertaken by faculty in the Graduate School of Business and Public Policy during 2001. The summary also contains thesis abstracts for those students advised by Graduate School of Business and Public Policy faculty during 2001.

Questions about particular projects may be directed to the faculty Principal Investigator listed, the Department Chair, or the Department Associate Chair for Research. Questions may also be directed to the Office of the Associate Provost and Dean of Research. General questions about the Naval Postgraduate School Research Program should be directed to the Office of the Associate Provost and Dean of Research at (831) 656-2099 (voice) or research@nps.navy.mil (e-mail). Additional information is also available at the RESEARCH AT NPS website, <http://web.nps.navy.mil/~code09/>

Additional published information on the Naval Postgraduate School Research Program can be found in:

- *Compilation of Theses Abstracts:* A quarterly publication containing the abstracts of all unclassified theses by Naval Postgraduate School students.
- *Naval Postgraduate School Research:* A tri-annual (February, June, October) newsletter highlighting Naval Postgraduate School faculty and student research.
- *Summary of Research:* An annual publication containing research summaries for projects undertaken by the faculty of the Naval Postgraduate School.

This publication and those mentioned above can be found on-line at:
<http://web.nps.navy.mil/~code09/publications.html>.

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INTRODUCTION

The research program at the Naval Postgraduate School exists to support the graduate education of our students. It does so by providing military relevant thesis topics that address issues from the current needs of the Fleet and Joint Forces to the science and technology that is required to sustain the long-term superiority of the Navy/DoD. It keeps our faculty current on Navy/DoD issues, and maintains the content of the upper division courses at the cutting edge of their disciplines. At the same time, the students and faculty together provide a very unique capability within the DoD for addressing warfighting problems. Our officers must be able to think innovatively and have the knowledge and skills that will let them apply technologies that are being rapidly developed in both the commercial and military sectors. Their unique knowledge of the operational Navy, when combined with a challenging thesis project that requires them to apply their focused graduate education, is one of the most effective methods for both solving Fleet problems and instilling the life-long capability for applying basic principles to the creative solution of complex problems.

The research program at the Naval Postgraduate School consists of both reimbursable (sponsored) and institutionally funded research. The research varies from very fundamental to very applied, from unclassified to all levels of classification.

- **Reimbursable (Sponsored) Program:** This program includes those projects externally funded on the basis of proposals submitted to outside sponsors by the School's faculty. These funds allow the faculty to interact closely with RDT&E program managers and high-level policymakers throughout the Navy, DoD, and other government agencies as well as with the private sector in defense-related technologies. The sponsored program utilizes Cooperative Research and Development Agreements (CRADAs) with private industry, participates in consortia with government laboratories and universities, provides off-campus courses either on-site at the recipient command, by VTC, or web-based, and provides short courses for technology updates.
- **Naval Postgraduate School Institutionally Funded Research (NIFR) Program:** The institutionally funded research program has several purposes: (1) to provide the initial support required for new faculty to establish a Navy/DoD relevant research area, (2) to provide support for major new initiatives that address near-term Fleet and OPNAV needs, (3) to enhance productive research that is reimbursably sponsored, and (4) to cost-share the support of a strong post-doctoral program.

In 2001, the level of research effort overall at the Naval Postgraduate School was 148 faculty work years and exceeded \$48 million. The reimbursable program has grown steadily to provide the faculty and staff support that is required to sustain a strong and viable graduate school in times of reduced budgets. In FY2001, over 93% of the research program was externally supported. A profile of the sponsorship of the Naval Postgraduate School Research Program in FY2001 is provided in Figure 1.

INTRODUCTION

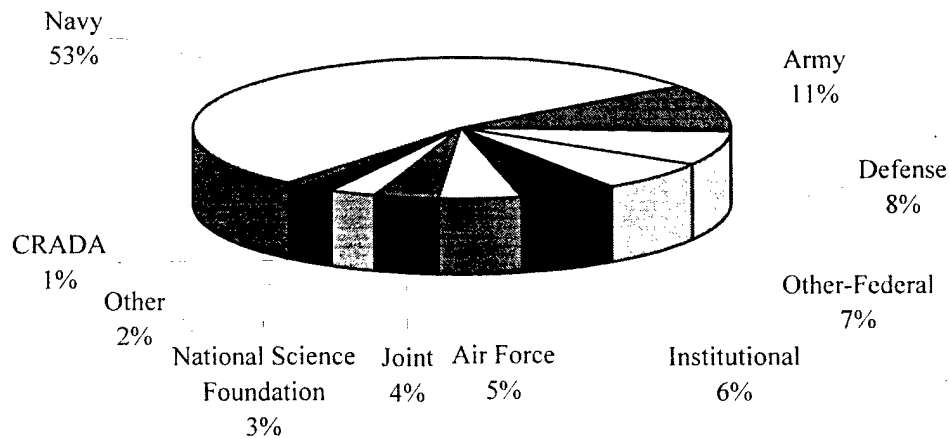


Figure 1. Profile of NPS Research and Sponsored Programs (\$52M)

The Office of Naval Research is the largest Navy external sponsor. The Naval Postgraduate School also supports the Systems Commands, Warfare Centers, Navy Labs and other Navy agencies. A profile of external Navy sponsorship for FY2001 is provided in Figure 2.

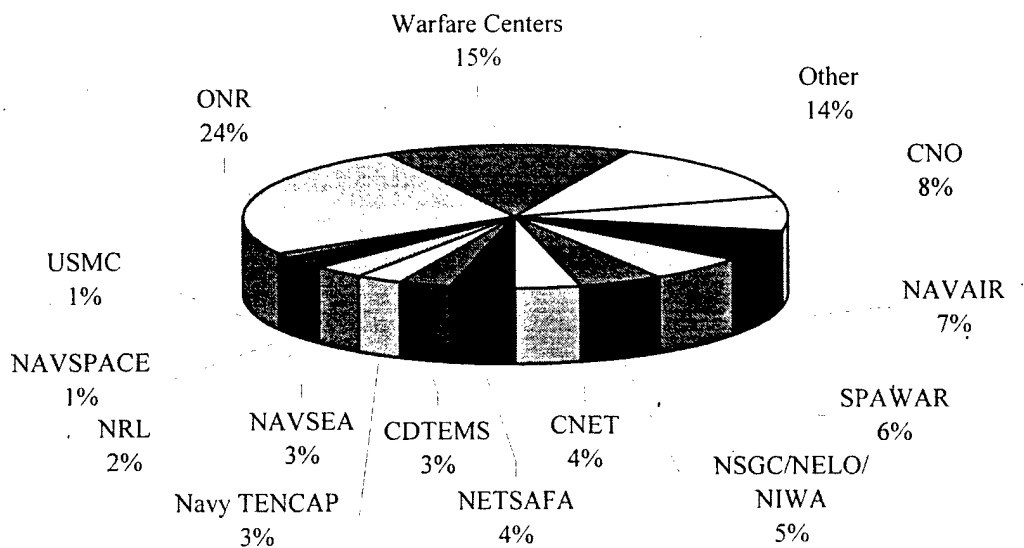


Figure 2. Navy External Sponsors of NPS Research and Sponsored Programs (\$29M)

These are both challenging and exciting times at the Naval Postgraduate School and the research program exists to help ensure that we remain unique in our ability to provide education for the warfighter.

DAVID W. NETZER
Associate Provost and Dean of Research

September 2002

**GRADUATE SCHOOL OF
BUSINESS AND PUBLIC POLICY**

**DOUGLAS A. BROOK
DEAN**

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DEPARTMENT SUMMARY

MISSION:

The mission of the Graduate School of Business and Public Policy is:

- To Improve the managerial capabilities and leadership qualities of US and international officers and government civilians through graduate education, research, and professional service.
- To develop students' abilities to analyze, think critically, and take intelligent action so they can more effectively carry out their professional responsibilities, and lead their organizations in complex, and sometimes life-threatening, environment.
- To conduct research that supports military decision-making, problem solving, and policy setting, improves administrative processes and organizational effectiveness, contributes knowledge to academic disciplines, and advances the mission of graduate education.
- To provide professional expertise that supports the development of the Naval Postgraduate School, the Departments of Navy and Defense, and other branches of Government, as well as our professional and academic organizations.

RESEARCH MISSION:

Faculty research is an important component of the Graduate School of Business and Public Policy's mission. As such, the school strives to "conduct research that supports military decision making, problem solving, and policy setting, improves administrative processes and organizational effectiveness, contributes knowledge to academic disciplines, and advances the mission of graduate education."

The research program is integrated to the greatest possible extent with the educational process. Students are encouraged to participate in faculty projects, and faculty research results are typically incorporated in classroom instruction.

CURRICULA SERVED:

The Graduate School of Business and Public Policy has primary responsibility for five graduate degrees. The largest degree program is a group of curricula in the Master of Science in Management. The MS in Management program was converted to Defense-focused MBA program in 2001 with the following curricular concentration areas:

- Acquisition Management
- Logistics Management
- Manpower Management
- Financial Management
- Information Management
- Defense Management

Distance learning graduate programs offered by the Graduate School of Business and Public Policy include: Contract Management and Program Management (for Department of Defense civilians at designated off-site locations), which award a Master of Science in Contract Management and a Master of Science in Program Management, respectively; and Leadership Education and Development program (for Company Commanders at the U.S. Naval Academy), which awards a Master of Science in Human Resources Management.

The School's graduate programs achieved the distinction of being one of only two graduate management programs in the country earning dual accreditation by AACSB-the Association to Advance Collegiate Schools of Business and NASPAA-the National Association of Schools of Public Affairs and Administration.

RESEARCH THRUSTS:

The primary goal of the school's research program is to provide the Navy and DoD with the capability of managing defense organizations and programs efficiently and effectively. Therefore, the objective of the school's research effort is to apply existing knowledge base in support of resource utilization decisions, to

DEPARTMENT SUMMARY

develop new concepts or theory if no such knowledge base exist to support the policy/decision making process, to enhance the relevance of the school's instructional programs, and to involve the students through their thesis or application project work in enhancing their decision making capability.

While concepts and knowledge base are generally divided into different functional areas or disciplines, actual resource utilization decisions or policies often require multi-disciplinary efforts. Therefore, in addition to pursuing functional area research in those disciplines with a critical mass of faculty, the thrust of the school's research program is to conduct cooperative interdisciplinary research in areas where the school is in a strong position to become a leading force in research. It also places the school in a strong position to assist defense policy makers, since it allows for a coordinated, broad-based program under "one roof"—where researchers from diverse fields can share information and findings in a unified and truly systematic fashion.

The faculty of the Graduate School of Business and Public Policy are drawn from a wide variety of academic disciplines in business and public sector management. The diverse, multidisciplinary character of the faculty is reflected in the breadth and depth of issues addressed by faculty research, which has historically been concentrated in areas of interest to the Departments of Defense and Navy. Therefore, faculty research directly enriches the instructional materials used in the curricula in the school. The topics and issues can be grouped into five broad areas:

- Acquisition and Contract Management,
- Logistics and Transportation Management,
- Financial Management,
- Manpower Systems Analysis,
- Organization, systems and Management.

FACULTY:

The research thrusts and faculty in each of the functional areas in the Graduate School of Business and Public Policy are discussed in greater detail in the following sections.

Acquisition and Contract Management. Defense acquisition represents a process of critical importance to the military, not only to reduce taxpayer costs, but to ensure the quality and performance of today's increasingly sophisticated weapon systems. Nevertheless, negligible academic research has been applied to systematically investigate, understand, and model the acquisition process; and current innovations in this domain—such as process reengineering and acquisition reform—are uncoordinated, ad-hoc, and performed largely on a trial-and-error basis. This is the case because many acquisition policy makers and executives have little or no benefit of sound theories to rely upon.

The acquisition group's primary objective is outlined as a multidisciplinary research program, designed to address this dearth of acquisition theory. Generally, research objectives are directed at the following:

- basic theory-building research into critical questions;
- fundamental dimensionality and key attributes associated with defense acquisition; and
- exploring the integrated reengineering and reform of acquisition processes through the development of empirical models, prototyping of advanced technologies, and rigorous analysis of process innovations and regulatory reform.

This research represents seminal scholarly work in the area of defense acquisition and draws from expertise in accounting, contracting, economics, information systems, law, organizational design, public policy, and other academic disciplines. The research program also plans for contributions not only from the NPS faculty, but through collaborative research with faculty from other major universities outside DoD through the External Acquisition Research Program (EARP) initially established by Professor Mark Nissen and currently managed by Professor Ira Lewis. EARP program and projects supported can be seen at the website: <http://www.nps.navy.mil/earp/>.

Logistics and Transportation Management. The primary mission of the Logistics and Transportation Management group is to educate military officers and DoD civilians in state-of-the-art concepts of logistics and transportation management. Emphasis is placed on understanding both military and non-military applications, so that students will be prepared to perform effectively in a military environment and interact

DEPARTMENT SUMMARY

efficiently with civilian contractors and suppliers. The general research perspective of the group is focused on improving DoD logistics and transportation performance as well as management effectiveness. Major research thrusts in this area include:

- DoD inventory policy;
- inventory and cycle time reduction;
- defense transportation and distribution systems;
- modeling and simulation for logistics decision support;
- reduction of manpower in aircraft and ship maintenance;
- aircraft Component Improvement Program (CIP); and
- sea-based logistics for the Navy and the Marine Corps.

Professor Kevin Gue's project developed throughput and storage system models for crossdocks and transshipment points, with particular application to sea base design in Sea Based Logistics. Professor Keebom Kang focused on using modeling and simulation method to address transportation and inventory issues. His current project addresses sea-based combat logistics of LHD amphibious attack ships. Senior Lecturer Don Eaton (RADM, USN, Ret.) Led a team of thesis students investigating the issues and concerns of aging aircraft and tactics of remediation and amelioration.

Financial Management. Research in the area of financial management has become increasingly important since the end of the Cold War, as defense organizations "downsize" and policy makers exercise renewed efforts to gain maximum utility of shrinking resources at minimum cost. The Financial Management (FM) group has identified four major functional areas as targets of opportunity for future research. These are:

- financial resource policy formulation, analysis and management;
- enterprise resource planning systems;
- financial matters of personnel entrusted with sensitive information;
- cost analysis,
- federal financial reporting and financial statement analysis.

The first of these functional areas—financial resource policy formulation, analysis, and management—covers a range of sub-areas: national defense and national security resource policy and management; resource planning, programming, budgeting, and policy under the Planning, Programming, Budgeting System; and relationships between financial management, contracting, acquisition, and other policy fields. Professors Larry Jones, Jerry McCaffery, and Richard Doyle have the expertise in this area.

Resource planning systems cover the development of systems, such activity-based management systems (ABM) and enterprise resource planning systems (ERP) capable of generating timely and reliable information for operational decisions. Professors Ken Euske continue to be involved in DoN's ERP efforts. Professor Joseph San Miguel were supported by Financial Executive Research Foundation to study the strategic impact of ERP systems.

Recent events of high profile security breach have heightened interest in the financial matter of those entrusted with sensitive information. Since 1998, Professor San Miguel has provided financial expertise to the National Security Agency, U.S. Customs, and the Central Intelligence Agency on the design and evaluation of employee financial disclosures for identifying unexplained affluence and financial stress. His current project applied financial analysis techniques to live data obtained from federal employees in positions of national security in attempt to highlight abnormality.

The research area of cost analysis covers the following: weapon systems and software cost estimation; resource requirement analysis; the cost of new technologies; and cost analysis of major system modifications. Presently, Professor Bill Gates are the most active in this area.

Manpower Systems Analysis. The focus of research in the Manpower Systems Analysis (MSA) group is on human resources. Defense manpower policy makers have been faced with many challenges since the end of the Cold War. Key among these challenges were a reduction of the active-duty force by over 30 percent, budget reductions in recruiting and advertising, a steady operational tempo and deployment schedule with fewer people, new missions, declining levels of public and congressional support for the military, increasing pressure to change the "culture" of military service, renewed efforts toward population representation of women and racial/ethnic minorities throughout the force, a seemingly immovable, high rate of first-term attrition among new recruits, declining levels of personnel retention in certain critical areas, a number of high-profile "scandals," and others. As the active-duty force was reduced and missions

DEPARTMENT SUMMARY

changed, it soon became clear that a smaller military had to be even more skilled and adaptable than the one that witnessed the end of compulsory service and performed so successfully throughout the early 1980s and early 1990s. These challenges confronting defense manpower policy makers are recognized by the MSA group as opportunities for research that will have a lasting impact on the future of the force. MSA research areas can be summarized as follows:

- manpower supply and force requirements;
- improvements in selection and classification of enlisted personnel;
- innovations in recruiting and the application of new technologies;
- improvements in selection of officers and pre-commissioning programs;
- effectiveness of equal opportunity and diversity management programs;
- training effectiveness and efficiency;
- personnel retention in critical fields;
- reduction of first-term attrition rates among enlisted personnel;
- force management and planning, including Reserve components;
- force structure and cost analysis;
- career-force modeling;
- officer promotion and performance; and
- civil-military relations and the All-Volunteer Force;

Professors Mark Eitelberg, Stephen Mehay, and George Thomas are involved in this area.

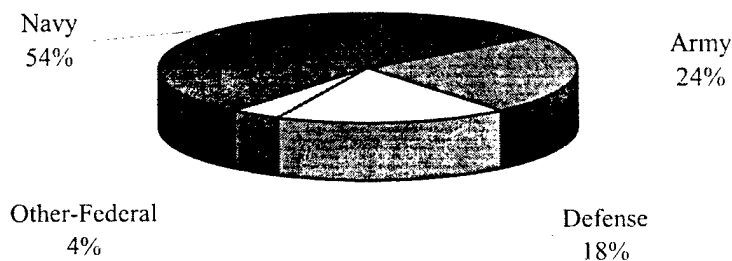
Organization, Systems and Management. Faculty in this functional area pursue basic and applied research on key management issues at a variety of organizational levels. Individual faculty members are acknowledged experts who publish leading-edge research on a variety of issues. Top management issues include strategic planning, change management, stakeholder analysis, organizational design and the development of culture. Human resource management issues include the design of strategic reward systems, managing gender and diversity issues, managing stress, forming career identities, and alternative strategies to training and education (including distance learning). There is a strong expertise in leadership issues, change management, intrinsic motivation, motivational strategies, empowerment, coaching, communications strategies, conflict management, and constructive uses of power.

RESEARCH CENTERS:

The Graduate School of Business and Public Policy is the “home” of the Center for Recruiting Innovation.

RESEARCH PROGRAM (Research and Academic)-FY2001:

The Naval Postgraduate School’s sponsored program exceeded \$49 million in FY2001. Sponsored programs include both research and educational activities funded from an external source. A profile of the sponsored program for the Graduate School of Business and Public Policy is provided below.



Size of Program: **\$3823K**

FACULTY LISTING

Brook, Douglas A. Dean GB/Kb 656-2161 dabrook@nps.navy.mil	Liao, Shu S. Professor and Associate Dean for Research GB/Lc 656-2505 sliao@nps.navy.mil	
Abdel Hamid, Tarek Professor GB/Ah 656-2768 tkabdelh@nps.navy.mil	Crawford, Alice M. Senior Lecturer GB/Cr 656-2481 acrawford@nps.navy.mil	Edwards, Leroy Lecturer GB/Ed 656-3628 ledwards@nps.navy.mil
Anderson, Laurel Visiting Associate Professor GB/La 656-3508 laanders@nps.navy.mil	Crouch, Thomas, LTC, USA Military Instructor GB/Ct 656-4298 twcrouch@nps.navy.mil	Eitelberg, Mark J. Professor GB/Eb 656-3160 meitelberg@nps.navy.mil
Barnard, James, CDR, USN Military Instructor GB/Bj 656-3301 jmbarnar@nps.navy.mil	Cuskey, Jeffrey R. Lecturer GB/Ck 656-2966 jcuskey@nps.navy.mil	Engelbeck, R. Marshall Lecturer GB/Re 656-1101 rmengelb@nps.navy.mil
Barrett, Frank J. Associate Professor GB/Br 656-2328 fbarrett@nps.navy.mil	Dillard, John T. Senior Lecturer GB/Dj 656-2650 jtdillar@nps.navy.mil	Euske, Kenneth J. Professor GB/Ee 656-2860 kjeuske@nps.navy.mil
Boudreau, Michael W. Senior Lecturer GB/Be 656-3420 mboudreau@nps.navy.mil	Doerr, Kenneth Associate Professor GB/Nd 656-3625 khdoerr@nps.navy.mil	Fann-Thomas, Gail Associate Professor GB/Fa 656-2756 gthomas@nps.navy.mil
Brinkley, Douglas E. Lecturer GB/Bi 656-2771 dbrinkle@nps.navy.mil	Doyle, Richard B. Associate Professor GB/Dy 656-3302 ddoyle@nps.navy.mil	Filizetti, Julie Lecturer GB/Dg 656-3564 jfilizetti@nps.navy.mil
Candrea, Philip J., CDR, USN Military Instructor GB/Pc 656-2884 pjcandre@nps.navy.mil	Eaton, Don, RADM, USN (Ret.) Senior Lecturer GB/Et 656-3616 deaton@nps.navy.mil	Franck, Raymond E., Jr. Senior Lecturer GB/Fr 656-3614 refranck@nps.navy.mil

FACULTY LISTING

Gates, William R.
Associate Professor
GB/Gt
656-2754
brgates@nps.navy.mil

Gue, Kevin R.
Associate Professor
GB/Gk
656-4299
krgue@nps.navy.mil

Haga, William J.
Senior Lecturer
GB/Hg
656-3094
wjhaga@nps.navy.mil

Harris, Reuben T.
Professor
GB/Hr
656-2161
rharris@nps.navy.mil

Hatch, Bill D., CDR, USN
Military Instructor
GB/Hh
656-2463
wdhatch@nps.navy.mil

Henderson, David R.
Associate Professor
GB/Ht
656-2524
drhender@nps.navy.mil

Hildebrandt, Gregory R.
Associate Professor
GB/Hi
656-2637
Ghildebrandt@nps.navy.mil

Hocevar, Susan P.
Assistant Professor
GB/Hc
656-2249
shocevar@nps.navy.mil

Jones, Becky
Lecturer
GB/Jb
656-2755
bdjones@nps.navy.mil

Jones, Lawrence R.
Professor
GB/Jn
656-2482
lrjones@nps.navy.mil

Kang, Keebom
Associate Professor
GB/Kk
656-3106
kkang@nps.navy.mil

Lamm, David V.
Associate Professor
GB/Lt
656-2775
dlamm@nps.navy.mil

Laurence, Janice H.
Research Associate Professor
GB/Lw
656-2471
jhlauren@nps.navy.mil

Lewis, Ira A.
Associate Professor
GB/Le
656-2464
ialewis@nps.navy.mil

Malina, Mary A.
Assistant Professor
GB/Ya
656-1187
mamalina@nps.navy.mil

Matthews, Dave
Senior Lecturer
GB/Md
656-2360
dmatthews@nps.navy.mil

McCaffery Jerry L.
Professor
GB/Mm
656-2554
jmccaffery@nps.navy.mil

Mehay, Stephen L.
Professor
GB/Mp
656-2643
smehay@nps.navy.mil

Moses, Orrin Douglas
Associate Professor
GB/Mo
656-3218
dmoses@nps.navy.mil

Mutty, John E.
Senior Lecturer
GB/Mu
656-2205
jmutty@nps.navy.mil

Naegle, Brad R.
Lecturer
GB/Nb
656-3620
bnaegle@nps.navy.mil

Nissen, Mark E.
Associate Professor
GB/Ni
656-3570
mnissen@nps.navy.mil

Owen, Walter E.
Senior Lecturer
GB/On
656-2048
wowen@nps.navy.mil

Roberts, Nancy C.
Professor
GB/Rc
656-2742/3358
nroberts@nps.navy.mil

San Miguel, Joseph G.
Professor
GB/Sm
656-2187
jsanmiguel@nps.navy.mil

Simon, Cary A.
Visiting Assistant Professor
GB/Sn
656-2439
csimon@nps.navy.mil

Snider, Keith F.
Associate Professor
GB/Sk
656-3621
ksnider@nps.navy.mil

FACULTY LISTING

Suchan, James E.
Associate Professor
GB/Sa
656-2905
jsuchan@nps.navy.mil

Summers, Donald
Research Associate
GB/Ds
656-3632
DESummer@nps.navy.mil

Thomas, George W.
Professor
GB/Te
656-2741
gwthomas@nps.navy.mil

Thomas, Kenneth W.
Professor
GB/Th
656-2776
kthomas@nps.navy.mil

Tudor, Rodney E., LTC, USA
Military Instructor
GB/Tu
656-2456
retudor@nps.navy.mil

Tudor, Ron
Lecturer
GB/Rt
656-3254
rbtudor@nps.navy.mil

Webb, Juliette
Assistant Professor
GB/Wj
jawebb@nps.navy.mil

Weitzman, Ronald
Associate Professor
GB/Wz
rweitzman@nps.navy.mil

Yoder, Elliot C., CDR, USN
Military Instructor
GB/Yc
656-3619
ecyoder@nps.navy.mil

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PROJECT SUMMARIES

AGING AIRCRAFT PROJECT

Donald R. Eaton, Senior Lecturer

Graduate School of Business and Public Policy

Sponsor: Naval Air Warfare Center - Aircraft Division

OBJECTIVE: The purpose of the research was to fund student and faculty travel to investigate the issues and concerns of aging aircraft and tactics for remediation and amelioration and thesis support.

SUMMARY: Research on the Aging Aircraft Project focused on acquisition processes, maintenance programs, aircraft wire systems and airframes. Aging risk management, cultural and institutional opportunities and threats to ameliorating the aging phenomena were explored. Pro-active maintenance practices to anticipate aging failures in such a way as to find latent failures before such failures could become catastrophic in terms of safety and cost were also explored. In the case of aging aircraft wire, we recommended a pro-active wire maintenance program that would prevent serious wire failures and tied such a maintenance program to Reliability Centered Maintenance (RCM) concepts.

THESES DIRECTED:

Bailey, C. and Kuenzli, J., "Making Systems Supportability a Reality," Masters Thesis, Naval Postgraduate School, December 2001.

Brown, K., Edge, W., Raia, G. and Ray, J., "Crossbow: a Logistics Maintenance Concept," Masters Thesis, Naval Postgraduate School, December 2001.

Fowler, M., "Acquisition Strategies for Aging Aircraft," Masters Thesis, Naval Postgraduate School, December 2001.

Tambouratzis, V., "Aging Aircraft Wiring: a Proactive Maintenance Methodology," Masters Thesis, Naval Postgraduate School, June 2001.

DoD KEY TECHNOLOGY AREA: Air Vehicles, Materials, Processes, and Structures

KEYWORDS: Aging Aircraft, Aircraft Maintenance, Latent Failure

DEVELOPMENT OF AN INTERNET-BASED ONLINE RECRUITING STATION (ORS)

Mark J. Eitelberg, Professor

Graduate School of Business and Public Policy

Sponsor: Office of the Deputy Assistant Secretary of Defense

(Military Personnel Policy) and Commander, Navy Recruiting Command

OBJECTIVE: To develop a comprehensive Web site that provides an interactive, multimedia-rich, online community environment for learning about, exploring, and applying for Navy jobs.

SUMMARY: Previous research suggests that military recruiting efforts can be improved through greater use of the Internet. In 1999, the Naval Postgraduate School (NPS) experimented with a "mock-up" of a new approach to recruiting called the Online Recruiting Station (ORS). The results of these and other experiments have been quite promising. The initial development of ORS focused on three main components: 1) a Self-Discovery module that would help potential recruits identify their career interests and work values, and assess other pertinent work-related information as well as the likelihood of being considered for a Navy job; 2) an E-Business module (enlistment forms and pre-qualification assessment, in interactive form); and 3) an Online Community environment, including a chat room, instant messaging, and other features. All components would be presented in a multimedia format, with state-of-the-art technology. An online game would serve as the central feature of ORS. The game would have elements that allow for assessment of player (or potential applicant) skills; and characters within the game would advance through scenarios by participating in the three components of Self-Discovery, E-Business (pre-enlistment

PROJECT SUMMARIES

forms), and Community or team tasks. Additionally, other potential attractions would be offered through the site: viewing selected events (e.g., flight operations on an aircraft carrier; "battle stations" at boot camp; etc.); and selected commands would staff the chat rooms during specified periods of time (allowing young visitors to "talk" with sailors about their jobs).

This marked the second year of the multi-year project. Under the original plan, ORS would be developed as an advanced, proof-of-concept prototype. A pilot or "beta" system would follow. A production system would be developed and subsequently launched upon completion of testing and evaluation of the ORS pilot. The project was suspended in 2001, despite strong support within the Office of the Secretary of Defense and Department of the Navy, when required funding was discontinued.

THESIS DIRECTED:

Wilcox, A.G., "Recruiting the Next Generation: A Study of Attitudes, Values, and Beliefs," Masters Thesis, Naval Postgraduate School, March 2001.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Recruiting, Enlistment Screening, Internet Applications, Military Manpower

STUDIES OF NAVY RECRUITING WEB SITE

Mark J. Eitelberg, Professor

Graduate School of Business and Public Policy

Sponsor: Commander, Navy Recruiting Command

OBJECTIVE: To provide research support to the Commander, Navy Recruiting Command, leading to the development of "Life Accelerator," the principal component and organizing theme of the new recruiting Web site, "Navy.com."

SUMMARY: This project pulled together information from a variety of previous studies relating to the general effectiveness of Navy recruiting through the Internet. Major topics included the following: background information on the target population of military-age youth; perceptions of the military by the so-called "Net Generation"; the expectations and views of recruiting "influencers," such as teachers, guidance counselors, parents, and older siblings; the comparative attractiveness for recruiting of various Internet features; Internet applications to evaluate the interests, personality types, and vocational aptitudes of potential recruits; the effective elements of a youth-oriented "virtual community"; the comparative effectiveness of presenting Navy opportunities in a variety of formats; the use of realistic job previews in presenting Web-based information on the Navy; and other areas related to improving the effectiveness of the Navy's new recruiting Web site.

THESIS DIRECTED:

Wilcox, A.G., "Recruiting the Next Generation: A Study of Attitudes, Values, and Beliefs," Masters Thesis, Naval Postgraduate School, March 2001.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Recruiting, Recruiter Performance, Personnel Attrition, Training Attrition, Training Performance, Manpower, Personnel, and Training (MPT) Databases

PROJECT SUMMARIES

ONLINE RECRUITING STATION

Mark J. Eitelberg, Professor

Graduate School of Business and Public Policy

Sponsor: Directorate for Accession Policy, Office of the Secretary of Defense

OBJECTIVE: To clarify the Online Recruiting Station (ORS) vision, outline the project plan, build partnerships, define organizational roles and responsibilities, specify preliminary requirements and resources, gain agreement among stakeholders on immediate and long-term funding, and identify contractors to assist with separate portions of ORS development.

SUMMARY: This is a relatively small project that extends research for a much larger, multi-year effort. The results of the study are intended to expand existing knowledge and information that would ultimately lead to the design, development, construction, application, testing, and continued evaluation and improvement of ORS. The ORS vision and general project plan were outlined in a document, "The Online Recruiting Station: Vision, Planning, and Preliminary Requirements" (restricted distribution). Additionally, a detailed project plan was developed, specifying milestones, costs, personnel requirements, and organizational responsibilities. Agreements were reached on inter-agency partnerships and responsibilities, including the details of immediate and long-term funding. Potential contractors were identified, interviewed, and assessed for their potential contributions, roles, and comparative costs.

PUBLICATION:

Eitelberg, M.J., "Women and Minorities in the Military: Charting a Course for Research," *Managing Diversity in the Military*, Dansby, M.R., Stewart, J.B. and Webb, S.C., (eds.), New Brunswick, NJ, Transaction Publishers, 2001.

PRESENTATION:

Eitelberg, M.J., "America's All-Volunteer Force: Who Serves and Why Should We Care?," Invited Paper, Notestein Seminar Series, Office of Population Research, Woodrow Wilson School of Public and International Policy, Princeton University, December 2001.

THESIS DIRECTED:

DiEugenio, D.G., "Business Process Redesign in Marine Corps Recruiting with Visual Modeling and Simulation," Masters Thesis, Naval Postgraduate School, September 2001.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Recruiting; Enlistment Screening; Internet Applications; Military Manpower

SUPPORT TO THE EXECUTIVE STEERING GROUP FOR COMMERCIAL BUSINESS PRACTICES PILOT

Kenneth J. Euske, Professor

Graduate School of Business and Public Policy

Sponsor: Naval Air Systems Command

OBJECTIVE: The objective of this proposal is to provide support to the executive steering group for commercial business practices practice. After each executive steering group meeting a report will be provided to the executive steering group. The report is normally in an electronic format.

SUMMARY: The PI attended the monthly meeting of the Executive Steering Group and provided feedback and recommendations to the sponsor.

PROJECT SUMMARIES

DoD KEY TECHNOLOGY AREAS: Other (Business Management)

KEYWORDS: Commercial Business Practices, Pilot, ERP

INTELLIGENT AGENTS AND WEB-BASED MARKETS FOR DETAILING NAVAL PERSONNEL

William R. Gates, Associate Professor

Mark E. Nissen, Assistant Professor

Graduate School of Business and Public Policy

Sponsor: Naval Personnel Research Studies & Technology and Naval Postgraduate School

OBJECTIVE: Analyze the technological and operational feasibility of establishing a web-based market, using intelligent agents, to match naval enlisted personnel to specific navy billets.

SUMMARY: This multi-year research analyzes the technological and operational feasibility of establishing a web-based market, using intelligent agents, to match naval enlisted personnel to specific navy billets. This system will be part of a general DoN Sailor Career Management System that manages cradle to grave career paths to facilitate both recruiting and retention by enhancing the quality of life within DoN.

Research in 2001 involved three general research areas: developing the relevant information technology and software, identifying the appropriate assignment algorithm and integrating the web-based system into DON's current detailing process. Work modified an extant prototype "intelligent mall" intended for a commercial product setting to reflect a Navy personnel metaphor. A more-robust prototype agent/market system, renamed the "Personnel Mall," was constructed. This, more-robust prototype demonstrates the ability for this technology to meet the requirements envisioned in this application. This integrated agent/market was tested using representative sailors and jobs in a "laboratory setting," to examine actual versus predicted matching performance for both human detailers and the two-sided matching algorithm. Economics experiments were used to test quality of fit in assignments made by both human detailers and the two-sided matching algorithm. A simulation model was developed to test the two-sided matching algorithm's ability to conform to Navy policy (e.g., fill high priority billets, assign all sailors to jobs, etc.).

PUBLICATIONS:

Gates, W.R. and Nissen, M.E., "Designing Agent-Based Electronic Employment Markets," *Electronic Commerce Research Journal*, Vol. 1, No. 3, Special Issue on Theory and Application of Electronic Market Design, pp. 239-263, 2001.

Gates, W.R. and Nissen, M.E., "Experimental Analysis of e-Employment Market Design," *Journal of Organizational Computing And Electronic Commerce*, forthcoming 2002.

Gates, W.R. and Nissen, M.E., "Agent- and Web-based Employment Marketspaces in the U.S. Department of Defense," A. Gronlund (ed.), *Electronic Government: Design, Applications and Management*, Hershey, PA, Idea Group Publishing, 2002.

Nissen, M.E., Gates, W.R., et al., "Web-Based Market for Improving Naval Personnel Detailing," *Naval Postgraduate School Research*, Vol. 11, No. 2, Naval Postgraduate School, June 2001.

Gates, W.R. and Nissen, M.E., "An Empirical Investigation of e-Employment Market Designs," in *Proceedings: The Fourth International Conference on Electronic Commerce Research (ICECR-4)*, Dallas, TX, pp. 93-115, 8-11 November 2001.

PRESENTATIONS:

Gates, W.R. and Nissen, M.E., "The Navy Enlisted Detailing Process: An Empirical Analysis," Western

PROJECT SUMMARIES

Economics Association International Meetings, Seattle, WA, 29 June–3 July 2002.

Butler, V., Molina, V., Nissen, M. and Gates, W., "Characterizing Sailor and Command Enlisted Assignment Preferences," Navy Manpower Research and Analysis Conference, Center for Naval Analysis, Alexandria, VA, 14-15 February 2002.

Koh, G., Nissen, M. and Gates, W., "A Redesign of the U.S. Navy's Enlisted Assignment Process," Navy Manpower Research and Analysis Conference, Center for Naval Analysis, Alexandria, VA, 14-15 February 2002.

Gates, W. and Nissen, M., "Designing Agent-Based Electronic Employment Markets," Western Economics Association International Meetings, San Francisco, CA, 7 July 2001.

Gates, W. and Nissen, M., "Intelligent Agents and Web-Based Markets for Detailing Naval Personnel," Military Personnel Research Science Workshop, Fogelman Executive Conference Center, University of Memphis, TN, 4 June 2001.

THESES DIRECTED:

Hill, K., "Comparative Assessment of Air Force Enlisted Detailing Process," Masters Thesis, Naval Postgraduate School, March 2001.

Ng, H.S. and Soh, C.G., "Designing an Agent-based Simulation System to Demonstrate the Advantages of an Electronic Employment Market in a Large Military Organization," Masters Thesis, Naval Postgraduate School, March 2001.

Robards, P., "Matching Algorithms for an Intelligent Mail-Based Detailing Process," Masters Thesis, Naval Postgraduate School, March 2001.

Tan, S.J. and Yeong, C.M., "Economics Experiments to Demonstrate an Electronic Employment Market in a Large Military Organization," Masters Thesis, Naval Postgraduate School, March 2001.

Wasmund, T.R., "Analysis Of The U.S. Army Assignment Process: Improving Effectiveness and Efficiency," Masters Thesis, Naval Postgraduate School, June 2001.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel and Training, Computing and Software, Modeling and Simulation

KEYWORDS: Intelligent Agents, Web-Based Markets, Two-Sided Matching Games

NAVY AIRLIFT

William R. Gates, Associate Professor
Graduate School of Business and Public Policy
Alan Washburn, Professor
Department of Operations Research
Sponsor: Chief of Naval Operations (N78)

OBJECTIVE: The Navy operates a fleet of operational support aircraft (OSA) that have the function of moving high priority passengers and cargo in wartime. The fleet is aging, and must gradually be replaced with more modern aircraft. The objective is first to measure the wartime demand for OSA transport in the event of a major war, and then to design a fleet that satisfies that demand at minimal cost.

SUMMARY: The basic approach is to estimate wartime demand for OSA transport, and then design a fleet that can meet that demand efficiently, bearing in mind that the costs of current OSA aircraft are "sunk." A fleet management tool OSAMIX is developed as an Excel workbook. Peacetime demand is

PROJECT SUMMARIES

estimated by recovering appropriate records from the JALIS database system, and then inflated to prospective wartime demand by applying a "surge factor." Given the characteristics of various aircraft, OSAMIX then finds the fleet that minimizes the present value of the costs of meeting that demand. One conclusion is that it is cost-effective for the Navy to retire its fleet of C-12 turboprop aircraft in favor of a similarly scaled jet aircraft.

PUBLICATIONS:

Gates, W. and Washburn, A. "The Navy Operational Support Aircraft Fleet," Naval Postgraduate School Progress Report, OR-01-006-PR, 2001.

THESES DIRECTED:

Law, J., "Assessing the Performance and Cost of Logistics Airfleet Options," Masters Thesis, Naval Postgraduate School, December 2000.

DoD KEY TECHNOLOGY AREA: Other (Military Airlift)

KEYWORDS: OSA, Aircraft Scheduling, Cost Effective

SEA BASED WAREHOUSING
Kevin R. Gue, Assistant Professor
Graduate School of Business and Public Policy
Sponsor: Office of Naval Research

OBJECTIVE: To develop throughput and storage system models for cross-docks and transshipment points, with particular application to sea base design in Sea Based Logistics.

SUMMARY: Throughput models for unit-load cross docking systems were developed, including a new type of queue called a staging queue. Analytical results were obtained with a continuous-time Markov chain model of the system, and built simulation models for more complex systems. Uses of the model in stream off-load operations and for the future sea based warehouse platform were proposed.

PUBLICATIONS:

Bartholdi, J., III, Gue, K. and Kang, K., "Staging Freight in a Crossdock," *Proceedings of the International Conference of Industrial Engineering and Production Management*, Quebec City, Canada, May 2001.

Gue, K. and Kang, K., "Staging Queues in Material Handling and Transportation Systems," *Proceedings of the 2001 Winter Simulation Conference*, Washington DC, December 2001.

DoD KEY TECHNOLOGY AREA: Other (Logistics and Transportation)

KEYWORDS: Distribution, Logistics, Warehousing, Crossdocking, Simulation.

PROJECT SUMMARIES

ANALYSIS OF BUDGET REDUCTION, COST-AVOIDANCE AND FINANCIAL MANAGEMENT INITIATIVES IN COMNAVAIRPAC

Lawrence R. Jones, Professor

Jerry L. McCaffery, Professor

Graduate School of Business and Public Policy

Sponsors: Office of the Comptroller, COMNAVAIRPAC and Naval Postgraduate School

OBJECTIVE: To provide assistance to the Office of the Comptroller, AIRPAC in analysis of initiatives for improving command management and management control, cost-reduction and cost avoidance in the Flight Hour Program (FHP) and in accommodating budget reduction.

SUMMARY: The project provided analytical assistance to the Office of the Comptroller, AIRPAC in responding to the necessity for reviewing and assessing options for improving command management and management control, achieving cost-reduction and avoidance in the Flight Hour Program (FHP) and accommodating budget reduction in the period FY 2000 and beyond.

PUBLICATIONS:

Jones, L.L., McCaffery, J.L., Thompson, F. and Zumeta, W., "Public Management for the New Millennium: Developing Relevant and Integrated Professional Curricula," *The International Public Management Review*, 2 February 2001.

Jones, L.L. and McCaffery, J.L., "Public Management Reform – A Symposium," *International Public Management Review*, 2 January 2001.

Jones, L.L. and McCaffery, J.L., "Symposium on Public Management Reform and E-Government," *International Public Management Journal*, 4 February 2001.

Jones, L.L., McCaffery, J.L. and Thompson, F., "Performance Budgeting and Accounting in the Public Sector," in A. Kahn, ed., *Budget Theory*, New York, State University of New York Press, 2001.

Jones, L.R., et. al. "Developing Integrated Public Management Curricula," International Public Management Network Workshop, Odense, Denmark, July 2001.

McCaffery, J.L., and Jones, L.R., *Budgeting and Financial Management in the Federal Government*, Greenwich, CT, Information Age Press, 2001.

THESES DIRECTED:

Kimmel, C. and Butzirus, E., "Alternative Command Funding and Functional Organization at the SPAWAR Command," Masters Thesis, Naval Postgraduate School, June 2001.

Phillips, E.A., "An Investigation of Flight Hour Cash Management at CNAP," Masters Thesis, Naval Postgraduate School, June 2001.

Sims, T. and Angela M., "Assessing the Outcomes of Regionalization in Navy Region Southwest," Masters Thesis, Naval Postgraduate School, June 2001.

Kask, A., "Program Budgeting to Improve Decision Making and Resource Planning in Estonian Defense," Masters Thesis, Naval Postgraduate School, June 2001.

Sabel, M., "Naval Special Warfare Command Implementation of the CFO Act," Masters Thesis, Naval Postgraduate School, September 2001.

Duma, D., "A Cost Estimation Model for CNAP Tacair Aviation Depot Level Repair Costs," Masters Thesis, Naval Postgraduate School, December 2001.

PROJECT SUMMARIES

Ma, W., "Cost Analysis of the USMC Federal Employees Compensation Act Program," Masters Thesis, Naval Postgraduate School, December 2001.

DoD KEY TECHNOLOGY AREAS: Other (Resource Management)

KEYWORDS: Resource Management, Financial Management, Management Reform

MODELING AND SIMULATION OF SEA-BASED COMBAT LOGISTICS UTILIZING AN LHD AMPHIBIOUS ATTACK SHIP

Keebom Kang, Associate Professor

Graduate School of Business and Public Policy

Sponsor: Naval Facilities and Engineering Service Center

OBJECTIVE: The objective of this project is to investigate ways to improve the ability to re-supply/replenish combat materiel utilizing LHD amphibious attack ships. It addresses the requirements in terms of sea-based logistics, inter-ship/intra-ship movement, stowage issues, material handling issues, total asset visibility issues, and recommendations for consideration in future ship designs.

SUMMARY: This study analyzes the concept of Sea Based Logistics in the area of inter-ship and intra-ship movement of materiel as well as ship-to-objective materiel movement. Two simulation models have been developed to evaluate the capability of current LHD-class amphibious ships to sustain a force deployed ashore. Results indicate a substantial increase in the number of aircraft, operational availability of those aircraft, and/or a substantial reduction in sustainment requirements are needed in order to successfully accomplish the stated scenarios of this study. The results of this study could support the design of future LHD-class ships.

PRESENTATIONS:

Kang, K., Brief to the Modeling and Simulation Group at the Naval Facilities and Engineering Service Center (NFESC), Port Hueneme, CA, August 2001.

Kang, K., Brief to supply officers onboard *USS Bonhomme Richard* (LPD 6), August 2001.

THESES DIRECTED:

Curtin, M., "Analysis of Inter/Intra Ship Material Movement in Sea Based Logistics Using Simulation," Masters Thesis, Naval Postgraduate School, June 2001.

Bryan, K., "Simulation of Sea Base Logistics Support of Operational Maneuver from the Sea," Masters Thesis, Naval Postgraduate School, December 2001.

DoD KEY TECHNOLOGY AREA: Modeling and Simulation

KEYWORDS: Readiness, Sealift, Sea-Based Logistics, Simulation and Modeling

EVALUATION OF EFFICIENT OFFICER COMMISSIONING SOURCE MIXES

Janice H. Laurence, Research Associate Professor

Graduate School of Business and Public Policy

Sponsor: Office of the Secretary of Defense

OBJECTIVE: The object of this proposal is to assess alternative officer commissioning sources and source mixes.

SUMMARY: The Principal Investigator provides on-site consultation and analysis of officer

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commissioning source and mix policy issues.

DoD KEY TECHNOLOGIES AREAS: Manpower, Personnel and Training

KEYWORDS: Officer Commissioning Source, Academy, ROTC, OCS

STUDY AND ANALYSIS OF INSIDER THREAT

Janice H. Laurence, Research Associate Professor

Graduate School of Business and Public Policy

Sponsor: Central Intelligence Agency

OBJECTIVE: To provide a documented description of the background, characteristics, and behaviors of insiders who pose threats to national security and the safekeeping of classified information. Included are threats from information technology. In addition to the characteristics of individuals, environmental aspects will also be uncovered along with potential interactions between individual and environmental factors. From these data, insider threat models will be developed along with recommendations for policies and procedures that will ameliorate the vulnerabilities.

SUMMARY: Analysis of a database on security violations housed by the National Reconnaissance Office (NRO) was conducted. Based on the results, a follow-on study and protocol were developed for administration to cleared personnel who have committed cyber security violations. A related study was designed (including protocol and proposal submitted to the FBI Institutional Review Board) for assessing cyber crimes among non-cleared personnel who are incarcerated. A synopsis of the Intelligence Community's SLAMMER project was prepared and a research prospectus was forwarded to the FBI so as to gain access to the SLAMMER data. SLAMMER is a classified project that consists of transcriptions of interviews with convicted spies against the United States. These data show potential for secondary analysis from a counterintelligence perspective. Further, the data show potential for designing training scenarios for personnel security purposes.

DoD KEY TECHNOLOGY AREAS: Command, Control and Communications

KEYWORDS: Personnel Security, Insider Threat, Background Investigations, Security Vulnerability

EXTERNAL ACQUISITION RESEARCH PROGRAM

Ira Lewis, Associate Professor

Graduate School of Business and Public Policy

Sponsor: Defense Acquisition University

OBJECTIVE: The mission of the External Acquisition Research Program (EARP) is to significantly increase the quality and quantity of acquisition research. It aims to expand the base of researchers interested in topics germane to Department of Defense (DoD) acquisition and to produce new and relevant knowledge and solutions from a variety of disciplines. The program targets researchers at leading universities outside of DoD's customary sphere of influence and support, but is open to scholars at all institutions capable of top quality acquisition research.

SUMMARY: Work as Program Manager has included: 1) Leading the evaluation team for FY2001 research proposals received from academic institutions; 2) Responsibility for a budget of \$300,000 (FY2002); 3) Marketing the program to academic institutions and DOD agencies; and 4) Contract management.

DoD KEY TECHNOLOGY AREA: Other (Acquisition and Contracting)

KEYWORDS: Acquisition, Contracting

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ANALYSIS OF NAVY RECRUITS' BACKGROUND FACTORS AND ATTITUDES

Stephen L. Mehay, Professor

Graduate School of Business and Public Policy

Sponsor: Naval Education and Training Professional Development and Technology Center

OBJECTIVE: The Navy has been experiencing high attrition rates during basic training for high school graduates. Information is needed on recruits' background characteristics and attitudes that could be used to facilitate their transition to military life.

SUMMARY: The purpose of this effort is to automate and analyze responses from about 10,000 bio-questionnaires administered to high school graduate recruits and to identify factors associated with their behavior during later basic training. If successful, the Navy could use this information to identify recruits in need of special, early assistance to help them complete basic training.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel and Training

KEYWORDS: Attrition, Recruiting

GENERAL EDUCATIONAL DEVELOPMENT (GED) SCREENING PILOT STUDY -- PART II

Stephen L. Mehay, Professor

Graduate School of Business and Public Policy

Sponsor: Chief of Naval Operations (N1H)

OBJECTIVE: The purpose of this study is to identify and evaluate procedures for the increased recruitment and improved selection of GED certificate holders to meet Navy procurement goals. If successful, the Navy could broaden its recruitment base and reduce first-term attrition.

SUMMARY: The effort will develop and pre-test a biographical questionnaire and evaluate its productivity in obtaining relevant behavioral information. The study will prepare guidelines for the administration of the questionnaire at the MEPS and prepare the data for subsequent statistical analysis.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel and Training

KEYWORDS: GED, Recruitment, Selection, Attrition

MODELS OF NAVY COMPENSATION AND RETENTION BEHAVIOR

Stephen L. Mehay, Professor

Graduate School of Business and Public Policy

Sponsor: Navy Personnel Research, Studies and Technology Center

OBJECTIVE: Navy is currently building a personnel data warehouse (PerSMART) that, in part, will be used to support the management of retention and Navy end-strength. The data warehouse will be constructed based on individual records derived from the Navy Enlisted Master File (EMF). When completed, PerSMART will contain a module called the Retention Monitoring Systems (RMS) that will allow analysts to calculate reenlistment and extension rates for individual sailors identified by rating, NEC, zone, and other important characteristics. Navy Personnel Bureau analysts require that the new data warehouse incorporate a Retention Modeling Module (RMM) that will support various types of more sophisticated statistical analysis of retention behavior.

SUMMARY: The purpose of this effort is to provide assistance in identifying and obtaining key elements needed for the Retention Modeling Module. The study will survey the literature military compensation and retention. The survey will provide the guide for the data fields that will be required to populate the RMM. The study will identify the necessary structure of the retention modeling capability for RMM. Various retention modeling approaches will be reviewed as will the data requirements for each.

PROJECT SUMMARIES

PUBLICATIONS:

Mehay, S., "A Survey of Navy Retention and Compensation Models," Technical Report prepared for Navy Personnel Research, Studies and Technology Center, Millington, TN, July 2001.

THESES DIRECTED:

Bellas, J. and McNally, J., "Navy Retention and Compensation Models," Masters Thesis, Naval Postgraduate School, March 2001.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel and Training

KEYWORDS: Retention, ACOL Models, Compensation

STATISTICAL ANALYSIS OF BASIC TRAINING ATTRITION

Stephen L. Mehay, Professor

Graduate School of Business and Public Policy

Sponsor: Navy Recruiting Command

OBJECTIVE: The purpose of this study is to identify and evaluate procedures for the increased recruitment and improved selection of GED certificate holders to meet Navy procurement goals. If successful, the Navy could broaden its recruitment base and reduce first-term attrition.

SUMMARY: The effort will examine and evaluate a number of different statistical approaches and models that can be applied to pre-service biographical data items as predictors of basic training attrition among high risk applicants, and recommend to the Navy the most effective formula for attrition reduction.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel and Training

KEYWORDS: GED, Recruitment, Selection, Attrition

FEDERAL FINANCIAL REPORTING AND ANALYSIS

Douglas Moses, Associate Professor

Graduate School of Business and Public Policy

Sponsor: Unfunded

OBJECTIVE: The objective of this line of research is to describe and critique current Financial Reporting practices of Federal Government entities and develop methodologies for conducting Financial Statement Analysis appropriate for federal agencies.

SUMMARY: Recent years have seen significant changes within the federal government that impact financial reporting. There has been a general shift toward more "business-like" management practices. There have been initiatives, such as the CFO Act and the Federal Accounting Standards Advisory Board, which have resulted in changes in both the requirement for, and the content of, the financial reporting of federal government activities. This research attempts to construct and validate a framework for conducting financial analysis of federal entities relying on the information available in federal financial reports. The research develops financial ratios designed to communicate the financial condition of federal entities and examines their meaning and properties

PROJECT SUMMARIES

THESES DIRECTED:

Belchoff, B., "Analysis of Changes in Federal Financial Ratios," Masters Thesis, Naval Postgraduate School, June 2001.

Murphy, M., "Fundamental Dimensions of Financial Condition in the Federal Government," Masters Thesis, Naval Postgraduate School, June 2001.

DoD KEY TECHNOLOGY AREA: Other (Financial Accounting/Reporting)

KEYWORDS: Financial Accounting, Federal Financial Reporting, Financial Ratio Analysis

KNOWLEDGE-FLOW THEORY FOR VERY-LARGE ENTERPRISES

Mark Nissen, Assistant Professor

Graduate School of Business and Public Policy

Sponsor: Office of Naval Research

OBJECTIVE: The primary objective of this research is to develop scientific knowledge and understanding (i.e., theory) pertaining to the phenomenon of knowledge flow.

SUMMARY: This, three-year project is funded by the Office of Naval Research (ONR) through its Young Investigator (YI) Program. The YI program is highly-competitive, and winning the corresponding grant award brings national recognition to the Naval Postgraduate School. The basic science associated with this project addresses our poor understanding of how knowledge—viewed as distinct from information and data—flows through the enterprise. To improve this understanding, a program of theory building and testing is conducted through a three-pronged technical approach: 1) develop and refine a model of knowledge-flow theory, emphasizing the very-large enterprise (e.g., Navy, Department of Defense); 2) develop a contingency model for matching the most-appropriate process and system designs to enterprise knowledge-flow patterns; 3) assess the performance effects of alternative knowledge system and process designs through simulation (e.g., of naval warfare, personnel processes).

2001 represents the first year of this project. In this first year, most of the spring quarter was spent onboard the *USS Coronado*, flagship of the Navy's Third Fleet, conducting a case study to investigate the phenomenology of knowledge flow through the Joint Task Force operation. This field research included working, eating and even living onboard this naval warship, while in port in San Diego as well as underway at sea for the Joint Task Force Exercise organized for the VINSON Battlegroup. Preliminary results include a grounded understanding of how knowledge flows are distinct from work flows associated with warfighting, along with the identification, classification and visualization of numerous interrelated knowledge flows using a four-dimensional model developed through integration of theory and empirical data.

PUBLICATIONS:

Oxendine, E. and Nissen, M.E., "Knowledge Process and System Design for the Carrier Battlegroup," *Knowledge and Innovation: Journal of the KMCI* 1:3, 2001.

Nissen, M.E., *Facilitating Naval Knowledge Flow*, Naval Postgraduate School Technical Report, NPS-GSBPP-01-004, 2001.

Nissen, M.E., *Toward a Program of Research on Knowledge Flow in the Very-Large Enterprise*, Naval Postgraduate School Technical Report, NPS-GSBPP-01-003, 2001.

Nissen, M.E. and Oxendine, E., "Integrating Knowledge Process and System Design for Naval Battle Groups," *Advanced Topics in Information Resources Management Idea Group Publishing* (forthcoming 2002).

PROJECT SUMMARIES

PRESENTATIONS:

Nissen, M.E., "Research Experiences and Opportunities with the Navy Sea-Based Battle Lab," Invited Presentation for the Naval Postgraduate School, School of Business and Public Policy Research Colloquium, Monterey, CA, September 2001.

Nissen, M.E., "Navy Knowledge Flow," invited presentation, Navy Chief Information Office, Knowledge-Centric Organization Project, presentation filmed in Monterey, CA, May 2001.

Nissen, M.E., "Navy Knowledge Flow Exchange," invited presentation, Command Third Fleet seminar, *USS Coronado*, San Diego, CA, May 2001.

Nissen, M.E., "A Brief Look at Knowledge Flow," invited presentation, Naval Postgraduate School Research Recognition Evening, April 2001.

Nissen, M.E., "A Tale of Three Knowledge Systems," invited presentation, Stanford University Center for Integrated Facilities Engineering, March 2001.

THESES DIRECTED:

Korzilius, H., "The Use of Knowledge Based Decision Support Systems in Reengineering Selected Processes in the U.S. Marine Corps," Masters Thesis, Naval Postgraduate School, September 2001.

Navarro, R., "Knowledge Management and System Design at U.S. Coast Guard Command Centers," Masters Thesis, Naval Postgraduate School, June 2001.

Sorenson, A., "The Coast Guard Knowledge Base: Building Online Guard Communities, Teams, and Experts to Facilitate Rapid Creation, Capture and Sharing of Service Related Knowledge," Masters Thesis, Naval Postgraduate School, June 2001.

OTHER:

"Knowledge Flow through a Military Joint Task Force Operation," in review.

"An Extended Model of Knowledge-Flow Dynamics," in review.

"Defense Project Management Knowledge Flow through Lessons Learned," in review; with Keith Snider.

"Experimental Assessment of a Redesign Knowledge System for Decision Support," in review.

DoD KEY TECHNOLOGY AREAS: Computing and Software

KEYWORDS: Knowledge, Knowledge Flow, Knowledge Management, Knowledge Superiority, Modeling and Simulation.

WEB-BASED LABOR MARKET DESIGN THROUGH INTELLIGENT AGENTS

Mark Nissen, Assistant Professor

Graduate School of Business and Public Policy

Sponsor: Navy Personnel Research Studies and Technologies Office

OBJECTIVE: To design Web-based labor markets for matching sailors with jobs via software agents.

SUMMARY: Associate Professor Bill Gates and the principal investigator broke new ground in terms of both two-sided matching algorithms and multi-agent systems, and we effectively integrated these disciplinary works to create effective market-design goals, approaches and proof-of-concept systems. This

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effort has since expanded to include experimental-economics and other work through collaboration with researchers from the University of Mississippi, and our market-design approach has been selected for Navy-wide implementation through its Navy/Marine Corps Career Management System.

PUBLICATIONS:

Gates, W.R. and Nissen, M.E., "Designing Agent-based Electronic Employment Markets," *Electronic Commerce Research Journal*, Special Issue on Theory and Application of Electronic Market Design 1:3, 2001.

Gates, W.R. and Nissen, M.E., "Agent- and Web-based Employment Marketspaces in the U.S. Department of Defense," in: A. Gronlund (ed.), *Electronic Government: Design, Applications and Management* Idea Group Publishing (forthcoming).

Nissen, M.E. and Gates, W.R., "An Empirical Investigation of e-Employment Market Designs," *Proceedings International Conference on Electronic Commerce Research*, Dallas, TX, November 2001.

PRESENTATIONS:

Nissen, M.E. and Gates, W.R., "An Empirical Investigation of e-Employment Market Designs," presented at the International Conference on Electronic Commerce Research, Dallas, TX, November 2001.

Gates, W.R. and Nissen, M.E., "Designing Agent-Based Electronic Employment Markets," presented at the Western Economics Association International Meetings, San Francisco, CA, July 2001.

Gates, W.R. and Nissen, M.E., "Intelligent Agents and Web-Based Markets for Detailing Naval Personnel," presented at the Military Personnel Research Science Workshop, University of Memphis, TN, June 2001.

THESES DIRECTED:

Ng, H.S., "Designing an Agent-based Simulation System to Demonstrate the Advantages of an Electronic Employment Market in a Large Military Organization," Masters Thesis, Naval Postgraduate School, March 2001.

Soh, C.G., "Designing an Agent-based Simulation System to Demonstrate the Advantages of an Electronic Employment Market in a Large Military Organization," Masters Thesis, Naval Postgraduate School, March 2001.

Robards, P., "Analysis of Two-Sided Matching Algorithms for Naval Personnel Processes," Masters Thesis, Naval Postgraduate School, March 2001.

OTHER:

"Experimental Analysis of e-Employment Market Designs," in review, with Bill Gates.

DoD KEY TECHNOLOGY AREAS: Computing and Software, Manpower, Personnel, and Training

KEYWORDS: Agents, Economics, Information Systems, Labor Markets, Personnel, Process Innovation, Research

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FINANCIAL REPORTING AND ANALYSIS RESEARCH FOR THE DEPARTMENT OF DEFENSE PERSONNEL SECURITY RESEARCH CENTER

Joseph G. San Miguel, Professor

Graduate School of Business and Public Policy

Sponsor: Department of Defense Security Research Center

OBJECTIVE: The objective of the research during the third year of this program was to assist the security agencies in applying financial analysis techniques to live data obtained from federal employees in positions of national security. Prior work recommended new tools for uncovering unexplained affluence or financial distress. The results have financial implications for security policies and programs of the Defense Investigative Service, the National Security Agency, the Central Intelligence Agency, and the U.S. Customs.

SUMMARY: Numerous initiatives are underway to evaluate the quality of financial and non-financial information for purposes of deterring or detecting security threats. Prior investigation and research has established that financial incentives and payments are generally the primary motives for acts of spying by U.S. citizens. The well-known spy cases involving Aldrich Ames and John Walker are examples. This project considers the use of the financial information for use as predictors of potential security risks and the need for security investigations. Financial information includes unexplained increases or decreases in an individual's net worth. The various sources of net worth such as earned income, inheritance, or sale of personal assets as well as the uses of net worth for investments and asset acquisitions, are variables that must be considered. Due to the sensitivity of the subject, the reports prepared for the sponsor and the other federal agencies are CLASSIFIED.

PUBLICATIONS:

San Miguel, J.G., "Application of Financial Ratios to Vertical and Horizontal Analysis of the National Security Agency's Financial Disclosures," Classified Report, Department of Defense, Security Research Center, 15 September 2001.

THESIS DIRECTED:

Lee, L., "Financial Analysis of Federal Employee Financial Disclosures to Identify Unexplained Affluence and Financial Stress," Masters Thesis, Naval Postgraduate School, June 2001.

DoD KEY TECHNOLOGY AREA: Other (National Security)

KEYWORDS: National Security, Financial Analysis, Cost Analysis, Cost Estimation

THE STRATEGIC IMPACT OF ENTERPRISE RESOURCE PLANNING SYSTEMS

Joseph G. San Miguel, Professor

Graduate School of Business and Public Policy

Sponsor: Financial Executive Research Foundation

OBJECTIVE: In recent years, business enterprises have made significant investments in information technology called enterprise resource planning systems to improve their strategic positioning, responsiveness to the customer, and market direction. This research examines a number of companies that have implemented enterprise resource planning systems to better understand the roles and responsibilities of financial managers and the resulting strategic information and performance measurement systems.

SUMMARY: For survival and growth in the global marketplace a firm must effectively allocate its strategic resources, which include human, physical, and financial assets, across business operations and processes. Its strategy must be supported by management systems that assist the planning and control of operations and processes. Today information technology supports these information systems. In recent

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years enterprise resource planning (ERP) systems have been used as a means to comprehensively link firm-wide operations and processes. The majority of the thousand largest firms in the U.S. have either implemented or in the process of implementing enterprise resource planning systems. Because of the millions of investment dollars involved, executive management is keenly aware of ERP and its promised benefits. Today, ERP vendors and IT consultants are also targeting middle-level firms with annual sales less than \$1 billion. The question is how effective are these significant investments in assisting executive management in achieving corporate objectives.

PUBLICATIONS:

San Miguel, J.G., "Dallas Consulting Group," in Blocher, E.J., et al., *Cases and Readings in Cost Management*, Irwin/McGraw-Hill, 2002.

San Miguel, J.G., "Emerson Electric Company," in Blocher, E.J., et al., *Cases and Readings in Cost Management*, Irwin/McGraw-Hill, 2002.

San Miguel, J.G. and Shank, J.K., "ERP as a Strategic Management Tool: Six Evolutionary Stages," *Handbook of Cost Management*, Warren, Gorham, Lamont, 2001.

THESES DIRECTED:

Banasiewicz, R., "Developing a Model to Assess Information Technology Investment Management in Government Agencies," Masters Thesis, Naval Postgraduate School, June 2001.

Leighty, J.E., "Criteria for Evaluating United States Marine Corps Installation Strategic Management," Masters Thesis, Naval Postgraduate School, December 2001.

Schweighardt, E., "Electronic Chart Display and Information System—Navy Analysis and Recommendations," Masters Thesis, Naval Postgraduate School, June 2001.

Shearon, B.T., "The Cost Effectiveness of West Coast Distributed Simulation Training for Pacific Fleet," Masters Thesis, Naval Postgraduate School, December 2001.

DoD KEY TECHNOLOGY AREA: Other (Cost Management)

KEYWORDS: Financial Analysis, Cost Analysis, Cost Estimation, Strategy

ACQUISITION CENTER FOR RESEARCH AND LESSONS LEARNED (ACQUISITION CENTRAL)

Keith F. Snider, Associate Professor
Graduate School of Business and Public Policy
Sponsor: TRADOC Analysis Command

OBJECTIVE: The objective of this proposal is to develop, implement and operate a virtual center to focus research resources on relevant and important acquisition issues, provide a means to make research results accessible to the acquisition community, serve as an integrating mechanism for acquisition research needs of warfighters, policy-makers and practitioners.

SUMMARY: A virtual center has been established, tested, and put on line for access by policy-makers and practitioners.

DoD KEY TECHNOLOGY AREAS: Other (Systems Acquisition)

KEYWORDS: Acquisition, Acquisition Research, Lessons Learned

**GRADUATE SCHOOL OF
BUSINESS AND PUBLIC POLICY**

**2001
Faculty Publications
and Presentations**

PUBLICATIONS/PRESENTATIONS

JOURNAL PAPERS

Boudreau, M., "Transitioning From Fielding to Steady-State Sustainment," *Army AL&T*, pp. 31-32, January-February 2001.

Fowler, D.N. and Nissen, M.E., "Innovating the Federal Acquisition Process through Intelligent Agents," *Acquisition Review Quarterly* 8:3, 2001.

Gates, W.R. and Nissen, M.E., "Designing Agent-Based Electronic Employment Markets," *Electronic Commerce Research Journal*, Vol. 1, No. 3, Special Issue on Theory and Application of Electronic Market Design, pp. 239-263, 2001.

Gergen, K.J., McNamee, S. and Barrett, F., "Toward Transformative Dialogue," *International Journal of Public Administration*, 24(7&8), pp. 678-707, 2001.

Jones, L.R., "Public Management Reform – A Symposium," *The International Public Management Review*, Vol. 2, Issue 1, pp. 1-52, 2001.

Jones, L.R., "Symposium on Public Management Reform and E-Government," *International Public Management Journal*, Vol. 4, Issue 2, 2001.

Jones, L.R., Thompson, F. and Zumeta, W., "Public Management for the New Millennium: Developing Relevant and Integrated Professional Curricula," *The International Public Management Review*, Vol. 2, Issue 2, pp. 19-38, 2001.

Jones, L.R. and Thompson, F., "Responsibility Budgeting and Accounting," *International Public Management Journal*, Vol. 3, pp. 205-227, 2001.

Laurence, J.H. "Our Armed Forces Respond to Terror at Home," *Psychological Science Agenda*, Vol. 14, No. 6., pp. 6-7, 2001.

Lewis, I., "Logistics and Electronic Commerce: An Interorganizational Systems Perspective," *Transportation Journal*, 40(4), pp. 5-13, Summer 2001.

Malina, M.A. and Selto, F.H., "Communicating and Controlling Strategy: An Empirical Study of the Effectiveness of the Balanced Scorecard," *Journal of Management Accounting Research*, Vol., 13, pp. 47-90, 2001.

Nissen, M.E., "Measurement-driven Enterprise Systems Engineering," *Journal of Engineering Valuation and Cost Analysis* 4:1, 2001.

Nissen, M.E., "Beyond Electronic Disintermediation through Multi-Agent Systems," *Journal of Logistics Information Management* 14:4, 2001.

Nissen, M.E., "Agent-Based Supply Chain Integration," *Journal of Information Technology and Management* 2:3, Special Issue on Electronic Commerce in Procurement and the Supply Chain, 2001.

Nissen, M.E., "An Experiment to Assess the Performance of a Redesign Knowledge System," *Journal of Management Information Systems* 17:3, Winter 2000-2001.

Oxendine, E. and Nissen, M.E., "Knowledge Process and System Design for the Carrier Battlegroup," *Knowledge and Innovation: Journal of the KMCI* 1:3, 2001.

Snider, K. F. and Walker, M. F., "Best Practices and Protests: Toward Effective Use of Past Performance As a Criterion in Source Selections," *Journal of Public Procurement*, Vol. 1, Issue 1, pp. 96-122.

PUBLICATIONS/PRESENTATIONS

Suchan, J., "The Effect of Interpretive Schemes on Videoteleducation's Conception, Implementation, and Use," *Journal of Business and Technical Communication*, Vol. 15, No. 2, pp. 133-163, April 2001.

Suchan, J. and Hayzak, G., "The Communication Characteristics of Virtual Teams: A Case Study," *IEEE Transactions on Professional Communication*, Vol. 44, Issue 3, pp.174-187, 2001.

CONFERENCE PAPERS

Bartholdi, J.J., III, Gue, K.R. and Kang, K., "Staging Freight in a Crossdock," *Proceedings of the International Conference of Industrial Engineering and Production Management*, Quebec City, Canada, May 2001.

Gates, W.R. and Nissen, M.E., "An Empirical Investigation of e-Employment Market Designs," *Proceedings: The Fourth International Conference on Electronic Commerce Research (ICECR-4)*, pp. 93-115, Dallas, TX, 8-11 November 2001.

Gue, K.R. and Keebom, K., "Staging Queues in Material Handling and Transportation Systems," *Proceedings of the 2001 Winter Simulation Conference*, Washington, DC, December 2001.

Gue, K.R. and Kang, K., "Staging Queues in Material Handling and Transportation Systems," *Proceedings of the 2001 Winter Simulation Conference*, pp. 1104-1108, 2001.

Hutchins, S.G., Kleinman, D.L., Hocevar, S.P., Kemple, W.G. and Porter, G.R., "Enablers of Self-synchronization for Network-Centric Operations: Design of a Complex Command and Control Experiment," *Proceedings of the 6th International Command and Control Research and Technology Symposium*, U.S. Naval Academy, Annapolis, MD, 2001.

Hutchins, S.G., Kemple, W.G., Poirier, J.A. and Hocevar, S.P., "Use of a Novel Organizational Structure to Support Complex Decisionmaking During Global Wargame 2001," *Proceedings of the 6th International Command and Control Research and Technology Symposium*, U.S. Naval Academy, Annapolis, MD, 2001.

Hutchins, S.G., Kemple, W.G., Poirier, J.A., Hocevar, S.P., Kleinman, D.L. and Sovereign, M.G., "Use of Information Technology to Develop a Collaborative Decision Support System for Command and Control," *Proceedings of the 6th International Command and Control Research and Technology Symposium*, U.S. Naval Academy, Annapolis, MD, 2001.

Nissen, M.E. and Gates, W.R. "An Empirical Investigation of e-Employment Market Designs," *Proceedings International Conference on Electronic Commerce Research*, Dallas, TX, November 2001.

CONFERENCE PRESENTATIONS (WITHOUT PUBLICATION)

Doerr, K., "An Empirical Comparison of Two Models of Task Completion Time," 2001 Academy of Management Conference, Washington D.C.

Eitelberg, M.J., "Bridging the Gap Between Defense and Public Administration," Annual Meeting of the American Society for Public Administration, Newark, NJ, March 2001.

Eitelberg, M.J., "America's All-Volunteer Force: Who Serves and Why Should We Care?" Notestein Seminar Series, Office of Population Research, Woodrow Wilson School of Public and International Affairs, Princeton University, December 2001.

Gates, W.R. and Nissen, M.E., "Designing Agent-Based Electronic Employment Markets," Western Economics Association International Meetings, San Francisco, CA, 7 July 2001.

PUBLICATIONS/PRESENTATIONS

Gates, W.R. and Terasawa, K.L., "Reconsidering Publicness in Alliance Defense Expenditures: NATO Expansion and Burden Sharing," Western Economics Association International Meetings, San Francisco, CA, 7 July 2001.

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**GRADUATE SCHOOL OF
BUSINESS AND PUBLIC POLICY**

Thesis Abstracts

THESIS ABSTRACTS

FOREIGN MILITARY SALES: IMPROVING CONTRACT CLOSEOUT PROCEDURES USING PROCESS INNOVATION

**Kristin Acquavella-Lieutenant, United States Navy
B.A., University of North Carolina, 1992**

Master of Science in Management-December 2000

Advisors: William Gates, Department of Systems Management

Mark E. Nissen, Department of Systems Management

In 1968, the Foreign Military Sales Act was written with a primary objective of facilitating the common defense by entering into international arrangements with friendly nations. Shrinking defense budgets have shaped an industrial base that is dependent on foreign markets in order to survive. Both the Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS) provide detailed guidance for negotiating contracts with foreign countries and stipulate that U.S. laws apply regardless of foreign policy. The FAR also provides the procedural requirements for the contract closeout process. Often the process is not completed in a timely or proper manner, resulting in noncompliance with contract closeout timeframes, increased backlog, dissatisfied customers and significant monetary ramifications.

The primary purpose of this thesis is to review the management of the contract closeout process and analyze it using process innovation tools. The FAR lists 15 specific Administrative Contracting Officer contract closeout steps that must be completed once a contract is deemed physically complete. Those steps are depicted using KOPeR methodology to identify process pathologies and shortcomings. Further, it develops two redesign alternatives that offer good potential to further streamline the process.

DoD KEY TECHNOLOGY AREA: Other (Acquisition and Contracting)

KEYWORDS: Foreign Military Sales, Contract Closeout Process, Process Innovation

ARAB GULF COOPERATION COUNCIL (AGCC) ECONOMIC INTEGRATION AND FUTURE RECOMMENDATION

**Khalifa D. Al-binali-Major, Bahrain Defense Force
Master of Science in Management-December 2000**

Advisors: Robert E. Looney, Department of National Security Affairs

Roger D. Evered, Department of Systems Management

This thesis discusses the historical events that lead to the establishment of the AGCC organization and analyzes the cooperation of the AGCC countries politics, security, economy, as well as defense spending at lower life cycle cost. U.S foreign military sales (FMS) are a good tool to facilitate the arms trades between the U.S and the AGCC countries. The thesis discuss the external and internal threats to the region and the AGCC relations with the West. The AGCC countries must enhance the existing Shield Force and maintain its alliance with the West.

This thesis also discusses the economies of the AGCC countries and indicates that the AGCC countries are still largely oil-based economies. Moreover, the economic characteristics of these countries indicate that they are not ready at their current stage to form a full monetary union. However, these countries are economically qualified for several forms of partial monetary integration, such as an exchange rate coordination arrangement, capital market integration. Also, the thesis suggests additional and aggressive economic diversification programs are needed and essential to enhance the development of sustainable economies. Finally, this thesis provides recommendations for exchange rate unification and monetary integration among the AGCC countries to strengthen and move the AGCC forward in the future.

DoD KEY TECHNOLOGY AREA: Other (Economics)

KEYWORDS: Arab Gulf Cooperation Council (AGCC) Security, Political System, Foreign Military Sales, Economic Integration

THESIS ABSTRACTS

LIFE CYCLE MANAGEMENT OF BAHRAIN AMIRI AIR FORCE F-16 AIRCRAFT

Isa Mohamed Alqetami-Major, Bahrain Defense Force

Civil Aviation Authority License in Electronics Engineering, Brunel Technical College, United Kingdom, 1985

Master of Science in Management-June 2001

Advisors: Raymond Franck, Graduate School of Business and Public Policy

Gregory Hildebrandt, Graduate School of Business and Public Policy

This thesis presents a general scheme for implementing Life Cycle Management (LCM) in the Bahrain Defense Force (BDF) and Bahrain Amiri Air Force (BAAF), with special attention paid to LCM issues for the F16 weapon system. The current situation of Bahrain, as well as the history and current challenges facing the BAAF in managing its F16s, are presented. Those challenges are to reduce the Total Ownership Cost (TOC) of the F16 fleet to the bare minimum without disturbing the defensive posture of the BDF and BAAF.

The related concepts of LCM, TOC, and Reduction in Total Ownership (R-TOC) are discussed in general, and also in the context of the BAAF F16 force. A feasible method of applying these methods to the BAAF's current situation is then presented in the form of recommended policies, procedures, roles, and responsibilities. Processes and procedures for use by both the BAAF and its suppliers in the management of resources are also recommended. These address all phases of the F16 life cycle (development, deployment, operation, maintenance, management, and retirement).

The advantages associated with developing data and management systems for identification and tracking of the Total Ownership Cost (TOC) of the BAAF F-16 are likewise emphasized. They allow management to make effective trade-off decisions regarding the acceptance or rejection of modifications and upgrades.

To demonstrate the method, an assessment of BAAF F16 Operations and Support (O&S) costs are also provided, with some of the data being generic and unclassified. Analysis of these data suggests significant cost savings to the BAAF are possible through changes in operational and support procedures, and specifically, through consolidation of support operations, elimination of some functions and consolidation of others. The implementation of these LCM procedures can be applied to other aircraft types in the BAAF, including the F16's replacement.

DoD KEY TECHNOLOGY AREA: Air Vehicles

KEYWORDS: Bahrain F16 Force, Life Cycle Costs, Life Cycle Management

INFORMATION SYSTEMS STRATEGIC PLANNING FOR KOSOVO PEACEKEEPING FORCE

Nuh Altinsoy-First Lieutenant, Turkish Army

B.S., Turkish Military Academy, 1996

Master of Science in Information Technology Management-September 2001

Advisors: William J. Haga, Graduate School of Business and Public Policy

John Osmundson, Department of Information Science

This thesis presents a model of a detailed strategic information plan for a military organization. The model includes the analysis and design of a network and a three-tier client server system. The network analysis focuses on the network traffic flow using Ethernet and Token Ring models. Each candidate technology is simulated with Extend 4.0. Average latency and waiting time in the queue are the simulation parameters. The selection of the candidate technology will play an important role in the implementation of the intranet for the organization.

The three-tier client/server system includes the design and implementation of a relational database, which is connected to the intranet. The database is created with Access 2000. The database connectivity from back-end to front-end is constructed by Active Server Pages (ASP), which enables the users to manipulate the database via their web browsers. The intranet pages are built with Microsoft Front Page 2000. This prototype will permit this organization to initiate a transformation from paper-based environment to the paperless world.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREAS: Computing and Software

KEYWORDS: Strategic Planning, Strategic Information Plan, Relational Database

AUTOMATING SUBMARINE TRAINING AND READINESS USING WEB-ENABLED APPLICATIONS

Kevin S. Anderson-Lieutenant, United States Navy

B.S., Jacksonville University, 1994

Master of Science in Information Technology Management-June 2001
and

David J. Murphy-Major, United States Marine Corps

B.S., Syracuse University, 1985

Master of Science in Information Technology Management-June 2001

Advisors: William J. Haga, Graduate School of Business and Public Policy

Douglas E. Brinkley, Graduate School of Business and Public Policy

This thesis examines the limits to on-board training and readiness imposed upon the submarine community by manual data collection and personnel record systems.

It proposes an integration of web-based applications under the Balanced Scorecard management approach as a solution. Specifications are included for fiber optic LAN Infrastructure design, network client workstations, network servers and IT-21 compliant network operating systems, producing applications and web augmentation tools. A description of relational database design is provided that encompasses database objects, data types and table relationships. Web design issues and network security issues are examined. Complete code for a prototype of the system in Microsoft Access is appended.

Recommendations are made for using an n-tier network architecture to automate the submarine training and readiness processes in small project modules using an incremental Prototype development approach. An n-tier architecture supports custom applications and commercial-off-the-shelf (COTS) components, supports component reuse and encapsulation, provides a consistent, secure and auditable access to data and will allow faster production at less risk. Recommendations are made for using Microsoft products that support n-tier architecture and are consistent with the Navy's IT-21 standards.

DoD KEY TECHNOLOGY AREAS: Computing and Software, Manpower, Personnel, and Training

KEYWORDS: Automation, Local Area Network, N-Tier, Readiness, Submarine, Training, Web-Based, Web-Enabled

THE DEFENSE FINANCIAL MANAGER: AN ASSESSMENT OF KNOWLEDGE REQUIREMENTS AND THE NAVAL POSTGRADUATE SCHOOL FINANCIAL MANAGEMENT GRADUATE CURRICULUM

Rolfe E. Ashworth-Lieutenant, United States Navy

B.A.E., Pennsylvania State University, 1992

Master of Science in Management-March 2001

Advisors: O. Douglas Moses, Graduate School of Business and Public Policy

John E. Mutty, Graduate School of Business and Public Policy

Recognizing the need to improve the capabilities of the Department of Defense (DoD) financial management workforce, the American Society of Military Comptrollers (ASMC) has developed an exam based certification program for DoD financial management personnel, the Certified Defense Financial Manager (CDFM) Program. The purpose of this thesis is to (1) assess how well the Naval Postgraduate School Financial Management curriculum covers the body of knowledge requisite to pass the CDFM examination, (2) recommend options to improve coverage; and (3) develop a student reference guide to aid students in preparing for the exam. The core competencies, knowledge elements, and specific topics that comprise the CDFM body of knowledge were identified through an extensive literature review. Key NPS faculty members were surveyed to assess the level of coverage the Financial Management curriculum

THESIS ABSTRACTS

provided. The results of the assessment show that the Financial Management curriculum covers approximately 80% of the knowledge requirements in varying degrees, but doesn't provide sufficient coverage of enough of them to fully prepare graduating students to pass the CDFM exam. Several options are proposed to improve the level of coverage including addition of an elective course and providing resources for self-study.

DoD KEY TECHNOLOGY AREA: Other (Financial Management)

KEYWORDS: Certification, Financial Management Curriculum, Certified Defense Financial Manager, CDFM

TOWARD JOINT MEDICAL LOGISTICS 2010 AND BEYOND: PROCESS INNOVATION AND REDESIGN OF CLASS VIII SUPPLY CHAIN AT A MEDICAL LOGISTICS COMPANY

Mary A. Augustitus-Major, United States Marine Corps

B.S., Southern Illinois University, 1987

M.S., Golden Gate University, 1989

Master of Science in Management-December 2000

and

Sonja L. Stevenson-Lieutenant, Medical Service Corps, United States Navy

B.S., Norfolk State University, 1995

Master of Science in Management-December 2000

Advisors: Mark E. Nissen, Department of Systems Management

Ira A. Lewis, Department of Systems Management

The purpose of this thesis is to evaluate current Class VIII supply chain procedures at a U.S. Medical Logistics Company (Med Log Co), process map the "as is" baseline process and propose possible "to be" process redesign alternatives that will possibly improve efficiency and produce long-term cost savings. To perform this analysis, the 1st Med Log Co at Camp Pendleton, CA was chosen. The assessment of their "as is" process includes a historical background on medical logistics within the Department of Defense, a comprehensive material logistics literature review, site visits, personnel interviews, process mapping of the baseline "as is" process, and proposal of two redesign alternatives for the "to be" process. A comprehensive analysis was conducted using Thomas Davenport's Process Innovation Framework and quantitative measurements were obtained using the Knowledge-based Organizational Process Redesign (KOPeR) methodology to diagnosis existing pathologies. KOPeR measurements indicate that the 1st Med Log Co's existing "as is" process is a fragmented, mostly manual procurement process that can be innovated now using information technology as a process enabler. Our results indicate that by formally injecting the use of electronic mail and shared databases into the "as is" procurement process an immediate impact can be realized. Further efficiency and cost savings can be accomplished by coupling the injection of information technology with a web-based end-to-end procurement process that assigns a case manager to the "to be" process.

DoD KEY TECHNOLOGY AREA: Materials, Processes, and Structures

KEYWORDS: Business-to-Business, Electronic Commerce, Innovation, Logistics, Medical Logistics, Material Management, Process Innovation, Process Mapping

THESIS ABSTRACTS

MENTORING EXPERIENCES AMONG MIDSHIPMEN AT THE UNITED STATES NAVAL ACADEMY

**Brett T. Baker-Lieutenant, United States Navy
B.A., University of Washington, 1992**

Master of Science in Leadership and Human Resource Development-March 2001

**Advisors: Brad Johnson, United States Naval Academy
Susan Hocevar, Graduate School of Business and Public Policy**

This study investigated mentoring and midshipmen at the United States Naval Academy (USNA). The mission of the Naval Academy is essentially to develop leaders, and mentoring is closely related to leadership. Therefore, this study looked at possible correlations between mentoring and midshipmen at USNA. Specifically, the extent of mentoring on midshipmen at USNA, the degree of influence mentors had on midshipmen, salient features of USNA mentors, and other psychosocial outcomes of mentoring on midshipmen were investigated in this study.

This study suggests midshipmen generally accept mentoring as an important concept, but only 45% of USNA midshipmen have mentors. Female midshipmen were more likely to have a mentor at USNA than their male counterparts. USNA mentors were typically older than their protégé, Caucasian, male and in the military. Peers were most trusted and utilized as mentors. This study also suggests that midshipmen having mentors were more satisfied with USNA, more likely to mentor others, and more likely to hold a leadership position on a sports team or in an extracurricular activity (ECA).

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Mentoring, Mentoring and Midshipmen, Mentoring at the U.S. Naval Academy, Mentoring Military Officers in Training, Military Mentoring

DEVELOPING A MODEL TO ASSESS INFORMATION TECHNOLOGY INVESTMENT MANAGEMENT IN GOVERNMENT AGENCIES

**Robert J. Banasiewicz, Jr.-Lieutenant, United States Navy
B.S., Boston University, 1993**

Master of Science in Management-June 2001

**Advisors: Joseph San Miguel, Graduate School of Business and Public Policy
Jeffrey Cuskey, Graduate School of Business and Public Policy**

In fiscal year 1994, the federal government obligated more than \$23.5 billion towards information technology (IT) products and services, which represents about five percent of its total discretionary spending. The Clinger-Cohen Act of 1996 was enacted by the U.S. Congress to help prevent wasteful government spending on IT projects by mandating that federal agencies develop a process to manage their IT projects as investments, including methods to continuously improve the efficiency and effectiveness of their management processes. The goal of this study was to develop a model to assess a government agency's IT management processes, specifically the selection, control, and evaluation of IT investments. In order to accomplish this, various General Accounting Office (GAO) reports were reviewed to determine the best practices being used to manage IT investments. Also, a model was developed that can be applied to an agency that already has some IT management processes in place. The major finding was that, while the critical processes and attributes identified by GAO are helpful in implementing improvements to an agency's processes, each individual agency needs to carefully assess the environment in which it operates and choose the management tools and techniques that best fit the agency's vision and mission and its specific environment.

DoD KEY TECHNOLOGY AREA: Other (Information Technology Management)

KEYWORDS: Information Technology Management, Information Technology Investment, Clinger-Cohen Act

THESIS ABSTRACTS

APPLICATION OF A SYSTEM-BASED INVENTORY MODEL FOR MARINE CORPS REPAIRABLE PARTS

**Craig P. Barnett-Captain, United States Marine Corps
B.S., United States Naval Academy, 1992**

Master of Science in Operations Research-September 2001

Advisor: Kevin R. Gue, Graduate School of Business and Public Policy

Second Reader: David A. Schrady, Department of Operations Research

A critical component of the Marine Corps' self-sustainment capability is its ability to procure and repair components for its ground equipment fleets. Secondary repairables consist of components that can be repaired, and for which repair is generally more economical and timely than purchase. The Marine Corps currently maintains spare repairable parts at seven principal locations, each operating independently of the other. There is excess inventory Service-wide because of the isolation of the inventories and because of mathematical flaws in the Marine Corps' sparing methodology. The Marine Corps is seeking to centralize the management of secondary repairables and is considering options that include centralizing responsibility and funding (while keeping the inventory model as it is) and changing the inventory model as well as the responsibility and funding. This thesis demonstrated that a centralized, "enterprise-wide" model of the inventory is superior to a decentralized one. Measures of comparison are total inventory cost and end-item availability. Stock levels calculated by both the current model and a commercial application called VMetric(tm)-XL were evaluated. For a selected end-item, the current model produces stock levels totaling \$25.9M in inventory and achieves 89.1% availability. For the same level of availability, Vmetric recommends stock levels totaling \$2.9M, a stunning 89% reduction in cost. These results are explained and implications for Marine Corps logistics support are suggested.

DoD KEY TECHNOLOGY AREAS: Other (Inventory Management)

KEYWORDS: Secondary Repairables, Spare Repairable Parts, Inventory Model

ANALYSIS OF CHANGES IN FEDERAL FINANCIAL RATIOS

**Boris S. Belchhoff-Lieutenant Commander, United States Navy
B.S., University of the State of New York, 1987**

Master of Science in Management-June 2001

Advisors: O. Douglas Moses, Graduate School of Business and Public Policy

Shu S. Liao, Graduate School of Business and Public Policy

During the past decade, Congress has passed legislation in an attempt to improve federal accounting practices. Furthermore, the Office of Management and Budget standardized the format for federal entities to follow in preparing their annual financial statements. The central objective of this study was to analyze the patterns over time in federal financial ratios created from data contained in these annual statements. The study examined the form and content of the new federal financial statements and developed and applied a framework of 31 financial ratios to the FY 1998, 1999 and 2000 financial statements of 22 of the 24 federal entities affected by the CFO Act of 1990. It analyzed ratio values in order to answer: (1) What patterns in financial ratio values exist across the various entities of the federal government? (2) What changes occur in federal entities' financial ratios over time? (3) What growth trends exist in financial ratios over time, and how consistent are those trends? (4) How stable are the financial ratios? (5) How do the various financial ratios correlate to one another, and how stable are these ratio relationships over time? Although there exists no strong evidence for overall trends in federal financial ratios, the ratios are informative in the sense that they discriminate both between the entities and across time; if differences exist between the financial conditions of the entities, or if changes in a particular entity's financial condition occur over time, the ratios will detect them.

DoD KEY TECHNOLOGY AREA. Other (Federal Financial Analysis)

KEYWORDS: Federal Government, Financial Ratios of Financial Condition, Indicators of Federal Government Agency Financial/Economic Health

THESIS ABSTRACTS

DEVELOPMENT OF A RETENTION MODELING MODULE FOR THE NAVY PERSONNEL DATA WAREHOUSE (PERSMART)

Judith D. Bellas-Lieutenant Commander, United States Navy

B.S.N., Webster College, 1986

M.S., Troy State University, 1998

Master of Science in Management-March 2001

and

Julie C. McNally-Lieutenant Commander, United States Navy

B.A., University of Northern Colorado, 1990

Master of Science in Management-March 2001

Advisors: Stephen L. Mehay, Graduate School of Business and Public Policy

CDR William D. Hatch, II, USN, Graduate School of Business and Public Policy

The Navy Bureau of Personnel is developing a data warehouse (PERSMART) to support retention and manpower planning. The purpose of this thesis is to investigate data and models that could be used to implement a retention-modeling module in PERSMART. The first part of the thesis surveys the literature on military and civilian retention and the link between compensation and retention decisions. The literature review is used to identify alternative data needed to support retention-modeling efforts. The thesis then identifies sources for the needed data elements. The second part of the thesis specifies and estimates a first term retention model for Navy enlisted personnel. The model focuses on the impact of the Selected Re-enlistment Bonus (SRB) and measures the bonus at the NEC and aggregate rating levels. The results suggest that higher SRB multiples are associated with higher re-enlistment rates. A marginal effect of 0.0194 for NEC-Specific SRB implies that for two otherwise identical individuals, the probability of reenlistment is +1.9 percentage points higher for the individual receiving a SRB. Alternative SRB measures yielded similar results.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel, and Training, Other (Compensation)

KEYWORDS: Compensation, Retention, Personnel Planning, Modeling

AN ANALYSIS OF THE F/A-18 E/F INTEGRATED READINESS SUPPORT TEAMING (FIRST) PROGRAM (DRAFT)

Laura L. Bellos-Lieutenant Commander, United States Navy

B.S., East Carolina University, 1989

Master of Science in Management-June 2001

and

Brian A. Mai, Lieutenant-United States Navy

B.B.A., Fort Hays State University, 1991

Master of Science in Management-June 2001

Advisors: LTC Brad Naegle, USA, Graduate School of Business and Public Policy

Ira Lewis, Graduate School of Business and Public Policy

Department of Defense logistics are under increasing pressure to reduce their cost of operations. As a result of many years of reliability and aging aircraft issues facing our Naval Aviation Fleet, a maintenance support contract has been developed to attempt to maintain the high reliability of the F/A-18 E/F type aircraft. Although contract logistics support has been around since World War II, the F/A-18 E/F Integrated Readiness Support Teaming program (FIRST) has extended this support to a new level as the contractor virtually assumes the role as the Inventory Control Point for this aircraft.

This research examines F/A-18 E/F program reliability and supportability issues. We assess the FIRST contract with particular regard to how this contract will affect the parts supportability aspects as well as the maintainability/reliability rates of the aircraft and life cycle costs. An important part of this research effort is the literature review. As yet, there are no studies available on the FIRST draft that might have assisted in evaluating the program. We obtained copies of the FIRST draft along with the Task Description Document and the Awards Fee Plan. The resulting analysis and conclusions discuss these elements and provide recommendations for improvement.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Parts Supportability, Reliability and Aging Aircraft)

KEYWORDS: Logistics, Maintenance, Outsourcing, Contractor Logistics Support, F/A-18E/F Aircraft

DEVELOPMENT OF THE MARINE INFORMATION PORTAL THROUGH INFORMATION MANAGEMENT ON THE WORLD WIDE WEB

Sherman L. Bierly-Major, United States Marine Corps

B.S., Ohio State University, 1985

**Master of Science in Information Technology Management-September 2001
and**

Martin J. Burns-Major, United States Marine Corps

B.S., Southern Illinois University, 1985

Master of Science in Information Technology Management-September 2001

Advisors: LtCol Terrance Brady, USMC, Graduate School of Business and Public Policy

Magdi Kamel, Department of Information Science

The Marine Information Portal (MIP) research project will systematically develop a Web-based information portal that will support Naval Postgraduate (NPS) Marine students in pursuit of a graduate education. This portal will be based on the precept that the needs of the Marine student community can be better served by the creation of a multifaceted Website geared to their specific information requirements. The MIP will provide information about the NPS, surrounding communities, professional USMC information, Marine student personal information, and support communication between students, thesis sponsors, the SEP assignment monitor, and the NPS Marine Corps Representative.

The development process will involve planning, requirements identification, design, and implementation. In support of requirement identification, a prototype website with a web-enabled database will be developed, and Marine students will be administered a questionnaire survey. Information will be gathered, consolidated, analyzed, and when appropriate, incorporated into the final site design. The database will include student contact information, as well as thesis information. The database will help enhance student and staff communication, as well as align thesis research with students' follow-on duty assignments. Finally, as a Marine officer, an NPS student, and member of the local community, the NPS Marines will have a Web site primarily focusing on effectively meeting their information needs.

DoD KEY TECHNOLOGY AREAS: Computing and Software

KEYWORDS: Marine Information Portal, MIP, Web-based Information Portal

A COST/BENEFIT ANALYSIS OF PERFORMANCE BASED LOGISTICS AT NAVAL INVENTORY CONTROL POINT MECHANICSBURG AND NAVAL INVENTORY CONTROL POINT PHILADELPHIA

Victor D. Blanco-Lieutenant Commander, United States Navy

B.S., University of South Florida, 1987

Master of Science in Management-December 2000

Advisor: Jeffrey R. Cuskey, Department of Systems Management

Mark E. Nissen, Department of Systems Management

The purpose of this thesis is to analyze the mechanics of a performance based logistics (PBL) initiative, provide a cost/benefit analysis of PBL initiatives already completed, and finally identify the major benefits and risks common amongst each initiative. This is accomplished by conducting a cost/benefit analysis of the Naval Inventory Control Point (NAVICP) PBL Business Case Analysis (BCA) and examining the customer response time, quality, and risk management aspects of PBL.

The data for this research were gathered from eight PBL BCAs from NAVICP Mechanicsburg and NAVICP Philadelphia. In addition, PBL questionnaires were submitted for several of the cases studied. Key personnel from both commands were interviewed.

THESIS ABSTRACTS

This thesis concludes that PBL is an overall cost effective and efficient contract arrangement, but improvements can be made to enhance the assessment and success of PBL. This conclusion was based on the net present value and sensitivity analyses conducted of the eight PBL cases. Sensitivity analysis revealed that the various cost factors affect the net present value of the PBL differently- with the material cost having the largest effect and contract administration cost having the least effect. Lastly, four recommendations were made for further improvements to the PBL process.

DoD KEY TECHNOLOGY AREA: Other (Acquisition and Contract Management, Logistics Support)

KEYWORDS: Performance Based Logistics, Direct Vendor Delivery

COST ANALYSIS OF PUBLIC WORKS MAINTENANCE MATERIAL OPERATIONS

James D. Blum-Lieutenant Commander, United States Naval Reserve

B.S.B.A., Chapman College, 1986

Master of Science in Management-December 2000

Advisors: Kenneth Euske, Department of Systems Management

William Haga, Department of Systems Management

The Office of Management and Budget Circular A-76 specifies that determining whether commercial activities should be done in-house or under contract to ensure best business practices and cost efficiency is an assurance the American taxpayer deserves. This study examines the maintenance material operations of Public Works to see if 1) they are conducted with best business practices, 2) inventories are optimally stocked based on usage data, and 3) conducting a cost analysis reveals areas for potential improvement. To provide the analysis, existing annual operating costs for labor, material, and overhead were reviewed. An inventory control model was used to calculate high and low limits for a sample of material items based on available usage data. Fifty-three percent of the sampled material items were stocked above or below suggested stocking levels per the inventory control model used. Based on the sample the annual cost to the command of the overstocked items is approximately \$131,000.

DoD KEY TECHNOLOGY AREA: Materials, Processes, and Structures

KEYWORDS: Systems, Cost Analysis, Inventory Control, Maintenance Material Operations

A BUSINESS PROCESS REVIEW OF THE SATELLITE ACCESS REQUEST, GATEWAY ACCESS REQUEST, AND REQUEST FOR SERVICES PROCESSES AT UNITED STATES TRANSPORTATION COMMAND

Michael L. Bramble-Major, United States Marine Corps

B.S., United States Naval Academy, 1988

Master of Science in Information Technology Management-March 2001

Advisors: Mark E. Nissen, Graduate School of Business and Public Policy

Erik Jansen, Graduate School of Business and Public Policy

The current emphasis on the implementation of e-business and automated solutions in the quest for increased efficiency accentuates the importance of Business Process Re-engineering. The existing method for processing Satellite Access Requests (SAR), Gateway Access Requests (GAR) and Requests for Services (RFS) at USTRANSCOM is an ideal candidate for review and innovation. The premise of this thesis is that Business Process Re-engineering, using information technology and other enablers of change, may produce quantum performance gains in these processes, particularly in terms of cycle time. Three redesign alternatives to the current process are developed using the Nissen methodology in conjunction with computer modeling and simulation tools. All three processes have tremendous potential to demonstrate dramatic reductions in cycle time, resulting in more efficient, streamlined satellite communications access request procedures at USTRANSCOM. The redesigns are based on delegation of authority, reducing the length of the process, and the introduction of an automated, web-based solution to streamline workflow and increase productivity. The research concludes that the SAR, GAR, and RFS

THESIS ABSTRACTS

processes can be dramatically improved through the application of an automated, information technology solution.

DoD KEY TECHNOLOGY AREAS: Command, Control and Communications, Materials, Processes and Structures, Modeling and Simulation

KEYWORDS: Business Process Re-engineering, Military Satellite Communications Access

THE EFFECT OF GRADUATE EDUCATION ON THE RETENTION AND PROMOTION OF MARINE CORPS OFFICERS

Gregory A. Branigan-Major, United States Marine Corps

B.B.A., James Madison University, 1988

Master of Science in Management-March 2001

Advisors: Stephen L. Mehay, Graduate School of Business and Public Policy

Julie Filizetti, Graduate School of Business and Public Policy

This thesis analyzes the factors associated with retention to the O-5 promotion point and selection for promotion to O-5. In particular, this thesis focuses on the economic returns to graduate education and specifically Naval Postgraduate School (NPS) education. In theory, the payoff to the Marine Corps is the increased productivity of the officer with a graduate degree. This thesis analyzes the differences in retention and promotion rates between officers with and without graduate degrees. Data from the FY1998 through FY2001 lieutenant colonel promotion boards and data for the corresponding accession cohorts, who entered the Marine Corps between FY80 and FY84 are merged with Automated Fitness Report System (AFRS) data. Nonparametric analysis and simple Probit techniques are used to estimate retention and promotion models. The results suggest that, in addition to other factors, graduate degrees from NPS and from sources other than NPS both have a positive effect on the retention and promotion of Marine officers. Several statistical techniques are applied to correct for potential biases due to self selection and sample selection. However, results from these techniques prove sensitive to slight changes in model specification and therefore, are not conclusive.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Marine Corps Officers, Promotion, Retention, Graduate Education, Naval Postgraduate School

THE ROLE OF HIGH PERFORMANCE COMPUTING IN SIMULATION BASED ACQUISITION: A CASE STUDY BASED ON EXPERIENCES IN THE RAH-66 COMANCHE PROGRAM

Denice P. Brown-DoD Civilian

B.S., Pennsylvania State University, 1975

Master of Science in Program Management-June 2001

Advisors: LTC Thomas W. Crouch, USA, Graduate School of Business and Public Policy

Andrew Mark, U.S. Army Research Laboratory

This thesis endeavors to determine how effective a role high performance computing played in the Program Definition and Risk Reduction (PDRR) and early Engineering and Manufacturing Development (EMD) phases of the RAH-66 Comanche Program. In so doing, the various modeling and simulation efforts used in the Comanche program are explored and their utility and efficacy determined. This study provides insights into the places to insert high performance computing into the simulation based acquisition process for best effect. In addition, it uncovers the best uses of modeling and simulation in the Comanche program, which can serve as a guide for other simulation based acquisition programs.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREAS: Air Vehicles, Computing and Software, Modeling and Simulation

KEYWORDS: RAH-66 Comanche, Simulation Based Acquisition, Modeling and Simulation, Simulation Based Design, High Performance Computing, Computer Aided Design, Computer Aided Engineering, Computer Aided Manufacturing, Virtual Prototyping, Virtual Manufacturing, Virtual Environments

**THE PRICE AND PROGRESS OF COMPLIANCE WITH FEDERAL FINANCIAL
MANAGEMENT REPORTING REQUIREMENTS IN DEPARTMENT OF THE NAVY
PROPERTY, PLANT, AND EQUIPMENT NONFINANCIAL FEEDER SYSTEMS**

Michael S. Burks-Captain, United States Marine Corps

B.A., University of Memphis, 1994

Master of Science in Management-December 2000

Advisors: O. Douglas Moses, Department of Systems Management

John E. Mutt, Department of Systems Management

The federal government holds an inherent responsibility to report on its financial management operations and consequent outcomes. The passage of the Chief Financial Officers Act of 1990 and subsequent fiscal reform legislation set forth a mandate for financial accountability through implementation of an integrated financial management system, preparation and audit of consolidated federal financial statements, and institution of government-wide strategic planning and performance measurement. The Department of Defense (DoD) remains the predominant noncompliant agency, and in 1999 acknowledged that archaic data feeder systems never intended to comply with accounting standards or integrate with financial management systems were the major obstacles to conformity. DoD estimates that 80 percent of relevant financial management data comes from these critical nonfinancial feeder systems. This thesis estimates the cost and progress of Property, Plant, and Equipment (PP&E) nonfinancial feeder system compliance within the Department of the Navy (DoN), which controls approximately 50 percent of DoD PP&E assets. Objective assessments of Real and Personal Property initiatives set a framework for examination of alternative strategies to overcome pervasive National Defense Asset reporting deficiencies. This thesis proposes a DoN strategic initiative to define, account for, and report National Defense PP&E in the absence of relevant federal accounting standards.

DoD KEY TECHNOLOGY AREA: Other (Financial Management and Systems)

KEYWORDS: Biennial Financial Management Improvement Plan, Chief Financial Officers Act, Department of Defense, Department of the Navy, Federal Accounting Standards Advisory Board, Federal Financial Management Improvement Act, Financial Reporting, Financial Statements, National Defense Assets, Nonfinancial Feeder Systems, Personal Property, Property, Plant and Equipment, Real Property

**AN ANALYSIS OF PERFORMANCE METRICS FOR MEASURING SHIPPING
FUNCTIONS AT A DEFENSE DISTRIBUTION DEPOT**

Kevin J. Carrier-Lieutenant Commander, United States Navy

B.S.B.A., Hawaii Pacific College, 1987

Master of Science in Management-March 2001

Advisors: Kevin R. Gue, Graduate School of Business and Public Policy

Ira A. Lewis, Graduate School of Business and Public Policy

Performance metrics for evaluating the shipping process at a defense distribution center are investigated. Two metrics are considered that the depots have used in the past, (average days delayed and average cycle time), considering the efficacy of both metrics and compare them with a new metric called cut-off time proposed by Gue (2000). Results suggest that the defense distribution centers should implement the cut-off time metric as a means of aligning depot processes with transportation cycles to improve customer service.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Logistics)

KEYWORDS: Logistics, Distribution, Defense Distribution Depot, Defense Logistics Agency, Performance Metrics

THE IMPACT OF TURN AROUND TIME IN BRAZILIAN NAVY INVENTORIES

Mauricio Casagrande-Commander, Brazilian Navy

B.S., Brazilian Navy Academy, 1979

Master of Science in Management-December 2000

Advisors: Kevin R. Gue, Department of Systems Management

CDR Kevin J. Maher, USN, Department of Operations Research

This thesis analyzes how the operation of helicopters produced and supported by manufacturers in various countries affect Brazilian Navy repairable inventories levels and costs. The research is based on a scenario where the Brazilian Navy operates 68 helicopters, manufactured by contractors in the U.S., France, England and Italy, and the Brazilian Navy relies on these manufacturers for depot-level maintenance. A simulation model representing the repair process of a group of critical helicopter components and measure the turn-around time (TAT) was developed. A readiness based model was also developed to find the optimal inventory level of the selected group of helicopter components to achieve a desired operational availability under these TATs. The results were applied to a spreadsheet model to find the differences in spare levels and associated costs necessary to operate the helicopter fleet. The research concludes that the helicopter's source has a substantial impact on repairable inventories levels and costs. Furthermore, this impact is large enough to influence decisions in the Brazilian Navy acquisition process of equipment and weapons systems.

DoD KEY TECHNOLOGY AREA: Other (Manufacturing Science And Technology, Logistics)

KEYWORDS: Inventory Management, Operational Availability, Simulation Modeling, Transportation, Aviation Depot-Level Maintenance

FORECASTING MODEL FOR FUTURE NEEDS REQUIREMENT FOR SPARE PARTS IN FMS SALES

Steven J. Colcombe-Major, United States Marine Corps

B.S., Old Dominion University, 1988

Master of Science in Management-December 2000

Advisors: Michael W. Boudreau, Department of Systems Management

David V. Lamm, Department of Systems Management

This research focuses on Italy, Brazil and the Republic of Korea, how each purchased the U.S. Marine Corps' Advanced Amphibious Vehicle (AAV), and how each supports the AAV through the life-cycle requirements. The thesis provides insights through an in-depth analysis of each country's political, economic and defense aspects. A predictive model determines the support requirements on future FMS sales by studying the past. Thus, the Marine Corps can estimate the future requests for spare parts in support of the AAV.

The research identifies political stability, economies of scale, and trust between the foreign government and the seller as the major factors needed to predict decisions about procurement of spare parts through FMS.

DoD KEY TECHNOLOGY AREA: Other (Acquisitions)

KEYWORDS: Foreign Military Sales (FMS), Italy, Brazil, Korea, AAV, AAVV, LVT, BPA, Spare Parts, OMFTS, Direct Commercial Sales (DCS)

THESIS ABSTRACTS

DEVELOPING AND STRUCTURING A PERMANENT CONTRACTING COMMAND IN THE UNITED STATES MARINE CORPS TO MAXIMIZE THE TRAINING, EDUCATION AND POTENTIAL OF MILITARY CONTRACTING OFFICERS IN ORDER TO BE BETTER PREPARED TO SUPPORT THE OPERATIONAL FORCES AND LEAD THE MARINE CORPS THROUGH THE 21ST CENTURY

**Eric M. Corcoran-Captain, United States Marine Corps
B.S., New Hampshire College, 1993**

Master of Science in Management-December 2000

**Advisors: L. E. Edwards, Department of Systems Management
CDR E. Cory Yoder, USN, Department of Systems Management**

The Marine Corps contracting community continually refines its policies and procedures as a response to the changing environment within which it operates. The objective of this thesis was to develop an innovative contracting command structure to maximize the training, education, potential and retention of the military contracting officers. To accomplish this objective, this thesis identified the historical and statutory basis for Government contracting. It also identified billets for qualified Marine Corps military contracting officers and where potential need currently is recognized. Lastly the roles and responsibilities of the Marine Corps military contracting officers are identified. Based upon this archival research and interviews with members of the contracting community, this thesis developed a framework for an innovative contracting command structure through the use of an integrated systems model. This model establishes the need for additional military contracting officer billets, standardizes the reporting and operational chains of command, and promotes stability. The key findings are that the current system design does not enhance the contracting officers' professional growth and development, aid in retention, or create a path for career progression. This study is a proactive approach to the changing environment of contracting to confront the detrimental findings above.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel and Training, Other (Acquisition)

KEYWORDS: Contracting, Military Contracting Officers, Marine Corps Contracting, Contracting Military Occupational Specialty, Contracting Career Path, Contracting Command Structure Model

ANALYSIS OF INTER/INTRA SHIP MATERIEL MOVEMENT IN SEA BASED LOGISTICS USING SIMULATION

**Michael J. Curtin-Major, United States Marine Corps
B.A., Assumption College, 1989**

Master of Science in Management-June 2001

**Advisors: Keebom Kang, Graduate School of Business and Public Policy
Kevin R. Gue, Graduate School of Business and Public Policy**

Operational Maneuver From the Sea (OMFTS) and its implementing concept, Sea Based Logistics (SBL), stress the need for logistically supporting forces ashore directly from a sea base. This implies a radically different approach for supporting forces ashore in the future. This study analyzes the concept of SBL in the area of inter-ship and intra-ship movement of materiel as well as ship-to-objective materiel movement in order to gain insight into the envisioned SBL support concept. This study presents a conceptual model blending aspects of current underway replenishment (UNREP) processes with an operational scenario incorporating the tenets of the OMFTS and SBL concepts. A baseline simulation model was developed to estimate UNREP cycle times under various scenarios. Experiments were conducted by modifying the baseline model to assess the impact on inter/intra ship materiel movement cycle time by increasing the lift capacity of the helicopters used for vertical replenishment (VERTREP) as well as increasing the number helicopters used for VERTREP. Results indicate that an increase in helicopter lift capacity significantly reduce overall cycle time, more importantly UNREP cycle time. The simulation model identifies constraining resources (i.e., elevators and forklifts) that are on the critical path of operations. Results of this thesis will eventually help to configure the amphibious ships used for SBL in the future.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Modeling and Simulation

KEYWORDS: Modeling and Simulation, Sea Based Logistics, Expeditionary Logistics, Underway Replenishment

A MODEL FOR TRAINING, EDUCATION AND DEVELOPMENT OF U.S. NAVY PATROL COASTAL BOAT (PC) PERSONNEL USING DISTRIBUTED LEARNING TECHNOLOGIES

Alexander Davila-Lieutenant, United States Navy

B.A., Jacksonville University, 1995

Master of Science in Management-June 2001

Advisors: Bernard Ulozas, Graduate School of Business and Public Policy

James Suchan, Graduate School of Business and Public Policy

This research will define, assess, and evaluate current training, education and development practices and recommend cost effective measures for improvements at U.S. Naval Patrol Coastal Boat (PC) facilities.

The objective is to propose a model for training technology infusion in Patrol Coastal Boats (PC) which will enable all sailors and officers assigned to these units to engage in training, education, and development activities without leaving the confines of the ship.

Research will include conducting a detailed analysis of current training policies, conducting in-depth reviews of the current educational infrastructure, identifying and recommending pertinent distributed learning programs, and conducting a cost and benefits analysis of implementing distributed learning technologies onboard a PC.

DoD KEY TECHNOLOGY AREAS: Computing and Software, Manpower, Personnel, and Training

KEYWORDS: Distributed Learning, Distributed Learning Technologies, Adult Learning, Patrol Coastal Boat (PC), Internet-based Learning, Education and Training, Manpower, Personnel, and Training

A CASE STUDY OF ACQUISITION REFORM: BRIGADE COMBAT TEAM, THE VANGUARD FOR ARMY TRANSFORMATION

Steven A. Dawson-DoD Civilian

B.S.M.E., University of Maryland, 1988

Master of Science Program Management-June 2001

Advisors: Michael W. Boudreau, Graduate School of Business and Public Policy

Richard E. McClelland, U.S. Army Tank Automotive Research, Development, and Engineering Center

David V. Lamm, Graduate School of Business and Public Policy

This thesis is a case study of the Interim Armored Vehicle (IAV) for the US Army Brigade Combat Team (BCT) and the application of acquisition reform and accelerated acquisition. This thesis identifies the acquisition reform initiatives that were applied to develop and procure an ACAT ID major weapon system within 16 months. In 1999, the Army Chief of Staff, GEN Shinseki, stated his vision for a transformed Army that would be based on a lighter, more lethal, faster deployable, and highly mobile force that could arrive anywhere in the world within 96 hours. Centered on the procurement of six brigades of IAVs, each brigade contains a measured mix of 10 combat and combat support vehicles based on a nearly common platform. The BCT procurement of IAVs is the interim solution and is a vanguard to the Army's transformation. The culmination of the transformation will be the Objective Force, scheduled to be operational in the year 2020. The IAV procurement, therefore, was not intended as a developmental program but an integration of existing off-the-shelf capabilities that balanced cost, schedule, and performance in the best available vehicle system. The procurement relied on multiple acquisition reform means to accelerate the requirements development, and solicitation, to enable the delivery of the best available product to the Army. The initiatives employed to make this award form the primary research question, "What has been the impact of DoD acquisition reform on the development of the Brigade Combat Team?"

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREAS: Ground Vehicles, Other (Procurement, Acquisition Reform)

KEYWORDS: Brigade Combat Team, Acquisition Reform, Interim Armored Vehicles, Medium Armored Vehicles, US Army Tank-automotive & Armaments Command, PEO - Ground Combat Support Systems, GAO Protest, Army Transformation

A COST-BENEFIT ANALYSIS OF A MILITARY THRIFT SAVINGS PLAN

Richard G. De Guzman-Major, United States Marine Corps

B.S., United States Naval Academy, 1989

Master of Science in Management-December 2000

Advisors: John E. Mutty, Department of Systems Management

Shu S. Liao, Department of Systems Management

The transition from defined benefit to defined contribution retirement plans represents the most significant change in both the private sector and civil service employee retirement systems in the last twenty years. The Thrift Savings Plan (TSP), a tax-deferred, defined contribution plan for federal civilian employees, was established in 1986 as part of the Federal Employee Retirement System. This thesis discusses the costs and benefits of a TSP plan for the uniformed services. The objective of the research addresses the costs of a military TSP. Government studies, periodicals, and the Internet were examined to identify the strengths and weaknesses of the federal TSP. Next, a probabilistic spreadsheet model using Monte Carlo simulation was developed to forecast deferred tax revenue, which represents the most significant cost associated with a military TSP. An analysis of the results indicates that the simulations come within 2.6 percent of the initial Department of Defense's forecast. On October 30, 2000, the National Defense Authorization Act for fiscal year 2001 was enacted. This act included a military TSP called the Uniformed Services Payroll Savings Plan. It is recommended that future cost estimates use probabilistic spreadsheet modeling to provide more relevant information to the decisionmaking process.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel, and Training, Modeling and Simulation

KEYWORDS: Military Personnel, Retirement (Personnel), Cost Estimates, Cost Analysis

COMPARISON OF DEPARTMENT OF DEFENSE INFORMATION TECHNOLOGY

ACQUISITION PROCESSES: A CASE STUDY

Sean P. Dehlinger-Captain, United States Marine Corps

B.A., Washington State University, 1994

Master of Science in Information Technology Management-September 2001

Advisors: Roger Evered, Graduate School of Business and Public Policy

Glenn Cook, Department of Information Sciences

This thesis presents a comparison and analysis of two Department of Defense (DoD) acquisition methods: the formal acquisition process and the Advanced Concept Technology Demonstration (ACTD). Both processes can be, and are, used by DoD to acquire information technology (IT), but while DoD has utilized the formal acquisition process for 30 years, the ACTD process is only six years old, and was specifically designed to improve upon the standard acquisition process (when applied to IT). By describing and studying the events surrounding, actors participating in, and results of one ACTD, this thesis will determine what lessons-learned can be applied to the standard acquisition process. While the ACTD and acquisition processes share some similarities in their management and funding, there are also significant differences. For example, ACTDs gain approval through a completely different process than acquisitions, and are subjected to less bureaucratic oversight. The recommendations provided in this thesis indicate that, based upon the experiences of the real-life ACTD sampled, the ACTD process does represent an improvement upon the standard acquisition process, specifically when the standard process is utilized to acquire IT.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREAS: Other (Acquisition)

KEYWORDS: Advanced Concept Technology Demonstration, ACTD, Formal Acquisition Process, Information Technology

BUSINESS PROCESS REDESIGN IN MARINE CORPS RECRUITING WITH VISUAL MODELING AND SIMULATION

David G. DiEugenio, Jr.-Major, United States Marine Corps

B.S., United States Naval Academy, 1988

Master of Science in Information Technology Management-September 2001

Advisors: Magdi N. Kamel, Department of Information Sciences

Mark J. Eitelberg, Graduate School of Business and Public Policy

The goal of the thesis is to identify information flow tasks in the current Marine Corps enlisted recruiting system presenting an opportunity for gains in efficiency through the application of information technology. This thesis presents an overview of the recruiting process, including the mission, target market, players, and business rules. The recruiting business model is decomposed into its components, and information flow through each component is further examined. Graphic models are created using Extend(tm) visual modeling and simulation software to establish a direct labor cost-per-task measure for the current or "As Is" system. "As Is" data are generated and recorded for each of the information flow tasks to be evaluated. Considering applications of information technology that may improve information flow tasks, future or "To Be" models are applied to the respective tasks and data are collected and recorded. Cost-per-task data for the "As Is" and "To Be" models are compared, and potential efficiencies gained are noted. The results of the comparison show that significant gains in efficiency are possible by applying information technology solutions to reduce redundant data entry and other burdensome administrative tasks.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel and Training, Modeling and Simulation

KEYWORDS: Business Process Redesign, Marine Corps Enlisted Recruiting System

AN ANALYSIS OF THE FINANCIAL IMPACT OF REDUCING THE MINIMUM SERVICE REQUIREMENT FOR PENSION BENEFITS ELIGIBILITY IN THE SENEGALESE ARMY

Cheikh Tidiane Diop-Colonel, Senegales Army

B.S., Versailles University, 1997

Master of Science in Management-March 2001

Advisors: Shu Liao, Graduate School of Business and Public Policy

O. Douglas Moses, Graduate School of Business and Public Policy

Since 1985, the Senegal Army has been fighting a rebellion in the southern part of the country. Unfortunately, only those soldiers killed while on duty in the area are eligible for survivor benefits regardless if they meet a 151/2 -year service requirement or not. While all soldiers who have been assigned to UN's peacekeeping operations or have been assigned to military training abroad have been deemed eligible for these pension benefits, all other soldiers with less than this minimum length of service are ineligible for such benefits.

Therefore the objective of the thesis is to examine the financial impact of expanding the pension eligibility to those who leave the service before the 151/2 -year requirement. This thesis estimates the future net cash flow based on data gathered from historic samples.

Using a Monte Carlo Simulation this thesis shows that the current pension system is financially solvent and effective, but remains fragile. Based on the conclusions reached in this thesis, my recommendations are to not accept new entrants under the 151/2-year requirement in the current pension system and to take measures to contain the variances of the net cash flows in order to keep the system strong.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Modeling and Simulation

KEYWORDS: Military Retirement Pension, Retiree's Pension Contributions and Benefits, Survivors' Benefits, Pension System Net Cash Flow

A COMPARATIVE ANALYSIS OF RISK MANAGEMENT PLANS WITHIN THE DEFENSE CONTRACT MANAGEMENT AGENCY

**Teddie L. Dyson-Lieutenant Commander, United States Navy
B.S., University of North Carolina, Chapel Hill, 1988
Master of Science in Management-June 2001**

**Advisors: CDR James M. Barnard, USN, Graduate School of Business and Public Policy
Shu Liao, Graduate School of Business and Public Policy**

This thesis performs a comparative analysis of a sampling of risk management plans for strategic and critical suppliers administered by the Defense Contract Management District West (DCMDW) in order to identify the areas of highest risk and the most common tools used to mitigate risk in key processes and systems for these suppliers.

The Defense Contract Management Agency (DCMA) uses a comprehensive, inclusive, and iterative approach to risk management. It follows the Government and DoD risk management premise of using a five-step approach to risk management and the basic idea of identifying and assessing key processes/systems whose risk, either through probability or potential impact, offers the most cause for concern from a performance, schedule, or cost perspective. It employs current information technology, Risk Assessment and Management Program (RAMP) to provide consistency, commonality, access, and comparability to its risk management process.

Performance and schedule, product support and supplier quality assurance for product quality, and delivery were the areas of highest risk for DCMA. The most commonly applied risk handling tools indicated in the RAMP database were areas associated with analysis, monitoring, and surveillance activities before final inspection: Data Analysis, Product Audits, System Evaluation, and Corrective Action.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Risk Management, Contract Administration

NAVY RECRUITER INCENTIVES AND MOTIVATION: A SURVEY OF ENLISTED RECRUITERS

**Ellen H. Emerson-Lieutenant Commander, United States Navy
B.A., College of Charleston, 1986
Master of Science in Management-March 2001**

**Advisors: John R. Barrios-Choplin, Graduate School of Business and Public Policy
Cary A. Simon, Graduate School of Business and Public Policy**

This thesis analyzes factors affecting Navy recruiter motivation to meet mission requirements. Commander, Navy Recruiting Command publishes an annual awards instruction that highlights many awards which recruiters can work toward. Current motivational theory identifies two basic sources of worker motivation, extrinsic and intrinsic rewards. Additionally, civilian sales forces tend to employ tangible benefits, such as cash bonuses and other forms of compensation, to reward productive sales representatives. The question is which of these sources and which of these kinds of awards motivate the Navy's sales force, their recruiters. An online survey solicited the current enlisted recruiting force to determine their attitudes toward incentives. Survey results determined the following: recruiters rank intangible incentives higher than tangibles, a proposed goal sabbatical and proposed cash awards rank highest of all tangible incentives studied, and recruiter attitudes toward incentives vary according to their status (paygrade, whether or not they volunteered for recruiting duty, and if they belong to the Career Recruiting Force). A positive command climate is determined to be the number one factor in motivating recruiters to meet mission requirements.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Manpower, Personnel and Training, Other (Recruiting)

KEYWORDS: Navy Recruiting, Recruiter Incentives, Motivation

FEASIBILITY OF AN ALL-VOLUNTEER ARMED FORCE IN TURKEY

Kurt Erdogan-First Lieutenant, Turkish Army

B.A., Turkish Army Military Academy, 1996

Master of Science in International Resource Planning and Management-June 2001

Advisor: David R. Henderson, Graduate School of Business and Public Policy

Second Reader: Mark J. Eitelberg, Graduate School of Business and Public Policy

Turkey is in the middle of the three most problematic regions of the world. Therefore, it maintains one of the largest militaries in the world. To man such a big army, the conscription system has been used for the last century. However, this study shows that conscription is not the best system for Turkey's defense needs. The most valuable resource of Turkey, manpower, is not efficiently allocated in the defense sector. An all-volunteer force provides an effective defense without additional cost. This study also argues that population growth will force the government to find an alternative to the current universal draft system. To reduce the effect of population growth, the government has been using a selective monetary service in the last two decades. But, this temporary solution cannot survive for a long time.

This study concludes that an all-volunteer force can bring efficiency to the defense department. It can increase the personnel quality and military readiness.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: All-Volunteer Force

WEB-ENABLED DOCTRINE: THE EVOLUTION OF A DYNAMIC DOCTRINE DEVELOPMENT PROCESS IN THE UNITED STATES NAVY

Joseph Fauth, IV-Lieutenant, United States Navy

B.A., University of Texas at Austin, 1994

Master of Science in Information Technology Management-March 2001

Advisors: Erik Jansen, Graduate School of Business and Public Policy

Shelley Gallup, Institute for Joint Warfare Analysis

The Navy envisions a dynamic development process for doctrine that produces accessible, timely, and relevant doctrine for the Fleet. The Navy Warfare Development Command (NWDC) in Newport, RI, recently has implemented information technology tools in the doctrine development process, creating the concept of Web-enabled Doctrine. This thesis analyzes Web-enabled Doctrine as the next step forward in the evolution of a dynamic doctrine process. This thesis presents an historical study of doctrine in the U.S. Navy, a description of the Navy's doctrine development process over the past three decades, and an evaluation of the current system with respect to the characteristics of a dynamic process. Data on the current process and Web initiatives were gathered through interviews with current and former NWDC staff members.

The results indicate that NWDC has increased the level of responsiveness in the process, thus improving the relevance and timeliness of doctrine. Recommendations are made for increased accessibility to the system and the migration towards emerging commercial Web standards (XML).

DoD KEY TECHNOLOGY AREA: Command, Control, and Communication

KEYWORDS: Web-enabled Doctrine, Doctrine Development, Naval Doctrine History, Dynamic Doctrine

THESIS ABSTRACTS

THE PERFORMANCE OF PREPARATORY SCHOOL CANDIDATES AT THE UNITED STATES NAVAL ACADEMY

**Brian S. Fitzpatrick-Lieutenant, United States Navy
B.S., United States Naval Academy, 1996**

Master of Science in Leadership and Human Resource Development-September 2001

Advisors: Stephen L. Mehay, Graduate School of Business and Public Policy

Roger D. Little, United States Naval Academy

This thesis analyses the performance of midshipmen at the United States Naval Academy who attended preparatory school prior to admission. Multivariate models are developed to estimate the effect of a preparatory school background on several measures of midshipmen performance at the U.S. Naval Academy. The data set covers the USNA classes of 1990 through 2000. Control variables include both math and verbal Scholastic Aptitude Test (SAT) scores and the high school class-ranking percentile. Ordinary Least Squares (OLS) regression models are employed to estimate the effect of prep school background on the Order of Merit of USNA graduates, and logit models are used to estimate the effect of prep school background on the probability of graduation of a midshipman, while controlling for SAT scores and rank in high school class. The findings reveal few significant differences in performance between those midshipmen who went to preparatory school and those who did not.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel and Training

KEYWORDS: Midshipmen, Preparatory School Background, U.S. Naval Academy

NAVY REFUELING OPTIONS IN SOUTHERN CALIFORNIA: AN ANALYSIS OF ALTERNATIVES IN CASE DEFENSE FUEL SUPPLY POINT AT POINT LOMA IS NOT AVAILABLE

**Ray A. Franklin, III- Lieutenant, United States Navy
B.S., Massachusetts Maritime Academy, 1993**

Master of Science in Management-March 2001

Advisors: William R. Gates, Graduate School of Business and Public Policy

Ira A. Lewis, Graduate School of Business and Public Policy

The Defense Fuel Supply Point (DFSP) at Point Loma California provides most of the fuel that the U.S. Navy assets use in the Southern California operating areas; 3,171,000 BBLS total of F-76 and JP-5 in Fiscal Year 2000. If it were disabled or destroyed, it would be vital that all personnel involved understand the numerous alternative methods of getting fuel to the fleet.

This thesis studies the offices and organizations that could be affected by the sudden removal of DFSP Point Loma as a fueling source, and examines the various alternative fueling options and methods. It looks at the options from the background of current fuel transportation methods and the reasons that might make a contingency fueling plan necessary. It discusses what considerations there would be to choosing an alternative, and gives four generic scenarios, walking through the options that might be best for each. The thesis ends with a summary of the findings, some conclusions, and some recommendations for DOD and for further studies.

The research was done through sources at the NPS Library, online, and on site including interviews and searching through files. From all of the information gathered, a number of conclusions can be drawn. The first one is that if DFSP Point Loma is destroyed or disabled that there are definitely other options for getting fuel to the fleet. The second and third conclusions are that the current fueling capabilities in Southern California support the Missions and Visions of MSC and DESC.

DoD KEY TECHNOLOGY AREAS: Materials, Processes, and Structures, Other (Logistics)

KEYWORDS: Refueling, Logistics, Tanker Ships, Replenishment at Sea, Fuel Depots, Pacific Fleet

THESIS ABSTRACTS

ANALYSIS OF MEASURES OF PERFORMANCE AND CONTINUOUS IMPROVEMENT AT THE NAVAL DENTAL CENTER PEARL HARBOR, HAWAII

John M. Fryzlewicz-Lieutenant, United States Navy Reserve

B.S., Pennsylvania State University, 1982

M.B.A., New Hampshire College, 1991

Master of Science in Management-December 2000

Advisors: Joseph G. San Miguel, Department of Systems Management

Paul J. Fields, Defense Health Management Institute

The Balanced Scorecard, developed by Robert S. Kaplan and David P. Norton, is a strategic management tool that has been successfully implemented in the private sector. This tool uses a balance of a historical perspective (financial) and three operational perspectives (customer service, internal business processes, and innovation and learning) that allow managers to readily evaluate an organization's performance towards achieving its vision and mission. This study examines the applicability of the Balanced Scorecard concept to Government organizations as a potential strategic management tool. The Government organization chosen to test this applicability was the Naval Dental Center Pearl Harbor (NDCPH) because it was recognized in 1998 for its organizational excellence by receiving the Hawaii State Award of Excellence, and the author's personal experiences onboard NDCPH as comptroller. The study centered on analyzing NDCPH's Mission, Vision, Key Success Factors (KSFs), and performance metrics, for use in developing a proposed Balanced Scorecard framework. This was done by equating the KSFs with Kaplan and Norton's perspectives and then matching appropriate performance metrics to the KSFs. A Balanced Scorecard framework that followed Kaplan and Norton's concept was recommended. The potential for adapting this framework to other Naval Dental Centers was also demonstrated.

DoD KEY TECHNOLOGY AREA: Other (Strategic Management)

KEYWORDS: Performance Measurement, Strategic Planning, Navy Dentistry

AN ASSESSMENT OF THE JUNIOR OFFICER CRYPTOLOGICAL CAREER PROGRAM (JOCCP) IN RELATION TO THE MARINE CORPS SIGNALS INTELLIGENCE COMMUNITY

Paul A. Funk-Captain, United States Marine Corps

B.S., University of South Carolina, 1995

Master of Science in Leadership and Human Resource Development-June 2001

Advisors: Keith F. Snider, Graduate School of Business and Public Policy

Lee Edwards, Graduate School of Business and Public Policy

This thesis assesses the Marine Corps' involvement in the Junior Officer Cryptological Career Program (JOCCP) and the effects that the program is having upon the Marine Corps Signals Intelligence community. The history and details of the JOCCP are presented, along with a review of two previous studies. The thesis analyzes the promotion and retention data of program graduates, the interview data from 14 program graduates, and the interview data from 13 senior officers associated with the program or its graduates. Findings indicate that the JOCCP has met its goals of educating career-oriented cryptologic officers for the Marine Corps and that it has a positive impact upon the Marine Corps Signals Intelligence Community.

Findings also indicate that the Marine Corps' utilization of JOCCP graduates is not optimal and that the program may have a negative impact upon graduates' promotion and retention. Detailed recommendations are offered to extend the positive impact of the program and to rectify shortcomings.

DoD KEY TECHNOLOGY AREAS: Electronic Warfare, Manpower, Personnel, and Training

KEYWORDS: Marine Corps Signals Intelligence, JOCCP, NSA, Cryptology, Internship, Officer Retention, Officer Promotion

THESIS ABSTRACTS

USING INFORMATION TECHNOLOGY IN THE NAVY LESSONS LEARNED SYSTEM TO IMPROVE ORGANIZATIONAL LEARNING

**Michael J. Garvey-Lieutenant, United States Navy
B.A., University of Binghamton, 1991**

Master of Science in Information Technology Management-March 2001

Advisors: Erik Jansen, Graduate School of Business and Public Policy

Shelly Gallup, Institute for Joint Warfare Analysis

Organizations are becoming increasingly aware that learning can be a source of competitive advantage. The United States Navy is not immune to this realization and has established the Navy Lessons Learned System (NLLS) as the singular Navy program for the collection, validation, and distribution of unit feedback. NLLS provides naval personnel a means to share observations, document deficiencies, convey solutions, and innovate tactics, techniques, or procedures (TTP). The purpose of this thesis is to examine the various factors that influence organizational learning, such as structure, environment, and culture, and to examine how information technology can be used to support or enhance organizational learning in the Navy. The research concludes that NLLS has improved organizational learning but has not attained as widespread use as is possible. Recommendations are provided to improve the program as well as increase NLLS exposure to the fleet and to the potential users of the system.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Information Systems, Organizational Learning, Navy Lessons Learned System, Information Technology

A COST BENEFIT ANALYSIS OF SUPPLYING CONSUMABLE MATERIALS BY READY SUPPLY DEPOT (RSD) VERSUS COMMERCIAL VENDORS

**Jose Ernesto B. Gaviola-Lieutenant, Philippine Navy
B.S., Philippine Military Academy, 1991**

Master of Science in Management-December 2000

Advisors: Douglas Moses, Department of Systems Management

CDR Kevin J. Maher, USN, Department of Operations Research

The purpose of this study is to examine the current Philippine Fleet (PF) method of supplying consumable materials to Fleet units via a Ready Supply Depot (RSD). The study desires to determine the most cost-effective method of delivering the services currently provided by the RSD in order to fully maximize the use of Fleet resources without sacrificing mission effectiveness. This thesis focuses on the cost the Navy pays to the supplier and all direct and indirect costs of the RSD operation. This study compares the total price of each item inventoried at RSD to a similar item sold by commercial vendors in the Cavite City and Manila area. The difference in price is multiplied by past demand to determine the excess cost to consumers of acquiring consumables from RSD instead of directly from commercial vendors. Additionally, results from RSD consumer surveys are used to assess the service benefits provided by RSD, as seen by its customers. The research results show that the compared items are less expensive to the customer when purchased at RSD. However, it also shows that it is more costly for the government to provide these items via RSD. Furthermore, a customer survey indicates that the RSD customers are not satisfied with the selection, quality, availability, and customer service levels present at the RSD. As a consequence, the recommendation is made to eliminate the Ready Supply Depot (RSD) operation and allow the RSD customers to use commercial vendors for their non-military consumable item needs.

DoD KEY TECHNOLOGY AREA: Materials, Processes, and Structures

KEYWORDS: Consumables, Ready Supply Depot, Inventory Management

THESIS ABSTRACTS

EMERGENCY SUPPLEMENTAL APPROPRIATIONS: A DEPARTMENT OF DEFENSE PERSPECTIVE

**Paul A. Godek-Lieutenant Commander, United States Navy
B.A., Saint Mary's College, 1988**

Masters of Science in Management-December 2000

Advisors: Jerry L. McCaffery, Department of Systems Management

John E. Mutty, Department of Systems Management

The increased use of "emergency" supplemental appropriations is gaining awareness within the Department of Defense (DoD) and continues to reflect the pressure of budget caps in the congressional appropriations process. While the defense portion of supplementals has been relatively small since the Vietnam War, emergency supplementals for natural disasters, military contingencies, and peacekeeping have steadily increased since the Persian Gulf War. The primary objective of this study is to focus on the history, policies, and processes of emergency supplemental appropriations and how they impact the DoD budget. Data were obtained by applying a legislative history tracking methodology to over sixty emergency supplemental bills, including all significant dates within the bill process by fiscal year from 1974 to 1999. Analysis of the data support the conclusion that it is imperative that Congress exercise good budgetary discipline and discretion regarding emergency supplemental appropriations. It should require agencies to improve planning for emergencies in order to avoid creating new budgets and mid-year plus-ups. Congress can avoid mortgaging future defense readiness and still support the military's role in global emergency operations. Irrespective of improvements in budget planning, some level of supplemental appropriations will always be necessary to meet true budget emergencies.

DoD KEY TECHNOLOGY AREA: Other (Federal Policy and Budgeting)

KEYWORDS: Emergency Supplemental Appropriations, Rescissions, Complex Emergencies

THE IMPLEMENTATION OF A KNOWLEDGE MANAGEMENT SYSTEM TO THE ACQUISITION ORGANIZATION AT A MAJOR SYSTEMS COMMAND

**Mark R. Goodrich-Lieutenant, United States Navy
B.S., Miami University, 1990**

Master of Science in Management-December 2000

Advisors: Mark E. Nissen, Department of Systems Management

CDR James M. Barnard, USN, Department of Systems Management

The thesis discusses the potential implementation of a knowledge management system to the contracting organization at a major systems command. In doing so, it examines ongoing DoD and private knowledge-based projects and discusses obstacles, feasibility and benefits of implementation of a knowledge-based system for the acquisition function at a major systems command (SYSCOM). The thesis also makes recommendations for eventual implementation plans. Also included is a discussion of the change in organizational processes made as a result of implementation.

It is envisioned that the thesis could be used as a model for the eventual implementation of a knowledge based system that would support the contracting activities at a major systems command to alleviate future problems with a workforce that is rapidly approaching retirement eligibility and the diminished financial resources available for the hiring of replacement employees.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Acquisition, Knowledge Management, Organizational Systems

THESIS ABSTRACTS

A SYSTEM ANALYSIS OF THE RECRUITMENT AND RETENTION PROBLEMS ASSOCIATED WITH THE PROGRAM MANAGER FOR CHEMICAL DEMILITARIZATION ORGANIZATION

Laurence G. Gottschalk-DoD Civilian

B.S., Virginia Polytechnic Institute and State University, 1980

Master of Science in Program Management-June 2001

Advisors: Keith F. Snider, Graduate School of Business and Public Policy

Jeffrey L. Kline, Aberdeen Proving Ground

The primary purpose of this thesis is to investigate the problems of retaining qualified personnel in the Program Manager for Chemical Demilitarization organization through the end date of the program. To accomplish this the Program Manager for Chemical Demilitarization organization was analyzed from an open system prospective to identify the elements within the organization, and in the larger organizational environment, that are expected to contribute to the retention problem. In addition the current Program Manager for Chemical Demilitarization workforce demographics were examined and a survey was performed to determine relevant retention and recruitment policies for the Program Manager for Chemical Demilitarization.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Recruitment, Retention, Organizational Analysis

AN ASSESSMENT OF THE WORLD WIDE EXPRESS (WWX) PROGRAM AND ITS EFFECTS ON CUSTOMER WAIT TIME (CWT) AND READINESS

Philippe J. Grandjean-Lieutenant Commander, United States Navy

B.A., Western Oregon State Collage, 1990

Master of Science in Management-June 2001

and

Charles J. Newbury-Lieutenant Commander, United States Navy Reserve

B.A.S., Troy State University, 1986

Master of Science in Management-June 2001

Advisors: Ira Lewis, Graduate School of Business and Public Policy

William Gates, Graduate School of Business and Public Policy

This thesis examines the benefits of implementing the Word Wide Express program to the Arabian Gulf. To perform this analysis, wholesale mean fill times were measured for items shipped via the Air Mobility Command and World Wide Express program. The Air Mobility Command and World Wide Express program data were then compared to determine how Customer Wait Time (CWT) and readiness were affected for Aircraft Carriers deployed to the Arabian Gulf. The second objective was to determine if World Wide Express program had an effect on customer confidence and determine the perception of the defense transportation service. A comprehensive analysis was conducted using data obtained through the RAND Corporation for four Aircraft Carriers deployed to the Arabian Gulf, two from each fleet. Our results indicated that the World Wide Express program does show improvements in wholesale mean fill time and Customer Wait Times for aircraft carriers deployed to the Arabian Gulf. These improvements translate to a minimal increase in readiness rates for Pacific Fleet aircraft carriers and no improvement for Atlantic Fleet aircraft carriers. Additionally, confidence levels were shown to be higher by survey participants when using the World Wide Express Program.

DoD KEY TECHNOLOGY AREA: Other (Transportation Logistics)

KEYWORDS: Worldwide Express (WWX), Air Mobility Command (AMC), Transportation, Federal Express (FedEx), United Parcel Service (UPS), DHL, Air Transportation, Logistics, Commercial Aircraft, Airlift Operations

THESIS ABSTRACTS

BUSINESS PROCESS REFORM AT MARINE CORPS INSTALLATIONS: A SYSTEMS PERSPECTIVE

William E. Grandrath-DoD Civilian

B.S., University of California-Davis, 1983

Master of Science in Management-December 2000

Advisors: Cary A. Simon, Department of Systems Management

Donald R. Eaton, Department of Systems Management

The Department of Defense (DoD) has made a conscious decision to find ways to reduce infrastructure costs, and apply the savings to weapons system modernization. Thus the "Defense Reform Initiative" (DRI) and the "Revolution in Business Affairs" (RBA) were created to help achieve needed savings. The Marine Corps, along with the other services, is in the process of changing the way installations are operated because of these initiatives. Better business practices are expected to include efficiency and effectiveness gains through competitive sourcing of goods and services, outsourcing and privatizing functions that are currently done in-house, as well as consolidating like functions within regional (geographical) areas and re-engineering business processes.

This study examines the impact that DoD reform initiatives are having on Marine Corps installations using an organizational systems framework model. Findings indicate that the reform initiatives are being implemented. The reforms are impacting the operation of Marine Corps installations. Marine Corps actions for some of the organizational system elements are incongruent with stated intent. Specific recommendations include: set clear direction by articulating a vision of installation expectations; revise the current installation structure, influence a culture change by revising and clarifying strategic direction; and monitor desired results.

DoD KEY TECHNOLOGY AREA: Command, Control and Communication

KEYWORDS: Business Reform, Outsourcing, Regionalization, Privatization, Competitive Sourcing, A-76, Re-Engineering, Organization, System

ARMY SMALL BUSINESS INNOVATION RESEARCH: A SURVEY OF PHASE II AWARDEES

Gregory S. Green-Major, United States Army

B.S., Hampton University, 1990

Master of Science in Management-June 2001

Advisors: Jeffrey R. Cuskey, Graduate School of Business and Public Policy

William J. Haga, Graduate School of Business and Public Policy

The shift towards qualifying performance and accounting for results has dramatically changed the way Government executes public policy objectives. The advent of the Government Performance and Results Act (GPRA) places the responsibility for gathering this information upon each Federal activity subject to its provisions. The Army Small Business Innovation Research (SBIR) program must now find a way to qualify its performance and determine what results are derived from a program that expends in excess of \$100,000,000 annually on research. This thesis analyzes Army SBIR commercialization rates against a National Science Foundation study of DoD Fast Track and DoD Control Group awards. It provides an objective measure of program results that program officials can use to submit their annual GPRA performance reports. The thesis studied 37 SBIR Phase II firms and established a performance baseline. The thesis concludes that Army SBIR awards are outperforming DoD Fast Track and DoD Control Groups in the critical area of average commercial sales per award. It recommends a reduced focus on outside investment and a survey strategy that uses small sample sizes to qualify program performance. It concludes with a proposed survey instrument that Army SBIR managers can use to capture future program outcomes.

DoD KEY TECHNOLOGY AREAS: Manufacturing Science and Technology, Other (Small Business Innovation Research Program)

KEYWORDS: Small Business Innovation Research Program, SBIR

THESIS ABSTRACTS

SOFTWARE METRICS FOR POST DEPLOYMENT SOFTWARE SUPPORT SYSTEMS: A CASE ANALYSIS FOR THE CHEMICAL ACCOUNTABILITY MANAGEMENT INFORMATION NETWORK

Janet E. Grobstein-DoD Civilian

B.S., University of Illinois, Urbana-Champaign, 1982

Master of Science in Program Management-June 2001

Advisors: Mark E. Nissen, Graduate School of Business and Public Policy

John Ferriter, Graduate School of Business and Public Policy

The Clinger-Cohen Act of 1996 requires performance measurement of information technology systems. Measuring the performance of program management for the Chemical Accountability Management Information Network (CAMIN) system requires a thoughtful selection of useful metrics. The CAMIN is a complex Management Information System in the post deployment software system (PDSS) phase of the system life cycle. This research uses three primary sources for candidate metrics for a PDSS like CAMIN: 1) typical software metrics from DoD and commercial applications, 2) typical fielded software system metrics from DoD and commercial applications, and 3) case analysis of metrics currently used by CAMIN and other DoD systems in the PDSS phase. Analysis of these candidate metrics creates a concise list of combined metrics that are applicable to fielded software systems. The current primary issues of CAMIN program management establish the basis for selection of appropriate program management metrics from the candidate list. These issues are examined in a process to answer the primary research question, "What are appropriate metrics and measures for management of the Chemical Accountability Management Information Network?"

DoD KEY TECHNOLOGY AREA: Computing and Software

KEYWORDS: Software, Metrics, PDSS, Program Management, Life Cycle, Acquisition, CAMIN

FIRST-TERM ENLISTED MALE MARINES' SATISFACTION WITH JOB CHARACTERISTICS: EVIDENCE FROM THE 1999 USMC WEB-BASED RETENTION SURVEY

Brinley M. Hall, III-Major, United States Marine Corps

B.A., Bowdoin College, 1988

Master of Science in Management-March 2001

Advisors: George W. Thomas, Graduate School of Business and Public Policy

Kathryn M. Kocher, Graduate School of Business and Public Policy

The purpose of this thesis was to analyze the job satisfaction of first-term male enlisted Marines. Prior research has shown that job satisfaction is an important variable in the retention decisions of both military and civilian workers. Data were extracted from the 1999 USMC Retention Survey and matched with Marine Corps personnel master files. The sample was restricted to E-2 through E-4. Job satisfaction was investigated by separating the data set by occupational group. Results indicate that over one-third of the respondents are dissatisfied with their job, a majority feel they have to "pick up the load" because the unit is understaffed, and over sixty percent feel their original expectations of the job have not been met. In the comparison of occupational groups, personnel in the combat arms community are significantly more dissatisfied with their job than the other four MOS communities. These findings can provide Marine Corps leaders with targeted information regarding occupational groups to use in improving job satisfaction and retention.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Job Satisfaction, Retention, Enlisted

THESIS ABSTRACTS

A DOD CONUNDRUM: THE HANDLING OF FEDERAL RETAIL EXCISE TAX ON THE ARMY'S MEDIUM AND HEAVY TRUCK FLEET

Harry P. Hallock-DoD Civilian

B.S.B.A., University of Delaware, 1979

Master of Science in Program Management-June 2001

Advisors: David V. Lamm, Graduate School of Business and Public Policy

Thomas C. Meyer, U.S. Army Tank-Automotive Command

This thesis explores the genesis of a Federal excise tax known as, FEDERAL RETAIL EXCISE TAX (FRET), and its impact on the acquisition of Medium and Heavy Tactical Wheeled Vehicles by the US Army and its sister Services. The thesis examines how DOD is impacted by the payment of this tax to the Department of the Treasury, through the IRS, and it reviews and discusses the direct cost, lost opportunity costs, and administrative burden to both DOD and its wheeled vehicle manufacturers. DOD payment of FRET to its contractors is in actuality the payment by one Government agency, the Army, to another Government agency, the IRS, through a third party, the defense contractor; who is considered by the IRS to be the taxpayer of record. As a result of this "three party" arrangement, no feedback mechanism exists between the Army and the IRS to verify actual payments, or for the Army to discuss and mitigate tax issues directly with the IRS. This situation is examined by addressing the primary research question: "What is the cost to the Government, both monetary and otherwise, of the Army paying FRET to the IRS, through third party defense contractors?"

DoD KEY TECHNOLOGY AREAS: Ground Vehicles, Other (Procurement)

KEYWORDS: Federal Retail Excise Tax, Medium & Heavy Tactical Wheeled Vehicles, US Army Tank-automotive & Armaments Command

A RETIREMENT PLANNING MODEL USING MONTE CARLO SIMULATION

Peter E. Hanlon-Lieutenant Commander, United States Navy

B.S., Villanova University, 1990

Master of Science in Management-December 2000

Advisors: Shu Liao, Department of Systems Management

Don Summers, Department of Systems Management

Uncertainty exists in retirement planning. The purpose of this thesis was to develop a stochastic retirement planning model to aid military personnel and decision/policy makers in evaluating retirement planning issues from a probabilistic perspective. The stochastic model developed differs from the ubiquitous retirement planning calculators available from many financial institutions and at many finance-related websites in that it accounts for the effects of uncertainty surrounding inflation and investment rates of return during one's investing "lifetime" by using Monte Carlo simulation techniques. The major components of the model are an input/output worksheet, a fund accumulation worksheet, a fund withdrawal worksheet, a probability distribution worksheet and a pay table lookup worksheet. After completing 17 inputs and running a simulation, a user is able to determine the probability of achieving a specific amount of retirement savings as well as the probability associated with how many years the retirement savings, supplemented by military retirement benefits and Social Security, may last. The information gained by using the model allows military personnel to evaluate their current retirement plans and make necessary adjustments. Additionally, the model allows decision/policy makers to evaluate specific military retirement issues in order to determine how changes may affect service members.

DoD KEY TECHNOLOGY AREA: Other (Financial Management)

KEYWORDS: Retirement, Monte Carlo Simulation, Military Benefits, Social Security Benefits, Historical Investment Returns

THESIS ABSTRACTS

MODERNIZATION THROUGH SPARES FOR THE ARMY'S LIGHT TACTICAL VEHICLE

Daryl P. Harger-Captain, United States Army

B.B.A., University of Alaska-Fairbanks, 1990

M.S.A., Central Michigan University, 1995

Master of Science in Management-December 2000

Advisors: Brad Naegle, Department of Systems Management

Keebom Kang, Department of Systems Management

In recent years, the Department of the Army has responded to the Federal Acquisition Streamlining Act of 1994 (FASA) and the Federal Acquisition Reform Act of 1996 (FARA) by implementing several policies and procedures. The policies are designed to cope with the challenge to operate with an ever-shrinking Defense budget and yet provide our warfighters with the weapon systems they need to succeed. One of the strategies employed by the Army to this end is Modernization Through Spares (MTS).

In a 22 January 1996 memorandum sent out by then Assistant Secretary of the Army (Research, Development and Acquisition), Gilbert F. Decker expressed his wishes to test the MTS concept on several programs, including the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV). He illustrated the MTS concept through an example, "While the old strategy may have gotten us a good price on a vacuum tube, for example it is time to begin buying semi-conductor chips with dramatic reductions in life-cycle costs and dramatic improvements in performance and reliability."

This research will analyze how the Program Manager (PM) of Light Tactical Vehicles (LTV) of the U.S. Army Materiel Command (AMC) implements Modernization Through Spares (MTS) for their HMMWV program. The objective is to establish the extent to which PM-LTV implements MTS and identify the methods used for MTS implementation in order to comply with the Army's strategy for MTS.

DoD KEY TECHNOLOGY AREAS: Command, Control and Communication, Ground Vehicles

KEYWORDS: Modernization Through Spares, Modernization, Modification, Acquisition Strategy, High Mobility Multi-Purpose Wheeled Vehicle (HMMWV), Light Tactical Vehicle

WIRELESS TECHNOLOGY VIA SATELLITE COMMUNICATIONS FOR PEACEKEEPING OPERATIONS

Andre T. Harrell-Captain, United States Marine Corps

B.S., Jacksonville University, 1993

Master of Science in Information Technology Management-September 2001

Advisors: Tri T. Ha, Department of Electrical and Computer Engineering

Nancy Roberts, Graduate School of Business and Public Policy

How can reliable information be shared amongst international, military, and non governmental organizations in support of peacekeeping operations? This thesis examines a wireless alternative to enhance existing communication infrastructures as a primary means of information exchange. When assessing the need for wireless and making a determination of its use, a study of its markets, trends, future growth, policies, and regulations must be taken into consideration. Wireless technology via satellite communications can offer a great advantage of information exchange for mobility-deployed organizations requiring extensive geographical coverage such as peacekeeping operations. With the emergence of higher transmission rates and technological options (i.e. video conferencing, Wide Area Networking, internet accessibility, voice/fax/data transfer, etc.) for satellite communication, the examination of wireless technology and the options it presents becomes paramount. Peacekeeping efforts involve the coordination and collaboration of civilian/military organizations that depend exclusively on information exchange for rapid response and operational readiness. The use for wireless as a necessary communication requirement will aid in the achievement of these objectives.

DoD KEY TECHNOLOGY AREAS: Computing and Software, Other (Peacekeeping)

KEYWORDS: Wireless Technology, Peacekeeping Operations, Satellite Communications

THESIS ABSTRACTS

FEASIBILITY STUDY OF SPEECH RECOGNITION TECHNOLOGIES FOR OPERATING WITHIN A MEDICAL FIRST RESPONDER'S ENVIRONMENT

Leroy W. Harris Jr.-Lieutenant, United States Navy

B.A., Saint Leo College, 1993

Master of Science in Systems Technology-December 2000

Advisors: Monique Fargues, Department of Electrical and Computer Engineering

Ray T. Clifford, Defense Language Institute

Douglas E. Brinkley, Department of Systems Management

This thesis was designed to address some of the issues facing the medical First Responder who is continually tasked with providing care within multi-national environments. Currently, there are no established billets or quota requirements at the Defense Language Institute Foreign Language Center for Navy Corpsmen for the purposes of foreign language education prior to an overseas assignment or deployment.

The primary Speech Recognition (SR) device used in this study was the Voice Response Translator (VRT). Navy Corpsmen and Army Medics were asked to evaluate the VRT's capabilities in assisting with non-English speaking patient assessments. Other SR assisted technologies available to overcome some of the burden of providing healthcare in a foreign language environment were also studied. The results of this feasibility study show that SR assisted technologies are a viable tool available for operation within a medical First Responder's environment.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel, and Training, Computing and Software

KEYWORDS: Speech Recognition, Machine Translation, Field Medicine, Medical

IMPLEMENTING THE DEFENSE RESOURCE MANAGEMENT MODEL IN EMERGING DEMOCRACIES

Tamas Hegedus-Lieutenant Colonel, Hungarian Air Forces

B.S., Kiev Civil Aviation University, 1983

Master of Science in International Resource Planning and Management-June 2001

Advisors: Roger Evered, Graduate School of Business and Public Policy

William Haga, Graduate School of Business and Public Policy

This thesis examines the political, organizational and cultural barriers to the implementation of the U.S. Defense Resource Management Model (DRMM) decision support system by the Ministry of Defense in Hungary between 1995 and 2000. It surveys the heritage of the Warsaw Pact alliance on military planning in Hungary prior to 1989. A detailed description of the DRMM system is provided along with an implementation history of DRMM in Hungary. Factors in the implementation failure are examined and suggestions are offered for improving the management of software and systems implementation in the future.

DoD KEY TECHNOLOGY AREA: Computing and Software

KEYWORDS: Information Technology Implementation in the Military

THESIS ABSTRACTS

NETWORK CENTRIC OPERATIONS AND NAVAL OFFICERS OF THE FUTURE: A FIRST ORDER ANALYSIS OF DESIRED KNOWLEDGE, SKILLS, ABILITIES, AND PERSONALITY TRAITS

Scott A. Hendrix-Lieutenant, United States Navy

B.S., University of Arizona, 1992

Master of Science in Management-September 2001

Advisors: Erik Jansen, Graduate School of Business and Public Policy

George Thomas, Graduate School of Business and Public Policy

The world is changing and future naval leaders must change with it. This thesis examines the future political, social, economic, and technological environments the Navy faces to determine future officer characteristics. A standard interview protocol is used to record the views of senior naval leadership and senior DON civilians who are experts in future warfare concepts and/or Navy manpower. From these interviews, future warfare and labor market requirements are examined. Due to increased speed and lethality during network centric operations (NCO), future officers will need to be broadly educated leaders who possess good decision making skills and core values. Future labor market requirements will demand officers who are leaders in diversity and possess leadership styles that motivate future generations. Because of the caliber of individuals demanded by NCO, future officers will need to possess greater interpersonal and team building skills to be effective leaders. To maximize the human potential of future officers, a new human resource strategy must be forged, one characterized by an adaptive manpower system that is holistic in nature as well as forward looking.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel and Training

KEYWORDS: Naval Officers of the Future, Network Centric Operations, Human Resource Strategy

MULTI-PHASE SOURCE SELECTION STRATEGY ANALYSIS

James F. Hiles-Lieutenant Commander, United States Navy

B.S., New School, 1986

Masters of Science in Management-December 2000

Advisors: Jeffrey Cuskey, Department of Systems Management

Keith Snider, Department of Systems Management

This thesis analyzed the use of a multi-phase source selection strategy at the Naval Air Systems Command. Points noted in four case studies were contrasted with policies and practices. Three essential characteristics of the multi-phase source selection strategy are that phases are used to fully understand requirements to the point that program risk is reduced, changes to requirements do not have to be re-competed and no Justification and Approval (J&A) is required for other than full and open competition when going into a follow-on phase considering only offerors from prior phases. Factors identified when the proposed multi-phase source selection strategy is appropriate include a high degree of confidence in the ability to determine a fair price without relying on supplier cost data, a fluid requirement likely to change significantly after exchange of information with potential sources, Government requirements initially stated as objectives, potential to take maximum advantage of commercially available technology, adequate time to fully accommodate exploratory phases prior to or at the start of the program, adequate commitment of funds available to accommodate potential growth in funding requirements during early requirement development phases, two or more sources expected to be capable of meeting the requirements, experienced personnel willing to adopt new strategies and engage in revised behavior patterns available for staffing the program office and organizational willingness to modify regulatory guidance as needed to accommodate the intended strategy.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Source Selection, Naval Air Systems Command, Major System Acquisition, Price-Based Acquisition, Multi-Phase Source Selection, Arsenal Ship, Deepwater, Marine Corps Aviation System Master Plan, Joint Direct Attack Munition

THESIS ABSTRACTS

AN ORGANIZATIONAL ANALYSIS OF THE UNITED STATES AIR FORCE PERSONNEL CENTER AIRMAN ASSIGNMENT MANAGEMENT SYSTEM

Kim D. Hill-Lieutenant Commander, United States Navy

B.A., University of Mississippi, 1987

M.Ed., University of Mississippi, 1993

Master of Science in Management-March 2001

Advisors: William R. Gates, Graduate School of Business and Public Policy

LCDR William D. Hatch, USN, Graduate School of Business and Public Policy

An analysis of the U. S. Air Force, Assignment Management System (AMS) is presented as an effective model that could be adapted by other services and agencies as a viable system for job matching, assignment and management of personnel assets. The military must compete with the civilian market to staff and man an all-volunteer force. There is a critical need to place more emphasis on career development and quality of life issues created by duty assignments requiring frequent and extended family separations due to overseas assignments.

Conventional personnel management practices leveraged by technological advances in secure data base management and Internet communications provide an opportunity for the military to more effectively and efficiently assign personnel. The Air Force system was chosen as a mature and well-developed model for a more detailed outcomes assessment and evaluation as presented in this study.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Manpower, Personnel, Assignments, Process Re-engineering, Retention

ANALYSIS OF ARMED SERVICES BOARD OF CONTRACT APPEALS, GENERAL ACCOUNTING OFFICE, AND FEDERAL COURT DECISIONS ON BEST VALUE IN FEDERAL PROCUREMENT

Scott J. Hoffman-Lieutenant Commander, United States Navy

B.A., University of Wisconsin-Whitewater, 1987

Master of Science in Management-June 2001

Advisors: CDR E. Cory Yoder, USN, Graduate School of Business and Public Policy

Lee Edwards, Graduate School of Business and Public Policy

This thesis analyzed four significant rulings by the Federal Courts, Armed Services Board of Contract Appeals, and General Accounting Office with respect to disputes regarding the best value selections in Government procurement and recommended ways to integrate these lessons into procurement organizations.

Best value entails the use of weighted factors that reflect the relative importance of each factor to the user. This allows the introduction of past performance, experience, technical approach, and other factors to be considered in addition to price.

The thesis analyzed the issues of four specific cases to determine if there is a pattern of weakness in a specific area of best value implementation. The aim is to bring any weaknesses to the attention of the acquisition professional in order to promote better application of best value and avoid future disputes, or at a minimum eliminate sustained disputes against the Government.

This thesis also looked at the commercial sector use of best value selections to view the similarities and differences that can be used to compare strengths and weaknesses of the Government's approach.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Acquisition, Best Value, Contracts, Evaluation, Procurement, Source Selection.

THESIS ABSTRACTS

ADOPTION OF THE INTERNET-BASED ELECTRONIC ORDERING SYSTEMS (EOS)-USERS' FACTOR ANALYSIS

**Shou-Chang Hsu-Lieutenant Commander, R.O.C. Taiwan Navy
B.S., Taiwan Naval Academy, 1989**

Masters of Science in Management-December 2000

Advisors: William J. Haga, Department of Systems Management

Kevin R. Gue, Department of Systems Management

Innovative technologies such as the Internet and World Wide Web are raising hopes of changing the picture of inefficient, complex and costly ordering processes and improving them in terms of quality, flexibility, and lead-time. The market of systems and services to support business-to-business relationships, in particular procurement processes, is one of hottest areas of Internet-commerce today. With most organizations spending at least one third of their overall budget to purchase goods and services, procurement savings hold significant business value. In this thesis, we provide a brief overview of e-commerce technologies, and present the summary of results from a survey study of small and medium organizations. The results are based on a survey of about 35 companies during the period Sep 2000 - Oct 2000. The survey covers issues related to identifying current adoption factors to moving ordering onto the Internet and current issues that have to be overcome in order to gain wide spread adoption.

DoD KEY TECHNOLOGY AREA: Command, Control and Communication

KEYWORDS: Electronic Commerce, Internet, Electronic Ordering System (EOS)

A CASE STUDY: IMPLEMENTATION OF THE GOVERNMENT PAPERWORK ELIMINATION ACT IN THE DOD ACQUISITION PROCESS: ASSESSING THE IMPACT OF INFORMATION TECHNOLOGY

**Robert M. Jennings-Lieutenant Commander, United States Navy
B.S., Indiana University, 1987**

Masters of Science in Management-December 2000

Advisors: Lawrence R. Jones, Department of Systems Management

Mark E. Nissen, Department of Systems Management

The Paperwork Elimination Act was signed into law on 21 October 1998. The Act is the guidance for Executive Agencies to improve customer service and information exchange through the use of information technology. The purpose of this thesis is to determine the feasibility of the Department of the Navy, specifically the Space and Naval Warfare Systems Command, San Diego (SPAWAR), to implement the Government Paperwork Elimination Act by the mandated 30 October 2003 deadline. This study examines the current paperless contracting system utilized by SPAWAR to determine if it can transition to a complete web based acquisition process. It is the finding of this thesis that, with the right level of funding and management oversight, the requirements of the Government Paperwork Elimination Act can be achieved.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORD: Systems, Defense Procurement

THESIS ABSTRACTS

DEPARTMENT OF DEFENSE (DoD) AND INDUSTRY-A HEALTHY ALLIANCE

Vicki L. John-DoD Civilian

B.S.B.A., Walsh College, 1987

Master of Science in Program Management-June 2001

Advisors: Richard Doyle, Graduate School of Business and Public Policy

Brian A. Smith, PEO Ground Combat and Support Systems

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

DoD KEY TECHNOLOGY AREA: Manufacturing Science and Technology

KEYWORDS: Science, Technology, Technology Transfer, Dual Use, Small Business Innovation Research, Cooperative Research and Development

THE POTENTIAL ROLE OF THE UNITED STATES MARITIME SERVICE (USMS) IN SUPPORTING READY RESERVE FORCE VESSEL CREWING NEEDS

Mark T. Jones-Lieutenant Commander, United States Naval Reserve

B.S., Montana Tech, 1986

Master of Science in Management-June 2001

Advisors: Ira Lewis, Graduate School of Business and Public Policy

Alice Crawford, Graduate School of Business and Public Policy

Because of concerns about possible Merchant Mariner manpower shortages or skill mismatch needed to crew DoD organic vessels during a major contingency, the Maritime Administration (MARAD) has proposed the development of a guaranteed surge pool of experienced inactive mariners available to ensure timely and adequate manning of its Ready Reserve Force (RRF). This pool would be a supplement, not a replacement, to the current active pool of mariners used to crew the RRF. This initiative is centered on using the United States Maritime Service (USMS) concept. Two main options were proposed: create a stand-alone USMS program under MARAD, and/or integrate the USMS concept with Navy's Merchant Marine Reserve (MMR) program.

Fourteen structured interviews were conducted with strategic sealift stakeholders and experts in order to provide MARAD and the Navy with elements of how these pools/programs could be developed and to identify the option that stakeholders believe is the best approach. Interview results revealed that a stand-alone USMS program, providing it could overcome various obstacles, was the preferred approach. Analysis and recommendations are provided on how both pools could be developed and what issues need to be resolved prior to either program implementation. An alternate approach to use the MMR program for RRF crewing is provided as well.

DoD KEY TECHNOLOGY AREA: Other (Strategic Sealift, Transportation)

KEYWORDS: Ready Reserve Force, United States Maritime Service, Merchant Marine, U.S. Navy Merchant Marine Reserve Program, Manpower, Sealift, Marine Transportation

THESIS ABSTRACTS

THE USE OF THE INTEGRATED PRODUCT TEAM IN THE NAVAL TOMAHAWK CRUISE MISSILE PROGRAM AT THE DEFENSE CONTRACTING MANAGEMENT AGENCY RAYTHEON

David H. Kao-Lieutenant Commander, United States Navy

B.S., University of Alabama at Birmingham, 1989

Master of Science Management-December 2000

Advisors: James M. Barnard, Department of Systems Management

David V. Lamm, Department of Systems Management

This thesis examines the use of the Integrated Product Team (IPT) concept within the Tomahawk Cruise Missile Program at the Defense Contracting Management Agency (DCMA) Raytheon. The study presents a literature review of the IPT philosophy and concepts and an overview of the Tomahawk Cruise Missile Program IPTs. Surveys and interviews focus on the following areas: 1) IPT dynamics; 2) IPT performance; 3) IPT training; and 4) the working relationship between contractor and Government personnel on IPTs.

Overall, team members who have participated in or managed an IPT agree that IPT has added value to the acquisition process by bringing functional disciplines from Government and industry together to exchange ideas and build a successful Tomahawk Program. Only a few team members reported that the IPT process led to problems in the decisionmaking process, alignment of team objectives, and contractor and Government working relationships.

Although both contractor and Government team members have some misunderstandings and preconceived notions about each other, both organizations realize that an effective Government and contractor interface provided by the IPT process is crucial to the success of the Tomahawk Program.

DoD KEY TECHNOLOGY AREA: Materials, Process, and Structures

KEYWORDS: Integrated Product Team, IPT, Acquisition

PROGRAM BUDGETING TO IMPROVE DECISION MAKING AND RESOURCE PLANNING IN ESTONIAN DEFENSE

Aldo Kask-Civilian, Ministry of Defense of Estonia

B.A., Tartu University, 1995

Master of Science in International Resource Planning and Management-June 2001

Advisor: Jerry McCaffery, Graduate School of Business and Public Policy

Second Reader: Lawrence R. Jones, Graduate School of Business and Public Policy

The thesis examines the linkage between budgeting, budget structure and decision making, discusses different functions a budget must fulfill and identifies criteria a budget structure should meet to support rational decision making. An examination of the most common budgeting approaches and the budget formats they use follows. As a result of this examination a mission-based program budget format emerges as the most suitable format for rational decision making at the top of organizations.

After identifying missions of the current military strategy, goals of the Estonian defense, and the structure of the current defense budget, the thesis analyses the strengths and weaknesses of the current defense budget structure and concludes that although it scores high on one major budgeting function - control - it does not support rational decision making at the top of Estonian defense establishment. To improve the situation the thesis identifies several alternative ways to structure and present budgetary information and assesses their strengths and weaknesses. And finally, some suggestions for further research conclude the study.

DoD KEY TECHNOLOGY AREA: Budget Format and Process

KEYWORDS: Estonia, Budget Structure (Format), Rational Decision Making, Program Budgeting, Mission Budgeting, Performance Budgeting, Zero-Based Budgeting, Line Item Budgeting, Incremental Budgeting, Planning, Programming and Budgeting Systems (PPBS)

THESIS ABSTRACTS

ALTERNATIVE COMMAND FUNDING AND FUNCTIONAL ORGANIZATION AT THE SPACE AND NAVAL WARFARE SYSTEMS COMMAND (SPAWAR)

Cathy M. Kimmel-Lieutenant Commander, United States Navy

B.S., University of San Diego, 1988

Masters of Science in Management-June 2001

and

Edward T. Butzirus-Lieutenant, United States Navy

B.S., Marquette University, 1991

Master of Science in Management-June 2001

Advisors: Lawrence R. Jones, Graduate School of Business and Public Policy

Jerry McCaffery, Graduate School of Business and Public Policy

This thesis examines funding sources for two Space and Naval Warfare Systems Command (SPAWAR) System Centers. SPAWAR System Centers Chesapeake and SPAWAR ITC, located in New Orleans, are the focus of this thesis. This thesis conducts a thorough review of the current funding structure at each SPAWAR System Center. Funding options available to SPAWAR System Centers are mission funding, which are monies appropriated by Congress, and reimbursable funding, which are monies recovered from customers for services rendered. Strengths and weakness of each funding method are analyzed for potential improvement. Each SPAWAR System Center's business base is also studied in regard to opportunities to grow the existing customer base and to identify potential threats to current market share. After careful examination of existing funding methods and in-depth interviews with top financial officials at the different SPAWAR System Centers, change recommendations to existing funding requirements and organizational structure are presented.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Cost Analysis, Command organization, SPAWAR Organization

LESSONS LEARNED FROM A WEB BASED DISTRIBUTED LEARNING CASE STUDY: EVALUATION OF COURSE DESIGN, MODULES, EFFECTIVENESS AND STUDENTS' PERFORMANCE AND REACTIONS

Miroslav E. Komar-Lieutenant Colonel, Croatian Army

B.S., University of Zagreb/Philosophy College, 1986

Master of Science in Management-June 2001

Advisors: James. E. Suchan, Graduate School of Business and Public Policy

Bernard J. Ulozas, Graduate School of Business and Public Policy

This thesis evaluated the first iteration of Navy Postgraduate School (NPS) on-line course 'Space Systems - Technology and Applications.' The thesis goal was to evaluate: course design; course effectiveness; student expectations and motivation before and affective reactions after the course; and typical patterns of on-line learning behavior according to Long's theory. Ultimately, the thesis intended to derive lessons learned and recommendations for future distributed learning (DL) courses and future research in this area.

There were thirty regular, resident NPS students in the sample. Data was collected from nine sources: four on-line questionnaires, Student Opinion Forms, on-line tracking, final grades, interviews with students, and interviews with the instructor.

Even though the course first course taught by this instructor, it was successful. Student expectations, motivation, affective and utility reactions were predominantly positive. For students, the most important advantage of the course was time flexibility and convenience. Students and the instructor agreed about central role of interactivity/feedback in a DL, which should be included into models of training effectiveness evaluation. Long-Dziuban's protocol results were surprising, but solid conclusions cannot be made without focused research. Results provided several recommendations about the course design, pedagogical improvements, instructional counseling, and future research.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Distributed Learning, Web-Based Training, Training Evaluation

THE USE OF KNOWLEDGE-BASED DECISION SUPPORT SYSTEMS IN RE-ENGINEERING SELECTED PROCESSES IN THE U.S. MARINE CORPS

Holly N. Korzilius-Captain, United States Marine Corps

B.M.A., University of Michigan, 1994

Master of Science in Information Technology Management-September 2001

Advisor: Mark E. Nissen, Graduate School of Business and Public Policy

Erik Jansen, Graduate School of Business and Public Policy

In light of the continued investment in information technology by businesses in hopes of achieving a measurable benefit in terms of process efficiency and effectiveness, business process re-engineering (BPR) is becoming increasingly important. BPR suggests that by radically redesigning underlying business processes, companies can achieve breakthrough improvements in productivity. BPR, however, is a knowledge intensive endeavor. A decision support tool called KOPeR-lite was developed with the intent of encoding the knowledge held by BPR experts and documented in BPR literature. This tool promises to assist BPR novices who are tasked with re-engineering inefficient or ineffective processes. The purpose of this thesis is to determine the viability of using KOPeR-lite when BPR novices undertake process re-engineering projects. It also proposes re-engineering solutions for the permanent change of station orders process for USMC officers, which will be presented to the leadership in the Headquarter, U.S. Marine Corps (HQMC) Manpower and Reserve Affairs (M&RA) branch. If adopted, one of the proposed solutions promises to dramatically improve process performance.

DoD KEY TECHNOLOGY AREAS: Other (Business Re-Engineering)

KEYWORDS: KOPeR-lite, Business Process Re-Engineering

FEDERALISM IN INDONESIA

Aditya Kumara-Lieutenant Junior Grade, Indonesian Navy

B.S., University of Indonesia, 1995

Master of Science in International Resource Planning and Management-June 2001

Advisors: Thomas Bruneau, Department of National Security Affairs

Roger Evered, Graduate School of Business and Public Policy

This thesis provides a review for Indonesians about federalism, including the definition and concept, how other countries apply federalism, what the impacts of implementing federalism in Indonesia might be, and what the requirements are for Indonesia to make federalism work successfully.

Indonesia seems to meet some of the indicators for a successful federal state. It has a population of over 200 million, and its territory is spread across more than 2,000 inhabited islands. It has great linguistic and ethnic fragmentation and many religions.

The current demands for a federal system are largely the product of a feeling of injustice against the central government, and its abuse of local revenue distribution accompanied by authoritarian actions by members of the Armed Forces and other government officials. This had created an unhealthy undercurrent of resentment against the unitary system, which has been surfacing in different ways for the past several years.

In order to deal with this issue, the essence of federalism has been adopted in the new bill (No.22/1999 or Regional Government) known as "wide-ranging autonomy." Therefore, the thesis recommends that the Indonesia government should first concentrate on the implementation of Law No.22/1999 (regional autonomy) and see how it works.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Indonesia, Federalism)

KEYWORDS: Federalism

**AN ASSESSMENT OF TURKISH DEFENSE INDUSTRY AND TURKEY'S EFFORTS TO
TRANSFER MILITARY TECHNOLOGY: STRATEGIES FOR ARMING THE FUTURE**

Haluk Kurtoglu-First Lieutenant, Turkish Army

B.S., Turkish Army Academy, 1996

Master of Science in Management-June 2001

and

A. Murat Agdemir-First Lieutenant, Turkish Army

B.S., Turkish Army Academy, 1996

Master of Science in Management-June 2001

Advisors: Shu Liao, Graduate School of Business and Public Policy

Michael Boudreau, Graduate School of Business and Public Policy

The end of the cold war has created a safer environment for most nations and reduced the need for fielding huge armed forces and vast investments for defense. However, due to her very special strategic position and historical responsibilities, Turkey still faces a range of substantial threats to its national interests, physical security, economic well being. These threats require the maintenance of a broad set of military capabilities in order to deter, and if necessary, to fight and win any future conflict. This thesis investigates the Turkish Defense Industry and Turkey's efforts to transfer military technology to establish a required technological base for a self-sufficient defense industry, which can fulfill the needs of the Turkish Armed Forces and stay competitive in a rapidly changing market place. The goal of this project is to evaluate the present Turkish Defense Industry and to present strategies that should be carefully considered in developing a sound defense industry and technological base policy. It addresses the defense industry and technology transfer issues as well as Turkey's security policy and future defense requirements. We make use of industry literature, trade publications, United States, Turkish and several other international government and non-government resources, and professional publications.

DoD KEY TECHNOLOGY AREA: Other (Technology Transfer)

KEYWORDS: Turkish Defense Industry, Technology Transfer

A STUDY OF MIDSHIPMEN'S EXPECTATIONS ABOUT OPERATIONS OTHER THAN WAR

David J. Laliberte-Lieutenant, United States Navy

B.S., Siena College, 1994

Master of Science in Leadership and Human Resource Development-September 2001

Advisors: Susan Hocevar, Graduate School of Business and Public Policy

Mark Eitelberg, Graduate School of Business and Public Policy

Since the end of the Cold War, the armed forces of the United States have increasingly been involved in military operations other than war (OOTW). Many service members feel these missions are contrary to the central purpose of the military and not in keeping with the reasons why they originally joined the service. Research shows that a mismatch of job expectations and job realities can be a factor in reducing retention. Thus, the military's leaders have made a conscious effort to eliminate "message mismatch" and better align the words, expectations, and actions of their individual services. In doing so, they hope to create greater organizational credibility and personal commitment for their forces.

The purpose of this research is to examine the general level of awareness, understanding, expectations and actual involvement concerning OOTW that exist among future naval officers at the United States Naval Academy and current junior officers. Conclusions about the possible expectation-reality gap among future naval officers concerning OOTW is explored. Recommendations for further research and implications for policy makers are offered to possibly decrease the gap between service member expectations and the likely operational realities of their future service.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel and Training

KEYWORDS: Operations Other Than War, OOTW, Midshipmen, Expectation-Reality Gap

ASSESSING THE PERFORMANCE AND COST OF LOGISTICS AIRFLEET OPTIONS

Jack N. Law-Lieutenant Commander, United States Navy Reserve

Master of Science in Management-December 2000

Advisors: William R. Gates, Department of Systems Management

Keebom Kang, Department of Systems Management

The Chief of Naval Operations (OPNAV) has directed a study to determine the proper airfleet to satisfy the Navy's future logistics needs. The sponsor of the study is OPNAV N78G, the Financial Management Office of OPNAV's Air Warfare Division. The goal of the study is to ensure effective and efficient resource allocation in building an airfleet that will satisfy future peacetime and wartime airlift demand. This thesis supports the OPNAV study by providing a tool for evaluating airlift fleet options on the basis of cost and capability. This decision support tool combines an aircraft assignment model, which determines fleet capability, with a Life Cycle Cost (LCC) model, which calculates the cost of acquiring and operating a given fleet of aircraft. The combined models allow decision makers to specify a fleet mix with desirable performance characteristics, calculate the cost of that fleet, and observe the financial and operational effects of changing either the makeup of the fleet or the acquisition schedule. The thesis combines deterministic and stochastic analysis of historical demand data to assess the demand for aircraft and the capabilities of a chosen fleet mix. The data provided by the sponsor do not include overseas missions; this limits the scope of the study, but does not detract from the methodology. Cost data from Navy and commercial sources are used to develop LCC data for the chosen fleet. The resulting methodology, taken as a whole, provides detailed insight into the effects that fleet mix changes have on airfleet performance and cost. The user can incorporate various priorities (low cost, high capacity, high flexibility) in the selection of a fleet mix and observe the impacts these decisions will have on fleet cost and performance.

DoD KEY TECHNOLOGY AREA: Other (Financial Management)

KEYWORDS: Logistics Airlift, Cost Benefit Analysis, Life Cycle Cost, Monte Carlo Simulation

A STUDY OF CONTRACT TYPES USED BY THE ARMAMENT CORPORATION OF SOUTH AFRICA (ARMSCOR)

Kopano P. Lebelo-DoD Civilian

M.S., The Institution for Mechanical and Electrical Engineering, 1989

Master of Science in Management-June 2001

Advisors: Jeffrey R. Cuskey, Graduate School of Business and Public Policy

David V. Lamm, Graduate School of Business and Public Policy

Defense acquisition in the Republic of South Africa is performed by the defense procurement agency called the Armament Corporation of South Africa (Armcor). The agency is faced with the challenge to acquire products and services effectively and efficiently and within a limited budget. One of the elements that contribute to increased efficiency in procurement is the reduction of contract risk. The agency's regulations presently allow the use of fixed-price contracts that limits its capability to mitigate risks especially in the procurement of specialized and complex military products. The study is organized in the following manner. Firstly, it presents structures; policies and regulations that govern contract types. Secondly, it reviews contract types used by the U.S. Federal agencies and other countries. Thirdly, it analyses Armcor's contracting procedures related to contract types. Lastly, the study recommends contract types that are suitable for the South African defense agency and changes that should be adopted before they can be incorporated. The research recommends a contract type model for Armcor.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Armscor Contract Regulations, Federal Acquisition Regulation, Fixed-Price, Cost-Reimbursement, Incentive Contract Types

FINANCIAL ANALYSIS OF FEDERAL EMPLOYEE FINANCIAL DISCLOSURES TO IDENTIFY UNEXPLAINED AFFLUENCE AND FINANCIAL STRESS

**Lance A. Lee-Lieutenant, United States Navy
B.S., University of Texas at Austin, 1994
Master of Science in Management-June 2001**

**Advisors: Joseph G. San Miguel, Graduate School of Business and Public Policy
Shu S. Liao, Graduate School of Business and Public Policy**

Espionage is an ever-present problem for the United States. Although the methods of espionage employed by foreign governments vary, the most common method of obtaining access to our intelligence is by purchasing intelligence from an individual with access to classified information. Spies committing espionage typically spend the money they receive and thus live a lifestyle beyond that sustainable by their legal income. The term "unexplained affluence" is used to describe those living beyond their legitimate means. On the other hand, employees suffering from "financial stress," i.e., those with overwhelming debt may be recruited by foreign governments for future spy missions. The purpose of this thesis is to examine alternative methods and techniques for evaluating the financial disclosures of certain federal government employees as a means of identifying employees exhibiting either unexplained affluence or financial stress. Employee financial disclosures were analyzed using trend, comparative, and financial analysis techniques both within and across time periods to determine whether the employee exhibited normal or abnormal financial characteristics. Trend analysis of this population's financial disclosure data revealed that low correlation exists between income and assets, liabilities and net worth. The results of comparative and financial ratio analysis proved that employees exhibiting abnormal financial characteristics could be identified for further investigation using information obtained from external sources.

DoD KEY TECHNOLOGY AREA: Other (National Security)

KEYWORDS: Espionage, Unexplained Affluence, Financial Stress, National Security

THE 12-PHASE ACQUISITION PROCESS: A COMPARISON OF THEORY VS. PRACTICE

**Christopher Lehner-Major, United States Army
B.S., United States Military Academy, West Point, 1990
Master of Science in Management-June 2001**

**Advisors: CDR E. Cory Yoder, USN, Graduate School of Business and Public Policy
Mark E. Nissen, Graduate School of Business and Public Policy**

The 12-Phase Acquisition Process was developed by the faculty of the School of Business and Public Policy, Naval Postgraduate School (NPS), and is a cornerstone concept for every contracting class at NPS. The 12-Phases provide a distinct roadmap for the equipment user and a Contracting Officer to navigate the cycle to procure an equipment item. For this thesis, each phase in the 12-Phases is supplied with the pertinent elements (e.g., actions, analyses, events) primarily from the Federal Acquisition Regulation (FAR) Part 12 (Acquisition of Commercial Items) and the FAR Part 13 (Simplified Acquisition Procedures). Additionally, the thesis outlines and analyzes the acquisition process of 2nd Battalion, 1st Special Forces Group (A) using the 12-Phases. Results of the analysis reveal eight problems and shortcomings in the battalion's process. These problems hinder the battalion from achieving its goals of a best-price or best-value, minimum delay, detachment satisfying acquisition. Recommendations are made for the battalion to incorporate elements of the 12-Phases into its acquisition process to better achieve its goals.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Acquisition, Contracting)

KEYWORDS: 12-Phase Acquisition Process, Defense Acquisition, Simplified Acquisition Process

A POISSON REGRESSION ANALYSIS OF THE ACADEMIC SETBACK IN NAVAL TRAINING DEADTIME

**Joseph T.C. Li-Lieutenant Commander, Taiwan Navy
B.S., Chinese Naval Academy, 1988**

Master of Science in Management-December 2000

Advisors: Robert Read, Department of Operations Research

Dennis Mar, Department of Systems Management

The dead time in a Naval Training Pipeline is defined as time spent by students enrolled in training doing things other than training. The effect of dead time has been to decrease the utilization of personnel to under 70% in recent times. Four years (1996-1999) of data have been selected for study. The Academic Setbacks for course with CDP identifier 6400 has been chosen for initial work and model building. The methods developed for this case will be applied to Academic Attrition and Instruction Interruption to the extent possible. The exploratory analyses will seek to discover internal temporal patterns of setbacks. The goal is to build methodology for identifying sets of time intervals that exhibit the larger setback and attrition rates.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel and Training

KEYWORDS: Poisson Regression, Training Deadtime, Maximum Likelihood

ASSESSMENT AND EVALUATION OF THE EMPLOYMENT OF THE MIDSHIPMAN INFORMATION SYSTEM (MIDS) AS A PERFORMANCE MEASUREMENT TOOL BY COMPANY OFFICERS AT THE UNITED STATES NAVAL ACADEMY

**Michael D. Luckett-Lieutenant, United States Navy
B.S., United States Naval Academy, 1994**

**M. Eng., University of California-Berkeley, 1995
and**

**David M. Oden-Lieutenant, United States Navy
B.S., Ball State University, 1990**

Master of Science in Leadership and Human Resource Development-June 2001

Advisors: Walter E. Owen, Graduate School of Business and Public Policy

Keith F. Snider, Graduate School of Business and Public Policy

Second Reader: CDR William R. Cloughley, USN, United States Naval Academy

This research first examines the use of the Midshipmen Information System (MIDS) by faculty, staff and midshipmen as a performance measurement tool at the United States Naval Academy. Specifically, this project examines how Company Officers use MIDS to measure the performance and development of the midshipmen over time, what metrics they believe are important to midshipmen development, how current MIDS functionality meets the needs of end users and recommendations for improvement of the overall system. Research includes interviews of faculty, staff and midshipmen on their use of MIDS, an online survey given to all Company Officers and a detailed analysis of current performance measurement models in use today. Once this data was collected, a system capability analysis of MIDS and the WebIntelligence ad-hoc query software was completed. These results are included in an appendix that can be used by all Company Officers as a training guide to ensure more effective use of their time.

The findings of this research allow the United States Naval Academy in general and the Company Officer specifically to more fully understand the importance of performance measurement in continually improving the development of midshipmen.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Manpower, Personnel and Training

KEYWORDS: MIDS, Database, Management Information System, Performance Measurement, Prototype

DEFINING AND COPING WITH WICKED PROBLEMS: THE CASE OF FORT ORD BUILDING REMOVAL

**David S. Luckey-Major, United States Marine Corps
B.A., Purdue University, 1989**

**Master of Arts in National Security Affairs-March 2001
and**

**Kevin P. Schultz-Lieutenant, United States Navy
B.A., University of San Diego, 1994**

Master of Arts in National Security Affairs-June 2001

Advisor: Nancy A. Roberts, Graduate School of Business and Public Policy

Second Reader: CAPT Frank Petho, USN, Department of National Security Affairs

Globalization and interdependencies have given rise to a new type of problem-some call them "wicked." Wicked problems are confounding experts in many disciplines of study. They are inherent to policy and strategic planning issues in civilian and military settings. The traditional, linear methods of problem solving are inadequate to address the complexity of wicked problems, and thus require new methods of problem solving. This thesis begins with a review of the definitions of wicked problems and strategies for coping with them found in academic literature.

In order to demonstrate the utility of these concepts to a military audience, the building removal aspect of the Fort Ord base closure is utilized as an illustration of a wicked problem. The thesis first identifies the characteristics of a wicked problem in the Fort Ord case, and then proposes a strategy for coping with Fort Ord building removal. The Fort Ord example is not unique within the Department of Defense, and lessons learned from this illustration are applicable not only to other closed bases and to future rounds of base closure, but also to other issues marked by complexity and interdependence.

DoD KEY TECHNOLOGY AREAS: Environmental Quality, Manpower, Personnel, and Training, Other (Strategic Planning, Problem Solving, Decision-making, Leadership)

KEYWORDS: Wicked Problems, Problem Solving, Coping Strategy, Fort Ord, Base Closure, Base Reutilization, Base Reuse, Base Realignment and Closure, Building Demolition, Building Deconstruction, Building Remediation, Hazardous Materials, Lead Based Paint, Asbestos

AUTONOMIC LOGISTICS CAPABILITY OF THE ADVANCED AMPHIBIOUS ASSAULT VEHICLE

**Paul G. Mack-Major, United States Marine Corps
B.S., United States Naval Academy, 1987**

Master of Science in Management-December 2000

Advisors: Michael W. Boudreau, Department of Systems Management

William J. Haga, Department of Systems Management

This study examined the feasibility of using on-board sensory data from the Marine Corps Advanced Amphibious Assault Vehicle (AAAV) as inputs to the Marine Corps Asset Tracking Logistics and Supply System, version II+ (ATLASS II+) as a way to improve sustained logistics decision making. It also looks at the possibility of feeding AAAV sensory data to the Optimized Naval Aviation Logistics Command Information System (NALCOMIS) at the Organizational Maintenance Activity (OMA) level. The major finding is that ATLASS II+ cannot fully support AAAV inputs at this time but the logistics system will be capable of such support when the AAAV is fielded in 2006. Another finding is that the Platform Software Interface Subsystem being developed for NALCOMIS could significantly improve the logistical management of the AAAV life-cycle if integrated into ATLASS II+. An additional improvement would

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result if the Configuration Management Subsystem of NALCOMIS could be integrated into ATLASS II+. Recommendations are made for logistical management practices and logistics policy.

DoD KEY TECHNOLOGY AREA: Command, Control and Communication, Sensors, Ground Vehicles

KEYWORDS: Autonomic Logistics, Sensors, Logistics, Maintenance, Supply, Automated Information Systems

REORGANIZATION OF THE MARINE AIR COMMAND AND CONTROL SYSTEM TO MEET 21ST CENTURY DOCTRINE AND TECHNOLOGY

John C. Madsen-Major, United States Marine Corps

B.S., Central Michigan University, 1989

Master of Science in Information Technology Management-September 2001

Advisors: Frank J. Barrett, Graduate School of Business and Public Policy

Erik Jansen, Department of Information Science

The Marine Air Command and Control System (MACCS) is at a crossroad for organizational change. New and emerging war fighting doctrine, which places an emphasis on joint and small contingency operations, as well as new technology, requires that the MACCS review how it is organizationally structured. Within the next few years, the Marine Corps will field the Common Aviation Command and Control System (CAC2S). CAC2S is designed to be a singular tactical system for all functional agencies within the Marine Air Control Group (MACG). Unique systems, which were in the past tailored for the specific missions, will be eliminated with the fielding of CAC2S. CAC2S will allow the MACCS to operate in a manner that could not be achieved when the MACCS was first formed during the 1960s. Many sources in the Fleet Marine Force and the support establishment recognize that the MACCS must reorganize in order to operate and function effectively within the confines of this emerging 21st century technology and doctrine. Parallels exist between how industry and business reorganize when introduced to new technologies and business doctrine, and the military. Organizational restructuring is something that must be carefully considered and planned, for it is most often resisted by the members and stakeholders of an organization. Overcoming the barriers and resistance to change requires formal models of change be implemented. Technology alone cannot increase or improve an organization's productivity. Only through formal restructuring can an organization such as the MACCS hope to remain essential to the mission of the Marine Corps.

DoD KEY TECHNOLOGY AREAS: Other (Organizational Change)

KEYWORDS: Marine Air Command and Control System, MACCS, Common Aviation Command Control System, CAC2S, Marine Air Tactical Group, MACG, Organizational Change

ANALYSIS OF PORT CONGESTION UPON SEALIFT OPERATIONS USING SIMULATION

Peter J. Mahoney-Captain, United States Marine Corps

B.A., College of the Holy Cross, 1995

Master of Science in Management-December 2000

Advisors: Keebom Kang, Department of Systems Management

Sang Jin Lee, Department of Systems Management

Strategic sealift plays a vital role in the U.S. Navy's concept of battlespace sustainment and projecting maritime power. Factors such as port congestion, however, can constrain the ability of sealift system assets to provide sustainment support when and where needed to meet mission objectives. This thesis describes the design and employment of a modeling and simulation framework, the Materiel Transport and Resource Allocation Decision-support System (MTRADS), to assess the potential impact of port congestion on time-critical sealift system operations.

We employ MTRADS to provide advance planning information regarding the expected effects of congestion, alternate force structures, and resource allocation decisions at the port of Pusan, Republic of

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Korea (ROK), on the ability of the Korean Flag Shipping (KFS) Program to execute an actual TPFDD-based sealift deployment plan generated by the Military Sealift Command (MSC). Our analysis, experimentation, and conclusions indicate certain sealift system or port assets can impose significant constraints on the KFS Program's ability to meet specific closure time objectives. We recommend MSC build upon the foundation MTRADS provides to further explore the potential effects of congestion-specific and other port access and denial issues affecting strategic sealift operations.

DoD KEY TECHNOLOGY AREA: Modeling and Simulation

KEYWORDS: Military Sealift Operations, Military Transportation, Computerized Simulation, Seaports(Facilities), Port Congestion, Korean Flag Shipping Program, Trafficability

COST BENEFIT ANALYSIS FOR THE UNITED STATES NAVY'S CLOSED CIRCUIT TELEVISION SYSTEM

**Thomas A. Martucci III-Lieutenant, United States Navy
B.S., University of Arizona, 1994**

Master of Science in Management-December 2000

Advisors: William Gates, Department of Systems Management

Cary Simon, Department of Systems Management

This thesis provides insight and a possible solution for improving the United States Navy's Closed Circuit Television (CCTV) System and training tape system. The Department of Defense (DoD), and specifically, the United States Navy, can incorporate commercial technologies that would improve the quality of life of its members, the quality of its shipboard training, and reduce the cost of providing CCTV support to deployed personnel.

The Office of Management and Budget (OMB) circulars A-76 and A-94 were used as guidelines to study potential cost savings and reduction measures. Data collection provided in this study consisted of internet and electronic queries, personal interviews, and telephone correspondences.

Results indicated that consolidating DoD media commands and converting to a Digital Video Disc (DVD) technology could reduce overall costs to the Navy and improve product quality. The Navy should validate these exploratory findings and consider implementing the following: consolidate television weekly (TW) and duplication facility (DUPFAC) services, replace existing 8mm players with commercial DVD players, and acquire future recorded media (movies and training films) on DVD.

DoD KEY TECHNOLOGY AREAS: Electronics

KEYWORDS: Closed Circuit Television, Site Television, Digital Video Disc

NATO AND CONFLICT RESOLUTION

**Florina C. Matei-Civilian, Ministry of Defense of Romania
B.S., University of Bucharest, 1996**

Master of Arts in International Security and Civil-Military Relations-March 2001

Advisors: Thomas C. Bruneau, Center for Civil-Military Relations

Nancy Roberts, Graduate School of Business and Public Policy

Since the end of the Cold War, the Balkan Peninsula has been witnessing various conflicts. The Former Republic of Yugoslavia has become a theater of atrocious confrontations between people with common history and traditions. The wars in Bosnia-Herzegovina and Kosovo, two components of the Former Republic of Yugoslavia, have entailed the involvement of the North Atlantic Treaty Organization in the multinational efforts to stop violence in this region. Since 1990, NATO's new objectives are reducing the risk of conflict, building increased mutual understanding and confidence among all European states, helping to manage crises affecting the security of the Allies, and expanding the opportunities for a genuine partnership among all European countries in dealing with common security problems.

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This thesis describes the characteristics of conflict and conflict resolution, with an emphasis on the factors that make a third party intervention in conflict "ideal." It will elaborate on NATO's diplomatic efforts to resolve conflict situations, providing an overview, analysis and evaluation of NATO's intervention as a third party in the conflicts in Bosnia-Herzegovina and Kosovo. Emphasis will be placed on whether or not NATO meets the factors/criteria for an "ideal third party."

DoD KEY TECHNOLOGY AREA: Other (Conflict and Conflict Resolution)

KEYWORDS: North Atlantic Treaty Organization, Conflict, Conflict Resolution, Third Party Intervening in Conflict Resolution, Ideal Third Party, Federal Republic of Yugoslavia, Bosnia, Kosovo

AN EVALUATION OF COSTS AND BENEFITS OF THE NAVY'S DRUG PREVENTION POLICIES

Mary Jane Osmeña McCrea-Lieutenant Commander, United States Navy
B.A., College of the Holy Cross, 1989
Master of Science in Management-March 2001

and

Markus Hey-Lieutenant, German Navy
Abitur, Gymnasium Adolfinum, 1990

Master of Science in Management-March 2001

Advisors: Stephen L. Mehay, Graduate School of Business and Public Policy
Natalie J. Webb, Defense Resource Management Institute

This thesis evaluates the costs and benefits of the Navy's drug prevention policies. Benefits stem from both deterrence and detection effects of the policies. By using data from the National Household Survey on Drug Abuse, and Department of Defense Survey of Health Related Behavior Among Military Personnel, the existence and magnitude of the deterrence effect is estimated. The gross benefits of the zero tolerance policy are calculated based on the costs avoided by deterring and detecting users. These benefits are compared to the total costs of the drug prevention program, including replacement costs of discharged personnel, and administrative costs. Sensitivity analysis suggests that, under reasonable assumptions about the key parameters, the program does not generate positive net benefits. It is recommended that an analysis of the cost-effectiveness of a rehabilitation program for positive drug testers be conducted.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Deterrence Effect, Detection Effect, Replacement Costs, Continuation Rates, Zero Tolerance

CASE ANALYSIS OF THE FORT ORD RESTORATION ADVISORY BOARD 1995-1999

Larry L. McGuire-Lieutenant Commander, United States Navy
B.B.A., Texas A&M University, 1987

Master of Science in Management-March 2001

Advisors: Susan P. Hovevar, Graduate School of Business and Public Policy
Cary A. Simon, Graduate School of Business and Public Policy

This research analyzes the successful and less successful practices of the Fort Ord Restoration Advisory Board in expediting environmental cleanup at Fort Ord, making former military land available for civilian use. It includes descriptions of base realignment and closure selection criteria, President Clinton's Revitalization Initiative, the Restoration Advisory Board Process, and an extensive literature review of citizen involvement in advisory groups and conflict. Nine semi-structured interviews were conducted with Army representatives, regulatory agency representatives, citizens, and other individuals that were either members of or associated with the Fort Ord Restoration Advisory Board. This paper draws conclusions and offers recommendations about how challenges encountered by the Fort Ord Restoration Advisory

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Board can be avoided at other military installations that either have existing advisory boards or are required to form boards due to future Base Realignment and Closure actions.

DoD KEY TECHNOLOGY AREA: Other (Base Realignment and Closure, Environmental Cleanup)

KEYWORDS: Shore Installation Management, Base Realignment and Closure, Restoration Advisory Board, Citizen Advisory Group, Conflict, Environmental Cleanup, Fort Ord

COLLABORATIVE PLANNING SOLUTIONS: USING USMC STANDARD COLLABORATION TOOLS TO ASSIST WITH MISSION PLANNING AND EXECUTION

Heidi J. McKenna-Captain, United States Marine Corps

B.B.A., University of Hawaii, 1991

Master of Science in Information Technology Management-September 2001

Advisors: Douglas E. Brinkley, Graduate School of Business and Public Policy

Floyd J. Brock, Department of Information Sciences

This study provides a baseline on collaborative solutions and tools. This thesis examines the current collaborative applications used within the United States Marine Corps (USMC). It demonstrates the strengths and weaknesses inherent to the current collaborative tool set used within the USMC. Additionally, this research examines how collaborative applications can effectively enhance information sharing during mission planning and execution, as well as increase productivity. A key to efficient planning and execution today is to find a seamless application that is standard throughout the entire Marine Corps and that is easy for the users to embrace. Findings indicate that collaborative tools can be highly effective if properly applied to the correct process. Recommendations for the future include finding a Web-based, data-driven application such as Microsoft Sharepoint Portal Server 2001. It combines the ability to easily create corporate Web portals with document management, enterprise content indexing, and team collaboration features.

DoD KEY TECHNOLOGY AREAS: Other (Information Technology)

KEYWORDS: Collaborative Applications, Web Portals, Document Management, Enterprise Content Indexing

IMPLEMENTING THE NAVAL POSTGRADUATE SCHOOL'S SECURITY POLICY USING WINDOWS 2000

David R. McKinley-Lieutenant Colonel, United States Marine Corps

B.A., Indiana University, 1983

Master of Science in Information Technology Management-September 2001

Advisors: Paul Clark, Department of Computer Science

William Haga, Graduate School of Business and Public Policy

Doug Brinkley, Graduate School of Business and Public Policy

When the Naval Postgraduate School (NPS) fully migrates to Microsoft Windows 2000 as the primary operating system on desktop PCs and servers, security configuration will be a major concern. Windows 2000 provides a consolidated tool set as a means to securely configure these systems. It also provides a pre-configured list of security templates that may be applied when initially configuring different types of systems. The purpose of this thesis is to provide: (1) brief overview of the Microsoft Windows 2000 security architecture, (2) a description of the Windows 2000 Security Configuration Tool Kit and how to configure security settings, (3) a discussion on security policy and how it effects security configurations, (4) recommendations on how to translate the Naval Postgraduate School's Security Policy into Windows 2000 security settings, and (5) recommendations on a pre-configured, security template for all students attending NPS.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREAS: Computing and Software

KEYWORDS: Microsoft Windows 2000, Security Configuration Tool Kit

CONTINGENCY CONTRACTING WITHIN THE DEPARTMENT OF DEFENSE: A COMPARATIVE ANALYSIS

Chester L. McMillon-Captain, United States Marine Corps

B.S., United States Naval Academy, 1993

Master of Science in Management-December 2000

Advisors: Jeffrey Cuskey, Department of Systems Management

David V. Lamm, Department of Systems Management

Contingencies such as regional conflicts, humanitarian and peacekeeping missions, or international or domestic disaster relief missions dictate the immediate deployment of military forces. This rapid deployment of Service members and other military assets requires concurrent deployment of supporting assets such as Contingency Contracting Officers (CCOs). The purpose of this research was to detail and compare the contingency contracting establishments of the Air Force, Army, Navy/Marine Corps, and Defense Contract Management Agency.

The thesis compares and contrasts the regulations governing the contingency contracting operations, the organization structure, contingency contracting support plans, and the training requirements and duties of CCOs of the aforementioned components. All components have adequate structures in place for contingency contracting. However, the research provides several conclusions and recommendations on how the Services could conduct contingency contracting operations more efficiently. Recommendations include the establishment of a contingency contracting chief within the Marine Corps, scenario-based field training within Department of Defense and the Services, and tailored pre-deployment training within each Service. As the Services continuously redefine their missions, they must adapt all subordinate units and organizations to ensure personnel have the training and equipment to meet any contingency.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Contingency, Contracting, Contingency Contracting

AN EXAMINATION OF MARFORRES CARDHOLDER AND APPROVING OFFICIAL SELF-MOTIVATION

Jeffrey W. Megargel-Captain, United States Marine Corps

B.A., Pennsylvania State University, 1992

Master of Science in Management-December 2000

Advisors: Susan Hovevar, Department of Systems Management

CDR Elliott Yoder, USN, Department of Systems Management

The focus of this research was to evaluate the intrinsic task motivation or "the positively valued experiences" (Thomas & Velthouse, 1990) that cardholders and approving officials within the Marine Forces Reserve obtain from performance of the duties associated with the purchase card program. The researcher sought to determine the prevalence of several contributors to intrinsic task motivation and how they affect performance and task satisfaction. The research includes an examination of Government, DoD, and DoN micropurchase program background and procedures with particular emphasis on the purchase card program at MARFORRES. This program background combined with a review of intrinsic motivation literature was used to devise and test a model of cardholder and approving official intrinsic task motivation. A survey was designed to evaluate this model and data were gathered from a sample of 114 cardholders and approving officials from MARFORRES. The results of the research indicate that task criticality, task competence, feedback, and autonomy were contributors to intrinsic task motivation. Autonomy was found to have the strongest relationship with motivation as well as quality of task performance and individual task satisfaction. Recommendations regarding training and streamlining purchase card activities are provided as an aid to decisionmaking in purchase card program management.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Government-Wide Commercial Purchase Card, Intrinsic Task Motivation

AN ANALYSIS OF THE COMPETITIVE STRATEGY IN THE INDUSTRY PROVIDING A DEFENSE SYSTEM OF SYSTEMS

James W. Melone-Lieutenant Commander, Supply Corps, United States Navy

B.S., United States Naval Academy, 1989

Master of Science in Systems Management-December 2000

Advisors: Gregory Hildebrandt, Department of Systems Management

Raymond E. Franck, Department of Systems Management

The change from platform to network centric warfare requires new perspectives of the Defense Industrial Base. Both the 1996 Defense Science Board Report on Vertical Integration and DoD's 1999 report on Price Based Acquisition recommend that DoD take steps to further understanding of competitive conditions in the defense industry. This thesis explores one method for gaining this insight. The industry is producing the system of systems for DoD, not just platforms. This thesis studies prime contractors for 78 programs which have been determined as the foundation for the future system of systems. By applying the Value-Net business model, it reviews the influences the Department of Defense, International Governments and industries, commercial firms, and suppliers have upon the prime contractors. This analysis identifies growth markets in interoperability development and open system component development. It also identifies competition-induced constraints on weapon system production markets. Through a survey of Defense Contract Management Agency Prime Integrators, it determines the concentration of prime contractor performance in the 78 programs. Based on data from 61 of the 92 prime contractors, it also reveals performance trends, indicating that key players in the industry have established strategies for network centric development. This thesis also shows that using the Value-Net business model is a valid method for understanding competitive influences in the industry for network centric warfare

DoD KEY TECHNOLOGY AREAS: Manufacturing Science and Technology (MS&T)

KEYWORDS: Industrial Base, Competition, System of Systems, Network Centric Warfare, Defense Industrial Base

A PERIODIC REVIEW INVENTORY POLICY FOR SMALL MILITARY HOSPITALS

Christopher T. Meyer-Lieutenant, United States Navy Reserve

B.A., University of Colorado, 1989

M.B.A., University of New Haven, 1995

Masters of Science in Management-December 2000

Advisors: Kevin R. Gue, Department of Systems Management

Keebom Kang, Department of Systems Management

We report on potential transportation, administrative, and inventory savings through an extended partnership between military hospitals and commercial prime vendors. We develop a simulated (Q,r) inventory model that incorporates inventory management concepts of optimal reorder points and quantities, and then compare the results to a periodic order policy. We compare the policies with a simulation that considers the effects of integrating inventory management, shipping, and invoice processing with the Prime Vendor. Our results suggest that small military hospital may benefit from a periodic order policy.

DoD KEY TECHNOLOGY AREA: Manufacturing Science and Technology (MS&T)

KEYWORDS: Hospital, Medical, Supply, Inventory, Simulation, Logistics

THESIS ABSTRACTS

ORGANIZATION DESIGN PRINCIPLES FOR COUNTERING TERRORISM IN THE UNITED STATES

**Matthew C. Mingus-Major, United States Army
B. S., Troy State University, 1990**

**Master of Science in Defense Analysis-December 2000
and**

**Richard D. Orman-Captain, United States Army
B. S., United States Military Academy, 1991**

Master of Science in Defense Analysis-December 2000

**Advisors: David C. Tucker, Command, Control, Communications, Computers,
and Intelligence Academic Group**

Susan P. Hocevar, Department of Systems Management

Recent terrorist activities (the World Trade Center bombing, the Oklahoma Federal Building bombing, the release of Sarin Gas in the Tokyo subway, etc.) have focused the national leadership on the topic of terrorism inside the borders of the United States. In response, two Presidential Decision Directives (PDD-62 and PDD-63) were issued to help define the terrorist threat and recommend a counter-terrorism organization in the federal government. However, the directives do not determine how the Federal government works with state and local authorities. The directives also do not focus on local, state, and federal capabilities to preempt a possible terrorist attack. This thesis builds a organizational framework of the U. S. counter-terrorism environment; explains the current U. S. counter-terrorism structure from a local perspective; develops a set of principles that could be used by any local or federal agency to develop a new or more efficient counter-terrorism organization; assesses two domestic counter-terrorism organizations; and proffers specific recommendations on how U. S. counter-terrorism organizations and programs could be more efficient.

DoD KEY TECHNOLOGY AREA: Other (National Security Affairs, Special Operations)

KEYWORDS: Counter-Terrorism, Domestic Counter-Terrorism, Terrorism, FBI, Interagency Working Group, Organization Design, Network

THE ROLE OF THE COMPANY OFFICER AT THE UNITED STATES NAVAL ACADEMY

**Tyrel W. Moxey-Captain, United States Marine Corps
B.S., United States Naval Academy, 1995**

Master of Science in Leadership and Human Resource Development-June 2001

**Advisors: Alice Crawford, Graduate School of Business and Public Policy
Priscilla Zotti, United States Naval Academy**

This thesis is an exploratory study into the role of the Company Officer at the United States Naval Academy. Specifically, this thesis briefly documents the historic role of the Company Officer and further examines how the Company Officers from the 2000-2001 timeframe perceive themselves either contributing or not contributing to the mission of the United States Naval Academy. The author conducted 30 questionnaires on the 30 Company Officers stationed at the Naval Academy during this period. In this questionnaire, the author specifically wanted to address the Company Officers' daily routines along with the Company Officers' perceptions on how they lead and mentor midshipmen. In addition, the author wanted to uncover some of the Company Officers greatest hindrances in the execution of their duties and their recommendations for improvement. The information gathered from the questionnaires enabled the researcher to glean four overall findings. Three of these findings discuss impediments to the Company Officer job, and the last finding addresses the overall perception Company Officers have about their job. Finally, the data retrieved from this study suggests that although the Company Officer billet is contributing to the overall mission of the United States Naval Academy, there is still room for improvement.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Leadership, Leadership Development

THESIS ABSTRACTS

AN ANALYSIS OF BUDGET EXECUTION IN ZIMBABWE AND SUGGESTED IMPROVEMENTS

Morgan Mudzinganyama-Lieutenant Colonel, Zimbabwe Army

B.Tech Accountancy, University of Zimbabwe, 1991

Master of Science in Management-June 2001

Advisors: John E. Muty, Graduate School of Business and Public Policy

Richard B. Doyle, Graduate School of Business and Public Policy

In Zimbabwe, the Government has been experiencing problems with budget formulation and control of expenditures by Ministries and departments. Through the adoption of a three-year-rolling budget in 1995, ministries were forced to forecast, focus and justify their requirements hence better planning. Despite this forward planning approach, budget execution problems have persisted as evidenced by over-expenditures, fraudulent activities and other related problems leading to centralize expenditure control at the Central Payments Office (CPO). The persistence of the problems led to the introduction of a Public Finance Management System (PFMS) starting in 2001.

This thesis aims to contribute towards finding a solution to the persistent budget execution problems. It describes important budget formulation and execution processes, statutes and organizations and their functions. The analysis shows that there is need to change the current system of doing business. Finally, it concludes by recommending that some statutes be changed and that new processes incorporating appropriate information technology (IT) be adopted.

DoD KEY TECHNOLOGY AREA: Other (Budgeting in Government)

KEYWORDS: Budgeting, Formulation, Execution, Information Technology, Planning, Programming

FUNDAMENTAL DIMENSIONS OF FINANCIAL CONDITION IN THE FEDERAL GOVERNMENT

Mark S. Murphy-Lieutenant Commander, United States Navy

B.S., High Point University, 1988

Master of Science in Management-June 2001

Advisors: O. Douglas Moses, Graduate School of Business and Public Policy

Kenneth J. Euske, Graduate School of Business and Public Policy

Historically, financial reports of federal agencies focused on budgetary accounting, the reporting of obligations and expenditures of appropriated funds. The Chief Financial Officers (CFO) Act of 1990 and subsequent legislation significantly changed this pattern by requiring the 24 largest government agencies to reorganize their financial staffs and establish Chief Financial Officers to reform accounting procedures and reporting. To achieve the goals of the financial reform acts, it must be determined if executive agencies are improving financial management. This determination may be facilitated by systematic financial analysis of agency operations using information provided in agency financial reports. The objective of this thesis is to examine financial ratios calculated from federal financial statement information in order to identify fundamental dimensions of financial condition within the federal government and the ratios representative of those dimensions. Statistical analysis of financial ratios using factor analysis was used to determine the fundamental dimensions of financial condition. The results indicate that nine fundamental dimensions of financial condition underlying the numerous financial ratios exist within the federal government. The dimensions are comprehensive in that they reflect the variance existing in the larger set of financial ratios. Individual ratios can be selected to represent or measure each dimension. These dimensions and ratios provide an approach to conducting a financial analysis.

DoD KEY TECHNOLOGY AREA: Other (Federal Financial Analysis)

KEYWORDS: Federal Government, Financial Ratios of Financial Condition, Factor Analysis, Indicators of Federal Agency Financial/Economic Health

THESIS ABSTRACTS

UKRAINIAN MILITARY EDUCATION: HIGH TIME FOR REFORM

Kostiantyn Narkunas-Lieutenant Colonel, Ukrainian Army

B.S., Sumy Artillery Institute, 1986

Master of Science in International Resource Planning and Management-June 2001

Advisors: Mark J. Eitelberg, Graduate School of Business and Public Policy

Benjamin J. Roberts, Office of Continuous Learning

This research demonstrates the need for change in the Ukrainian military educational system. Shaped after the Soviet style, the current military educational system is still highly specialized, with a strong emphasis on training. The traditional approach to an officer's preparation is quickly rendered obsolete by the rate of progress. Moreover, rapid and constant changes in the international and domestic environment, the emergence of new missions, technical advances, and the information revolution require a creative and adaptable educational system as well as life-long learning. Ukrainian officers today need a qualitatively new level of knowledge of international law and organizations, ethnicity and culture, economics and human rights, civil-military relations, and information technology. The military educational system bears a heavy responsibility for providing adequate knowledge to the officer corps, and it should become an agent for change.

DoD KEY TECHNOLOGY AREA: Other (Military Educational System)

KEYWORDS: Curricula, Leadership, Information Technology, Communication Skill

USING KNOWLEDGE MANAGEMENT TO INNOVATE

USCG COMMAND CENTER PROCESSES

Randall J. Navarro-Lieutenant, United States Coast Guard

B.S., California State Polytechnic University, 1991

Master of Science in Information Technology Management-June 2001

Advisors: Mark E. Nissen, Graduate School of Business and Public Policy

Daniel R. Dolk, Information Systems Academic Group

The U.S. Coast Guard (USCG) responds to thousands of alerts received each year from the Search and Rescue Satellite-Aided Tracking (SARSAT) system. Each alert requires an efficient and effective response to assist a potential mariner in distress. This thesis provides an in-depth analysis of the process employed by USCG Command Centers in responding to SARSAT alerts. The purpose of this analysis is to identify alternatives that can improve the knowledge work performed in the process. This thesis builds on recent work that focuses on knowledge management and system design from three integrated perspectives: 1) reengineering, 2) expert systems knowledge acquisition and representation, and 3) information systems analysis and design. The integrated framework covers the gamut of design considerations from the enterprise process at large, through alternative classes of knowledge in the middle, and on to specific systems in detail. The SARSAT response process is examined using this integrated framework and identifies five technological and organizational alternatives that offer significant potential to improve the overall performance of the process.

DoD KEY TECHNOLOGY AREAS: Command, Control and Communications, Other (Knowledge Management)

KEYWORDS: Knowledge Management, Process Analysis, Process Re-engineering, Information Systems

THESIS ABSTRACTS

AGENT-BASED SIMULATION SYSTEM: A DEMONSTRATION OF THE ADVANTAGES OF AN ELECTRONIC EMPLOYMENT MARKET IN A LARGE MILITARY ORGANIZATION

Hock S. Ng-Major, Singapore Armed Forces
B.E., Nanyang Technological University, Singapore 1994
Master of Science in Management-March 2001
and

Cheow G. Soh-Major, Singapore Armed Forces
B.E., University of Manchester, 1991
Master of Science in Management-March 2001

Advisor: William R. Gates, Graduate School of Business and Public Policy
Mark E. Nissen, Graduate School of Business and Public Policy

The Navy Personnel Command assigns over 100,000 Sailors annually utilizing in excess of 200 Detailers. This process is typically done manually between Sailor and Detailer. Navy Personnel Research Studies and Technology (NPRST), together with NPS, have begun a series of studies to optimize this process through the use of an Agent-Based Employment Market System. To assist in the validation of the Agent-Based System, this thesis seeks to design a simulation program as a demonstration of the possibilities and potential advantages of an Agent-Based Electronic Employment Market. Research includes conducting a review of the current personnel detailing process in the Navy, coding a simulation program, and running various detailing scenarios. The simulation results indicated there are potential advantages of an Agent-Based Employment Market System to detailing in the Navy.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel, and Training, Modeling and Simulation, Computing and Software

KEYWORDS: Department of the Navy Manpower Distribution System, Manpower Model Simulation

NAVAL AVIATION AGING WIRING: PROGNOSTIC AND DIAGNOSTIC SOLUTIONS

Mark E. Nieto-Lieutenant, United States Navy
B.S., Jacksonville University, 1994
Master of Science Management-December 2000
Advisors: Donald Eaton, Department of Systems Management
Keebom Kang, Department of Systems Management

The Navy and Marine Corps provide key forward-presence, crisis response and war-fighting capabilities to our nation's leaders and joint commanders. Naval Aviation plays a central role in every naval mission.

Unfortunately, the tools of naval aviation's power, its aircraft, are becoming alarmingly old. The average age of the naval aviation inventory is in excess of eighteen years old. The nerve center of today's sophisticated aircraft, wiring, is also aging and in some cases aging faster than the aircraft themselves. This study was initiated to determine the state of aging aircraft wiring in naval aviation, explore emerging technological solutions to support these systems as they age, and make a recommendation for a course of action.

This thesis provides an overview of the aging wiring problem and performs an analysis of possible technological solutions. Specifically, several prognostic and diagnostic technologies exist in the field of aircraft wiring. This thesis will discuss and evaluate these technologies in terms of ramifications, implementation, costs and benefits. Simple cost and cost savings models for technology application will be formulated using data from the Navy T-45 training program and commercial airlines to make a purchase recommendation to the Naval Air Systems Command's Aging Aircraft Integrated Process Team.

DoD KEY TECHNOLOGY AREA: Air Vehicles

KEYWORDS: Aging Systems, Aging Aircraft, Aging Aircraft Wiring, Prognostic, Diagnostic

THESIS ABSTRACTS

360-DEGREE FEEDBACK: A POWERFUL TOOL FOR LEADERSHIP DEVELOPMENT AND PERFORMANCE APPRAISAL

**David C. Nystrom-Lieutenant Commander, United States Navy
B.A., Gettysburg College, 1987**

Master of Science in Management-March 2001

Advisor: Frank J. Barrett, Graduate School of Business and Public Policy

Second Reader: Nancy A. Roberts, Graduate School of Business and Public Policy

Three hundred-sixty degree feedback is a powerful multi-dimensional leadership development tool that draws upon the knowledge of people within a person's own circle of influence: supervisors, peers, and direct reports. It is most widely used for development, yet many organizations also use it for administrative purposes. This thesis examines the efficacy of 360-degree feedback through an in-depth research review that establishes when 360-degree feedback is effective and what conditions enhance or detract from its effectiveness. The thesis explains how 360-degree feedback was developed and examines its rapid growth in popularity. The argument for multi-dimensional performance feedback is then discussed in terms of four factors that have changed the role of leadership as we have moved from the Industrial Age/Cold War to globalization and the Information Age. As leadership's roles change, so must the goals of leadership development. A review of successful organizations reveals that many are using 360-degree feedback for modern leadership development, reinforced by similar systems for administrative performance appraisal. Research on 360-degree feedback reveals effectiveness conditions, design and implementation considerations, and four categories of potential benefits. Large Group Interventions with Appreciative Inquiry for collaborative design/implementation and positive change management also are discussed. The thesis ends with strong recommendations for the use of 360-degree feedback for both Navy leadership development and administrative appraisal.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: 360-Degree Feedback, Leadership, Leadership Development, Performance Appraisal

A FULL COST ANALYSIS OF THE REPLACEMENT OF NAVAL BASE, GUANTANAMO BAY'S MARINE GROUND DEFENSE FORCE BY THE FLEET ANTI-TERRORISM SECURITY TEAM

**Placido C. Ordon Jr.-Captain, United States Marine Corps
B.A., The Citadel, 1992**

Master of Science in Management-December 2000

Advisors: John E. Mutty, Department of Systems Management

Richard B. Doyle, Department of Systems Management

Constrained defense budgets and manpower resources have motivated the United States Marine Corps and the United States Navy to seek initiatives that maximize the efficient use and allocation of these diminishing resources. Once such initiative is the restructuring of the Marine security presence at Naval Station, Guantanamo Bay, Cuba, through the replacement of the 350 man Marine Ground Defense Force with a smaller, rotating unit consisting of two platoons from the Fleet Anti-terrorism Security Team (FAST) Company. FAST would be able to perform the same security mission as effective as the Ground Defense Force with fewer personnel and infrastructure requirements, resulting in both financial and manpower savings. This thesis performs a full cost analysis of this initiative to determine whether any cost savings will be realized. By reviewing and comparing historical cost data and Marine Corps budget estimates, the study determined that there are no real financial savings in executing the proposal. The Marine Corps and Department of the Navy may, however, achieve benefits in better manpower utilization and opportunity cost savings, by exercising this option.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel and Training, Other (Financial Management)

KEYWORDS: Cost Savings, Opportunity Costs, FAST, Manpower Resources

THESIS ABSTRACTS

AN ANALYSIS OF THE UNITED STATES MARITIME INDUSTRY AND ITS ABILITY TO MEET NATIONAL SECURITY STRATEGY REQUIREMENTS

Antonio Oropeza-Lieutenant Commander, United States Navy

B.S., United States Merchant Marine Academy, 1988

Master of Science in Management-March 2001

and

Brian E. DeLaney-Lieutenant, United States Navy

B.S., United States Merchant Marine Academy, 1995

Master of Science in Management-March 2001

Advisors: Ira A. Lewis, Graduate School of Business and Public Policy

William R. Gates, Graduate School of Business and Public Policy

The mariner pool was not an issue of concern until Operations Desert Shield/Desert Storm brought about the largest fleet activation since the Vietnam Conflict. To meet Ready Reserve Force crewing requirements during the Gulf War, mariners from the Great Lakes and retired mariners ranging up to eighty years of age were mobilized. Additionally, Military Sealift Command had to hire as many as 162 foreign-flag ships to supplement its sealift capabilities. This raised concerns over the mariner pool and its effects on national sealift capabilities in terms of the national defense strategy. However, there is no organization that can state and validate the number of United States merchant mariners.

The objective of this study is to determine if there are enough qualified merchant mariners to meet the crewing requirements brought on by two nearly simultaneous major theater wars without sacrificing manning levels in the commercial fleet. Part of this project also analyzed the maritime industry to determine the causes of the mariner shortage. Although research did not yield the data necessary to determine actual size of the mariner pool, estimates suggest that the number of mariners available is not sufficient to fulfill surge requirements in support of national sealift strategy.

DoD KEY TECHNOLOGY AREA: Other (Sealift)

KEYWORDS: Sealift, Merchant Marine, Maritime Policy, Ready Reserve Force

A STATISTICAL ANALYSIS OF THE IMPACT OF MARITAL STATUS ON NUCLEAR SUBMARINE OFFICER RETENTION

Matthew F. Phelps-Lieutenant, United States Navy

B.S., U.S. Naval Academy, 1995

Master of Science in Leadership and Human Resource Development-June 2001

Advisors: J. Eric Fredland, United States Naval Academy

Stephen L. Mehay, Graduate School of Business and Public Policy

This thesis develops multivariate logit models to estimate the impact of marital status and the independent effect of dependent children on nuclear submarine officer retention beyond the minimum service requirement (MSR). Using data from the Navy History Promotion File, the Naval Officer Fitness Report Summary File and the Officer Loss File, logit models are specified to analyze the probability of nuclear submarine officer retention beyond the MSR. The probabilities are modeled as functions of marital and dependency status, commissioning source, undergraduate major, age and early performance evaluations. The findings reveal that being married with dependent children at the O-3 promotion board, being older at commissioning, being commissioned via an enlisted commissioning program and being recommended for accelerated promotion at least once as an O-2 are all positive indicators of submarine officer retention beyond the MSR. Being commissioned via the Reserve Officer's Training Corps (ROTC) and the Officer Candidate School (OCS) are negatively associated with submarine officer retention. Based upon the research results, recommendations are made to conduct further research to determine retention elasticities of submarine officers based on dependency status to determine the most cost-effective means of improving junior officer retention.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Manpower, Personnel and Training

KEYWORDS: Submarine Warfare, Retention

FLYING HOUR PROGRAM CASH MANAGEMENT AT COMMANDER NAVAL AIR FORCES PACIFIC

William E. Phillips-Lieutenant Commander, United States Navy

B.S., United States Naval Academy 1986

Master of Science in Management-June 2001

Advisors: Lawrence R. Jones, Graduate School of Business and Public Policy

John E. Mutty, Graduate School of Business and Public Policy

The FY 2000 Flying Hour Program (FHP) comprised \$3.2 billion of the Operations and Maintenance, Navy (O&M, N) appropriation, nearly half of which was allocated to the Commander Naval Air Forces Pacific (CNAP) for flight operations and aircraft maintenance. Insufficient funding has made it impossible to execute the FHP to the Navy Primary Mission Readiness standard of 83 percent.

This thesis analyzed CNAP FHP cash management for fiscal years 1998, 1999, and 2000, including techniques used by managers to execute the under-funded FHP. It concluded that CNAP managers use risk contingent cash management strategies and techniques to fund requirements while carefully avoiding Anti-deficiency Act violations. These techniques include delaying required aviation repairs to future years, reducing at home squadron flying hours and using Unfilled Customer Orders.

Navy budgeting does not recognize valid liabilities for some FHP related programs. The FHP is treated as discretionary and used annually as a source to pay these recurring liabilities, causing CNAP to be reactive in cash deficit control, always in need of fiscal rescue. CNAP transaction costs are increased by constant management of funding shortfalls. The risk of failing to meet fleet readiness requirements has grown as a consequence.

DoD KEY TECHNOLOGY AREA: Other (Flying Hour Program)

KEYWORDS: Flying Hour Program, DoD Budgeting and Execution, Naval Aviation

KEY EMERGING TRENDS IN THE INTERMODAL FREIGHT TRANSPORTATION INDUSTRY

Dexter Phillips-Lieutenant Commander, United States Navy

B.S., East Tennessee State University, 1981

Master of Science in Management-December 2000

Advisors: Ira A. Lewis, Department of Systems Management

Alice Crawford, Department of Systems Management

This thesis addresses the key emerging trends in the intermodal freight transportation industry. Interviews were conducted with a focus on perceptions that the various intermediaries have towards their working relationships with one another, the impact of emerging technologies, and what government policies and regulations should be enacted or repealed in order to improve the industry.

Eight individuals were interviewed representing the following seven intermediaries: 1) Shipper, 2) Ocean Carrier, 3) Port Authority, 4) Railroad, 5) Trucking, 6) Third Party Logistics and Intermodal Management Company, and 7) Drayage. All interviews were taped and then transcribed. A major finding is that the U.S. government, industry, and academia must work in a collaborative effort to develop and maintain educational and internship programs to prepare present and future transportation managers and technicians to become the industry's leaders.

Although dramatic developments in advanced technologies have been the single greatest factor influencing changes in transportation during the past 25 years it is people who manufacture goods, provide transportation services, and ultimately consume the goods produced. Therefore, it is the "human-in-the-loop" who when properly equipped, trained, and experienced will truly revolutionize the commercial intermodal freight transportation industry.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Logistics)

KEYWORDS: Logistic Systems, Intermodal, Freight, Transportation Industry

THE IMPACTS OF A FULLY FUNDED POSTGRADUATE EDUCATION ON PROMOTION AND COMMAND SCREEN FOR FIXED-WING, CARRIER-BASED PILOTS AND NAVAL FLIGHT OFFICERS

**William B. Phillips-Lieutenant, United States Navy
B.S., University of Missouri, 1990**

Master of Science in Leadership and Human Resource Development-March 2001

Advisors: Stephen L. Mehay, Graduate School of Business and Public Policy

William R. Bowman, United States Naval Academy

This thesis evaluates the effect of fully-funded graduate education on the joint outcome of promote to Pay Grade 5 and screen for squadron command for fixed-wing, carrier-based aviator lieutenant commanders (Pay Grade 4) eligible for the Pay Grade 5 board. Binomial logit models are estimated to examine the impacts of earning a graduate degree, the timing of the degree, and the technical specificity of the degree. The thesis finds no evidence that career progression at this critical point is harmed by acquiring a fully-funded graduate degree. Rather, the thesis finds significant positive effects on promote/screen for those officers earning advanced degrees at selected junctures.

Logit model estimates show that aviators with fully-funded technical degrees earned one or more years after the Pay Grade 4 board are 26.9% more likely to promote/screen than aviators without graduate degrees. Additionally, officers who earned graduate degrees on their own time are 5.8% more likely to promote/screen than officers without graduate degrees.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training, Other (Graduate Education, Aviation)

KEYWORDS: Graduate Education, Aviation, Aviator Promotions

A PERFORMANCE MEASUREMENT APPROACH FOR PRICE-BASED ACQUISITION

**Mark A. Polca-Lieutenant Commander, Supply Corps, United States Navy
B.A., Hiram College, 1987**

Master of Science in Management-December 2000

Advisors: David V. Lamm, Department of Systems Management

CDR E. Cory Yoder, USN, Department of Systems Management

The purpose of this thesis is to create a set of core performance metrics that will be used to evaluate how effective price-based acquisition is in the accomplishment of eliminating or reducing the differences between the Department of Defense's acquisition process and the buying practices of the private sector in the procurement of goods and services. A survey of acquisition professionals at various contracting organizations throughout the Services was conducted to gain an insight into the current understanding and use of price-based acquisition in the contracting process. From the literature review and responses to the survey, an analysis was conducted on the current goals, understanding and use of price-based acquisition in the Department of Defense. It was found that the current understanding and use of price-based acquisition is limited in the acquisition process. From the data collected during this research a set of goals and performance metrics were defined for the measurement and evaluation of the primary goals of price-based acquisition.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Contracting, Acquisition Reform, Price-Based Acquisition

THESIS ABSTRACTS

INTERAGENCY MANAGEMENT OF COMPLEX CONTINGENCY OPERATIONS: THE IMPACT OF PRESIDENTIAL DECISION DIRECTIVE 56

Michele A. Poole-Lieutenant, United States Navy

B.S., United States Naval Academy, 1995

Master of Arts in National Security Affairs-September 2001

Advisors: Nancy Roberts, Graduate School of Business and Public Policy

Karen Guttieri, Department of National Security Affairs

The central question of this thesis is: What was the impact of Presidential Decision Directive 56? The U.S. government recognized the need for a more systemized method for managing the interagency response to complex contingency operations, after their experiences in Somalia, Haiti, and Bosnia. In 1997, President Clinton signed PDD 56: The Clinton Administration's Policy on Managing Complex Contingency Operations.

To determine the impact of this directive, this thesis uses a pre-PDD 56 and post-PDD 56 case study comparison methodology treating PDD 56 as the intervention. U.S. participation in Bosnia from 1995 until 1996 is the pre-PDD 56 case study, and U.S. participation in Kosovo from 1998 until 1999 is the post-PDD 56 case study. The Bosnia and Kosovo case studies are compared using six variables (type, depth, and timing of planning, decision process, funding, and monitoring and modification). Subsequent improvements to PDD 56 illustrate the positive impact that PDD 56 has had on improving U.S. government civil-military unity of effort in complex contingency operations.

DoD KEY TECHNOLOGY AREAS: Other (U.S. Politics)

KEYWORDS: Presidential Decision Directive 56, Clinton

FINANCIAL PLANNING MODEL FOR THE ARMED FORCES OF THE PHILIPPINES PROVIDENT TRUST FUND

Romeo D.V. Poquiz-Lieutenant Colonel, Philippine Air Force

B.S., Philippine Military Academy, 1981

Master of Science in Management-December 2000

Advisors: Douglas Moses, Department of Systems Management

Shu Liao, Department of Systems Management

Recent developments gave rise to twin problems for the Armed Forces of the Philippines Provident Trust Fund (AFPPTF). Firstly, the AFPPTF, though it has identified the type of assets in its planned portfolio, is not sure how to allocate the assets in the portfolio in order to optimize returns. Secondly, the AFPPTF has no visibility of expected returns in the future years, on which to base its decisions in determining the amount of yearly scholarship assistance. This thesis research aimed to solve these twin problems of the AFPPTF. The research involved two broad steps - data collection and model construction and analysis. Data collection was primarily through literature reviews, archival research, and interviews. The analysis involved simulation through the Monte Carlo method. The model was created using Microsoft Excel spreadsheet, where all the possible variables affecting future portfolio returns and fund balances were linked with the other variables through formulas and equations. These variables, such as initial investment, yearly scholarship and operating expenses, etc., were based on the various yearly cash flows of the AFPPTF. The portfolio returns and yearly fund balances, called "forecasts" in the model, were based on the probability distributions of the historical returns of the assets in the portfolio. Simulation runs, each run involving 5,000 trials, were undertaken to determine the expected portfolio returns and fund balances in a 20-year time horizon. Simulation was also used in determining the optimal asset allocation used in the model. The model may be used by the management of AFPPTF in financial planning by varying certain variables, conducting simulation runs on each variation, creating and analyzing the simulation results, and ultimately making decisions.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Financial Management)

KEYWORDS: Financial Planning, Optimal Asset Allocation, Monte Carlo Simulation, Trust Fund Management, Armed Forces of the Philippines

**STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS ANALYSIS OF
CONSOLIDATED SERVICES AT NAVAL AIR STATION JOINT
RESERVE BASE FORT WORTH**

**Jeffrey M. Post-Lieutenant Commander, United States Naval Reserve
B.B.A., University of Wisconsin-Milwaukee, 1997
Master of Science in Management-March 2001**

**Advisors: Cary A. Simon, Graduate School of Business and Public Policy
Ira Lewis, Graduate School of Business and Public Policy**

This thesis analyzes the consolidation of U.S. Navy, Air Force, and Texas Air National Guard (TANG) support services at Naval Air Station (NAS) Joint Reserve Base (JRB) Fort Worth, Texas. Consolidation literature was reviewed and extensive field interviews were conducted with 11 military and civilian personnel involved in support service consolidation at NAS JRB Fort Worth.

A strengths, weaknesses, opportunities, and threats (SWOT) assessment and interview results yielded the following conclusions: There is a lack of DOD direction concerning guidance and implementation of interservice support; consolidating support functions among the Services increases overall efficiency and improves performance; and cultural differences are evident among the Services, but the differences can be resolved.

Recommendations include increasing the priority of developing and promulgating joint policies and standardizing DOD instructions for generic functions. Additionally, Service leaders should include more interservice operability into their strategic and training plans, and analyze existing and potential cost savings.

DoD KEY TECHNOLOGY AREA: Other (Interservice Support)

KEYWORDS: Military Base Support Operations

**A REVIEW OF SOCIAL SECURITY AND SUPPLEMENTAL SECURITY INCOME
FROM A FEDERAL BUDGET PERSPECTIVE**

**Brian T. Prevo-Lieutenant, United States Navy
B.S., Towson State University, 1987
Master of Science in Management-March 2001**

**Advisors: Richard B. Doyle, Graduate School of Business and Public Policy
Frank J. Barrett, Graduate School of Business and Public Policy**

This thesis examines Supplemental Security Income (SSI) starting from its inception in 1972, and identifies and evaluates the major changes that have transformed it through its short lifetime. SSI originated in the Social Security Act of 1935, and was later enhanced by the Social Security Act Amendments of 1950. As one of the multitude of entitlement programs constituting the mandatory spending category of the federal budget, SSI plays an important role in the lives of many individuals. Of specific interest are the changes brought about by the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996 and the Balanced Budget Act (BBA) of 1997.

A focused review of pertinent literature, Social Security and SSI legislation, and an analysis of the effects of welfare reform illustrate how after federalization in 1972, SSI experienced rapid growth throughout the decades of the 1980s and 1990s. In particular, SSI experienced a significant increase in growth from 1985 to 1990, which appeared to have been contained by the PRWORA of 1996. However, the BBA of 1997 allowed SSI to quickly resume its historical pattern of growth.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Federal Budget)

KEYWORDS: Social Security, Social Security Trust Funds, Supplemental Security Income, Mandatory Spending, The Personal Responsibility and Work Opportunity Reconciliation Act of 1996, The Balanced Budget Act of 1997

A COMPARISON AND ANALYSIS OF THE ESTIMATED SERVICE LIFE OF CARRIER-BASED TACTICAL AIRCRAFT AS IMPACTED BY OPERATIONAL TEMPO

Jeffrey J. Pronesti-Lieutenant, United States Navy

B.S., University of North Florida, 1994

Master of Science in Management-June 2001

Advisors: William J. Haga, Graduate School of Business and Public Policy

LTC Brad R. Naegle, USA, Graduate School of Business and Public Policy

This study examines the impact of high operational tempo upon the projected inventory of carrier-based tactical aircraft. It specifically looks at the effect of higher than expected number of catapult launches and arrested landings (cats/traps) upon the available inventory of F/A-18C Hornets (with service life extension modifications to the airframe), F/A-18C Hornets (without service life extensions), F/A-18E/F Super Hornets and Joint Strike Fighters, Carrier Variant. The op tempo effect is examined for each of these aircraft individually and for the impact upon the total naval carrier-based tactical air force. The findings show that high tempo operations reduce the number of available aircraft in later out-years. The study also shows that the service lives of each aircraft type are years shorter than Navy projections. Recommendations are made for the implementation of a catapult and arrestment accrual rate management program.

DoD KEY TECHNOLOGY AREA: Air Vehicles

KEYWORDS: Aircraft Service Life Limitations, Airframe Management, Service Life Extension Program, SLEP

STIMULATING INNOVATION IN NAVAL SPECIAL WARFARE BY UTILIZING SMALL WORKING GROUPS

Thomas A. Rainville-Lieutenant Commander, United States Navy

B.A., Norwich University, 1990

Master of Science in Defense Analysis-March 2001

Advisor: David Tucker, Special Operations Academic Group

Second Reader: Susan Hovevar, Graduate School of Business and Public Policy

Naval Special Warfare has produced successful innovation by using small working groups. Naval Special Warfare deems an innovation successful if it results in a more efficient, less risky, more cost effective method to conduct special operations. The Quantum Leap program is an example of successful innovation in Naval Special Warfare produced by a small working group. How have these small groups been able to produce successful innovations? Michael McCaskey's Theory offers an explanation of how small working groups innovate. His theory is a generally accepted theory on how to produce innovation in the business world by using small working groups. McCaskey identified three variables needed to produce innovation: 1) the small working group must have the support and protection of the leadership, 2) have access to resources, and 3) have autonomy from established structure within an organization. After interviews with senior Naval Special Warfare officers, two additional variables were deemed important. Ownership and the license to fail were added to McCaskey's three variables.

This thesis will test which variables were or were not present during three Naval Special Warfare case studies where small working groups attempted to produce innovation. Two of the case studies successfully produced innovation, but the final case study failed to produce an innovation. This thesis will evaluate the five variables in each case study and attempt to explain why the innovation was a success or a failure.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Innovation)

KEYWORDS: Innovation, Small Working Groups, Quantum Leap, MKV SOC, Vision 2000

LOGISTICS PLANNING FOR DEPLOYMENT: A COMPARATIVE STUDY OF THE ROYAL NORWEGIAN AIR FORCE AND THE UNITED STATES AIR FORCE

Leif M. Ramberg-Captain, Royal Norwegian Air Force

B.S., Molde College, 1994

Candidatus Magisterii, Molde College, 1997

Master of Science in Management-June 2001

Advisors: LTC Thomas Crouch, USA, Graduate School of Business and Public Policy

Ira Lewis, Graduate School of Business and Public Policy

Deployment operations abroad are a new challenge to the Royal Norwegian Air Force (RNoAF). This thesis compares the logistical planning that is carried out in the United States Air Force (USAF) and in the RNoAF in order to achieve operational effectiveness during deployment operations.

Logistics relationships, assets and planning tools that influence logistics efficiencies in the two air forces are identified and analyzed. By comparing the planning process in the two organizations, important factors in the planning, deployment and sustainment phases are identified. These factors help determine how logistics efficiencies can contribute to operational effectiveness.

With declining spending on defense, air forces need to improve logistics efficiency in order to maintain the required level of operational effectiveness. An air force needs to develop the right mixture of logistics investment in structure and assets versus efficient logistics processes. In order to achieve the right mixture of logistics, knowledge of the interrelated logistical and operational factors is required, and trade offs have to be made.

The thesis recommends that further research be undertaken to determine the appropriate factors that contribute to efficient logistics in support of deployments.

DoD KEY TECHNOLOGY AREA: Other (Logistics)

KEYWORDS: Logistics, Logistics Planning, Logistics Support, Logistics Concepts, Agile Logistics, Logistics Organization, Policies, Deployment, International Operations, Royal Norwegian Air Force, United States Air Force

A GUIDE TO SELECTING SOFTWARE METRICS FOR THE ACQUISITION OF WEAPON SYSTEMS

Rakhee H. Ramgolam-DoD Civilian

B.Sc., University of Durban-Westville, 1996

Master of Science in Management-September 2001

Master of Science in Software Engineering-September 2001

Advisors: Brad Naegle, Graduate School of Business and Public Policy

Mark E. Nissen, Graduate School of Business and Public Policy

Luqi, Department of Computer Science

Modernization of Department of Defense (DoD) weapon systems has resulted in an ever-increasing dependence on software. Despite technological advances in the software field, software development remains costly and one of the highest risk factors on most weapon system programs. The use of software metrics is a methodology for mitigating this uncertainty so that software development progresses under informed decision making. Software metrics are essential tracking tools used by program managers to monitor and control risk areas. However, the choice of metrics for a program is critical to their usefulness. This research provides a guide to acquisition managers on selecting the most effective metrics to use in management of weapon system software. The study identifies key issues in the use of software metrics experienced by program managers. The study recommends a revised set of metrics and improvements to

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the use of metrics based on innovations and improvements in the software field as well as software estimation tools that facilitate the use of these software metrics.

DoD KEY TECHNOLOGY AREAS: Computing and Software

KEYWORDS: Software Metrics, Acquisition of Weapons Systems, Software Estimation Tools

AN ANALYSIS OF THE CONSOLIDATION OF MARINE CORPS PURCHASING AND CONTRACTING SERVICES THROUGH A GEOGRAPHICAL REGIONAL OFFICE

Arthur J. Rego-Captain, United States Marine Corps

B.A.; National University, 1995

Master of Science in Management-June 2001

Advisors: CDR E. Corey Yoder, USN, Graduate School of Business and Public Policy

Lee. E. Edwards, Graduate School of Business and Public Policy

In response to DoD personnel downsizing and decreased budgets, the Marine Corps has sought ways to combat these restraints through acquisition reform initiatives such as regionalization. This thesis examines the consolidation and restructuring of five Marine Corps contracting activities located in the Southwest region of the United States. The objective of this study was to develop a regionalized infrastructure in order to reduce costs, improve efficiency, and optimize resources to best support the customer. To accomplish this objective, interviews were conducted of military and civilian contracting personnel in the Southwest region. The interviews obtained information about the strengths, weaknesses, and potential obstacles to the implementation of a regionalized contracting office. Based upon the research and interviews with members of the regional contracting community, this thesis developed a framework for a regionalized contracting infrastructure through the use of an organizational systems model. This model assists in creating a unified command structure, standardizes policy and procedures, enhances the efficiency and effectiveness of the organization, and eliminates duplicative functions and processes. This thesis is a proactive approach to the consolidation and restructuring of contract billets to achieve cost reduction and streamline the contracting force in the region.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel, Training, Materials, Processes and Structures

KEYWORDS: Contracting, Regionalization, Infrastructure, Consolidation, Marine Corps

DEFENSE SPENDING DATABASES FOR COUNTRIES IN THE ASIA-PACIFIC REGION: AN ANALYSIS AND COMPARISON

Charles R. Reuning-Lieutenant Commander, United States Navy

B.S.M.E., Vanderbilt University, 1987

Master of Science in Management-March 2001

Advisors: Richard B. Doyle, Graduate School of Business and Public Policy

Raymond Franck, Graduate School of Business and Public Policy

The purpose of this research was to identify and analyze a select number of unclassified databases that cover defense spending and other defense related criteria for countries in the Asia-Pacific region. A thorough search was first conducted for databases with defense information on countries in the Asia-Pacific region. Initial sorting criteria were identified and applied to create a list of databases to be evaluated in detail. These databases were then evaluated and discussed in detail using additional evaluation criteria that were developed. Conclusions were then drawn, and recommendations made, for the best databases to be used by defense and policy analysts in the future. This research recommended the following databases. For defense spending information, the Australian Defense Intelligence Organization's Defense Economic Trends in the Asia-Pacific 1999 was recommended. For defense capabilities information, the International Strategic Studies Association's Defense and Foreign Affairs Handbook was recommended. For arms sales and transfers information, the SIPRI Yearbook was recommended for use. The best all around defense

THESIS ABSTRACTS

database on the Asia-Pacific region was judged to be the International Institute of Strategic Studies' Military Balance 2000/2001.

DoD KEY TECHNOLOGY AREA: Other (Public Policy and Budgeting)

KEYWORDS: Defense Spending

RECONSTITUTION COSTS OF AIRCRAFT LAUNCH AND RECOVERY EQUIPMENT DUE TO CONTINGENCY OPERATIONS

Stephen K. Revelas-Lieutenant Commander, United States Navy

B.S., University of Virginia, 1990

Master of Science in Management-June 2001

Advisors: John E. Mutt, Graduate School of Business and Public Policy

Shu S. Liao, Graduate School of Business and Public Policy

Since the end of the Cold War, the United States Navy has been involved in many peacekeeping and disaster relief operations worldwide. Most of these Operations Other Than War (OOTW) have been unanticipated and therefore unbudgeted. The marked increase in the occurrence of these contingency operations compelled Congress to establish the Overseas Contingency Operations Transfer Fund (OCOTF) in 1997. This fund is used to reimburse the service components for their expenditures in support of contingency operations. However, due to the uncertainty involved in these contingencies, the Department of the Navy (DoN) has found it very difficult to estimate and subsequently identify costs associated with the contingency operations. This thesis develops a defensible method of assigning Aircraft Launch and Recovery Equipment (ALRE) maintenance and repair costs to contingency operations based on the number of sorties flown. The model was derived through regression analysis of catapult shots using underway days and Primary Mission Readiness (PMR) as explanatory variables. This model should aid the DoN in both predicting and identifying costs attributable to contingency operations and lend credibility to the DoN's request to the Office of Management and Budget (OMB) for reimbursement.

DoD KEY TECHNOLOGY AREA: Other (Contingency Operations)

KEYWORDS: Aircraft Launch and Recovery Equipment, Contingency Costs, Reconstitution Costs, Regression Analysis, Overseas Contingency Operations Transfer Fund

MILITARY HEALTHCARE REFORM AND LEGISLATIVE CHANGES FOR FY01

Timothy R. Richardson-Lieutenant, Medical Service Corps, United States Navy

B.S., Park College, 1991

M.S., Troy State University, 1994

Master of Science in Management-December 2000

Advisors: Richard B. Doyle, Department of Systems Management

Frank J. Barrett, Department of Systems Management

Healthcare is considered one of the most important non-cash benefits in the military compensation package. However, the Military Healthcare System (MHS) has several significant problems, including inequity in benefits, lack of access to care, growing out-of-pocket cost, and a perceived "promise" of free healthcare for life for military retirees that has not been kept. This thesis examines the MHS and congressional reforms during the 2nd session of the 106th Congress addressing these problems. An expanded background of the MHS benefit is presented, followed by a description of current problems with the MHS. Recommended DoD reform initiatives are reviewed, along with bills addressing MHS initiatives. Changes to the military healthcare benefit passed for FY01 are documented and explained. The research methodology included a review of public records, websites, congressional testimony, reports from relevant congressional committees, JCS, OSD, and DoD healthcare reform proposals, and phone interviews with military healthcare experts. A major new entitlement called TRICARE-For-Life and a retiree pharmacy

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program were enacted, representing the largest increase in domestic spending in over 30 years to address problems with the MHS.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel and Training

KEYWORDS: Healthcare, Military Healthcare, MHS, DoD Health Programs, TRICARE, Medicare, Healthcare Reform, MHS Reform

APPLYING TWO-SIDED MATCHING PROCESSES TO THE UNITED STATES NAVY ENLISTED ASSIGNMENT PROCESS

Paul A. Robards-Captain, Australian Regular Army

B. Eng., University of New South Wales, 1993

Master of Science in Management-March 2001

Advisors: William R. Gates, Graduate School of Business and Public Policy

Mark E. Nissen, Graduate School of Business and Public Policy

The existing Navy detailing process is characterized by bilateral negotiations between detailers and sailors. In this process, detailers match sailors with billets while attempting to satisfy, to the maximum extent possible, the needs and preferences of each group. The current process requires the effort of approximately 240 detailers and results in assignments that do not always satisfy the competing preferences of sailors and billets.

This thesis explores various two-sided matching processes as currently used in some markets, as possible alternative means of assigning sailors. The similarities and differences between existing two-sided matching processes and the Navy's assignment process are examined. Various modifications to the assignment process and the matching algorithm are proposed to enable the matching algorithm to be suitably applied to the Navy's situation.

It is found that the application of a two-sided matching process would significantly reduce the number of detailers required, while simultaneously improving the overall quality of assignments. Furthermore, to enhance the process, a means of including incentives to encourage sailors to accept difficult to fill positions is provided.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Detailing, Enlisted Personnel, Assignment, JASS, Two-Sided Matching, Marriage Problem, Assignment Incentives

ANALYSIS OF CHEMICAL AGENT RESISTANT COATING (CARC) AND CHEMICAL DECONTAMINATION DOCTRINE IN RELATION TO TACTICAL WHEELED VEHICLES (TWV)

James S. Roberts-DoD Civilian

B.S.M.E., Virginia Polytechnic Institute and State University, 1991

M.S., The Catholic University of America, 1995

Master of Science in Program Management-June 2001

Advisors: LTC Brad Naegle, USA, Graduate School of Business and Public Policy

Michael Etzinger, U.S. Army Tank Automotive Command

By Army policy, all tactical wheeled vehicles are painted with Chemical Agent Resistant Coating (CARC) with the implied mission of Force Protection by providing for effective decontamination and subsequent unprotected use of chemically contaminated systems. CARC has proven to be difficult to effectively apply in typical manufacturing operations, are toxic even in dry film, and fail to provide corrosion protection to the substrate metals. All of those issues may be tolerable if the CARC system provided an effective means for decontaminating and therefore, protection of the force, but CARC does not and cannot provide for effective TWV decontamination. The design, construction and materials used in manufacturing TWVs make them costly and highly impractical, if not impossible to effectively decontaminate.

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The associated cost of CARC in manufacturing, maintaining against corrosion, and early retirement of TWVs due to substrate failure is enormous and incalculable. Given the ineffectiveness of decontamination efforts on any TWV, whether or not they are painted with CARC, the Army may have nothing to lose in Force Protection and may reap significant cost avoidance by eliminating the requirement for CARC on TWVs and exploring more effective coatings that would reduce initial cost, be maintainable, and provide superior corrosion resistance for the over 200,000 tactical wheeled vehicles maintained in its fleets.

DoD KEY TECHNOLOGY AREAS: Chemical and Biological Defense, Ground Vehicles

KEYWORDS: CARC, Decontamination, Contaminates, Tactical Wheeled Vehicles, Chemical Doctrine

ONLINE REVERSE AUCTIONS: A PRICING TOOL FOR GOVERNMENT CONTRACTING

Bruce A. Roll-Lieutenant Commander, United States Navy

B.S., Emporia State University, 1985

Master of Science in Management-December 2000

Advisors: Mark E. Nissen, Department of Systems Management

William R. Gates, Department of Systems Management

Reverse Auctions (RA) are the next generation of procurement application software designed to link acquisition reform and common DoD procurement business processes with commercial best practices and advances in electronic commerce. When fully implemented, it will serve the DoD and Federal Government. This research examines RAs and emerging electronic commerce technologies that are revolutionizing the business industry today. Through a literature review and interview process, an analysis of RAs along with eBreviate, a commercial RA contracting venture, and leading RA software applications in e-commerce is presented. Innovation analysis is applied to the data gathered from the research to develop a new process design. As analysis predict that by 2003, business to business e-commerce will grow to \$1.3 trillion and 95% of business industry is going to go to RAs, only an aggressive implementation of innovative technologies today will prepare Government for the procurement needs of tomorrow. It is to this end that this research is conducted, with the intent of fostering innovative change in Government pricing.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORD: Government Contracting, Procurement, Electronic Commerce

THE OPERATION JOINT ENDEAVOR DEPLOYMENT: TRANSPORTATION LESSONS LEARNED AND IMPACT ON SUBSEQUENT OPERATIONS

James A. Rupkalvis-Major, United States Army

B.S., United States Military Academy, 1990

Master of Science in Management-March 2001

Advisors: Ira A. Lewis, Graduate School of Business and Public Policy

Michael W. Boudreau, Graduate School of Business and Public Policy

Through the 1990s, the United States military, specifically the Army, has decreased its forward presence around the world. Instead, we have become a "force projection" Army, relying on deployments to move our forces into a theater of operations. This increased reliance on the art of deploying has made the study of previous deployments critical. This study is also important since military strategists expect U.S. forces to be involved in an increasing number of regional contingency operations of the sort conducted in Bosnia from late 1995 until the present. The success of such large-scale operational missions hinges on the Army's ability to efficiently deploy its forces. Planners of future missions therefore would greatly benefit from the study of the deployment to Bosnia in support of Operation Joint Endeavor.

This thesis provides a thorough chronology of events surrounding the deployment of Army forces from Germany through Hungary and Croatia into Bosnia. The work further analyzes related transportation and logistical issues and problems in order to identify lessons learned from the mission.

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Once the lessons learned are identified, the study relates how those lessons learned have influenced deployment doctrine and deployments to subsequent operations.

DoD KEY TECHNOLOGY AREA: Other (Deployment Systems)

KEYWORDS: Operation Joint Endeavor, Deployment, Bosnia, Transportation

ENHANCING TRADITIONAL CLASSROOM INSTRUCTION THROUGH COMPUTER MEDIATED COMMUNICATIONS

Michele L. Ruppert-Lieutenant, United States Navy

B.S., University of Florida, 1991

M.S., Florida Institute of Technology, 1995

Master of Science in Information Technology Management-March 2001

Advisors: Douglas E. Brinkley, Graduate School of Business and Public Policy

William J. Haga, Graduate School of Business and Public Policy

This thesis examines the enhancement of traditional classroom instruction through the use of computer mediated communications (CMC). It explores student and instructor involvement with the use of CMC technology. Students must interact with fellow students and the teaching faculty to learn and CMC technology will facilitate this interaction. Previous research on CMC is surveyed. The CMC climate in a graduate level course is examined. The findings indicate that CMC may improve the pedagogical course framework. Recommendations include a policy stating traditional courses will be taught with CMC technologies, traditional courses should be structured properly with both course materials and CMC technologies and a training program must be implemented for both the teaching faculty and students.

DoD KEY TECHNOLOGY AREAS: Computing and Software, Other (Information Systems)

KEYWORDS: Collaborative Learning, Collective Learning, Cooperative Learning, Computer Mediated Communication, Computer Mediated Learning, Computer Supported Collaborative Learning, Group Communication, Group Interactivity, Group Learning, Human-Computer Interaction, Learning Collaboration, Learning Interaction, Online Communication, Online Groups, Online Interactivity, Peer Group Learning, Study Circles, Syndicates, Team Learning

ANALYSIS OF THE UNITED STATES MARINE CORPS NORWAY AIR LANDED MARINE EXPEDITIONARY BRIGADE (NALMEB) PROGRAM

Lawrence S. Ryder-Major, United States Marine Corps

B.A., University of Pennsylvania, 1986

Master of Science in Management-December 2000

Advisors: Richard B. Doyle, Department of Systems Management

Brad R. Naegle, Department of Systems Management

This thesis examines the utility of the Norway Air Landed Marine Expeditionary Brigade (NALMEB) program. The NALMEB is a USMC program established to counter the Soviet threat to NATO. Although the threat that rationalized the program no longer exists, the program has remained intact, continuing to consume over \$7 million annually and an additional \$6.1 million of Norwegian funds. It is slated to receive over \$90 million in procurement funding to modernize the equipment stored in the caves between 2003 and 2008. Additionally, there are over 5,000 pieces of Marine Corps equipment devoted to the program not available for use elsewhere in the Marine Corps. This research examined the political, military, and budgetary factors associated with the program. The methodology included a review of directives regarding the program, the evolution of the USMC mission, national military and security strategy, program evaluations and interviews with officials familiar with the program. The research concludes that the political and military benefits attributed to the program are overstated and the costs of the program are understated in its annual O&M appropriation. Although the program currently provides minimal contributions to the U.S. national military strategy, a revised mission statement and other major

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program changes could significantly increase its utility. Finally, the research identifies several upcoming opportunities related to U.S. and Norwegian defense planning that provide an opportunity to restructure the program.

DoD KEY TECHNOLOGY AREA: Other (National Security)

KEYWORDS: NALMEB, Prepositioning, Norway, Marine Expeditionary Brigade, MEB

NAVAL SPECIAL WARFARE COMMAND'S IMPLEMENTATION OF THE CFO ACT

Martin J. Sabel-Lieutenant, United States Navy

B.A., University of Florida, 1995

Master of Science in Management-September 2001

Advisors: Lawrence R. Jones, Graduate School of Business and Public Policy

Jerry L. McCaffery, Graduate School of Business and Public Policy

The Department of Defense and thus Department of the Navy accounting and budgeting systems are often characterized by the classic problem of "garbage in, garbage out." Differences in definitions and classifications of finance categories, human error, and lack of training, and faulty accounting systems can result in inaccurate data and inability to properly utilize such data throughout the chain of command. Account execution does not match accounts budgeted, creating the potential for violations of rules and regulations and poor decision making for planning, programming, budgeting, and execution for current and future years. An inability to match mission to budget requirement can greatly impact resource utilization by Naval Special Warfare Command in its contingency operations throughout the world.

NAVSPECWAR has made an effort to ensure consistency and accuracy of data collection by matching their budget execution categories to their POM process categories and matching unit missions to specific accounts. The objective of this thesis is to analyze SPECWAR's implementation of the Chief Financial Officer's Act and its influence on the utilization of their data by their parent command (USSOCOM) in the planning, programming, budgeting, and execution system and the potential Navy-Wide implications of their program.

DoD KEY TECHNOLOGY AREAS: Other (Accounting and Budgeting)

KEYWORDS: Accounting Systems, Chief Financial Officers Act, CFO Act

THE IMPACT OF SUBSISTENCE PRIME VENDOR ON THE SUBSISTENCE SUPPLIER BASE

David D. Sanders-Lieutenant Commander, United States Navy

B.S., Morehouse College, 1990

Masters of Science in Management-December 2000

Advisors: CDR James M. Barnard, USN, Department of Systems Management

Erik Jansen, Department of Systems Management

Acquisition Reform has brought rapid change within the acquisition community. The streamlining of the acquisition process has led to a number of innovations within the contracting discipline. This research will focus on one of these innovations, the Subsistence Prime Vendor (SPV) Program. The SPV program was implemented to reduce the inventories and to improve the quality of food products purchased to support military dining facilities. Under the traditional subsistence inventory system, the Government procured food items directly from manufacturers. The contracting process centered on filling a space in a warehouse. Prime vendor contracting is centered on the end-user. The customer communicates his requirements directly to the assigned prime vendor, and the prime vendor delivers in accordance with terms of the contract and the customer's request. The prime vendor assumes the role as the food distributor with subsistence no longer being procured from food manufacturers and stored in warehouses. As a result, the subsistence supplier base has undergone radical change. The purpose of this thesis is to analyze the impact that the prime vendor concept has had on the subsistence supplier base.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Material, Processes, and Structures

KEYWORDS: Subsistence Prime Vendor, Acquisition Reform

AN ACTIVITY BASED COSTING ANALYSIS OF THE DEPARTMENT OF THE NAVY'S ENLISTED DETAILING PROCESS

**Richard J. Schlegel-Lieutenant Commander, Supply Corps, United States Navy
B.B.A., Hofstra University, 1987**

Master of Science in Management-December 2000

**Advisors: William R. Gates, Department of Systems Management
Shu S. Liao, Department of Systems Management**

The Navy Personnel Command assigns over 100,000 Sailors annually utilizing in excess of 200 Detailers. Negotiations commence between Sailor and Detailer via telephone or e-mail approximately nine months prior to the Sailor's expected rotation date from their current assignment. One method to examine where inefficiencies could exist in a process is to conduct an Activity Based Costing (ABC) study. The Activity Based Costing technique measures the cost of specific activities performed by an organization in producing a product or service. This thesis examines the detailing activities of the Administrative, Deck and Supply Rating Branch at the Navy Personnel Command in Millington, Tennessee and assigns relevant costs to the activities performed by a Detailer when assigning Sailors to their next duty station. The findings of the analysis are that approximately 75 percent of a Detailer's available time is used in direct or indirect detailing activities. Depending on the paygrade of the Detailer, this equates to an annualized cost between \$33,112.76 and \$47,853.70 per Detailer. The Detailer spends 25 percent of their time in non-detailing related activities that equates to an annualized cost between \$10,755.10 and \$15,519.55 per Detailer.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel, and Training, Materials, Processes, and Structures

KEYWORDS: Department of the Navy Personnel Assignment, Activity Based Costing, Department of the Navy Manpower Distribution System

ELECTRONIC CHART DISPLAY AND INFORMATION SYSTEM - NAVY: ANALYSIS AND RECOMMENDATIONS

Edward Joseph Schweighardt-Lieutenant, United States Naval Reserves

B.S., Massachusetts Maritime Academy, 1994

Master of Science in Management-June 2001

**Advisors: Joseph G. San Miguel, Graduate School of Business and Public Policy
John E. Mutty, Graduate School of Business and Public Policy**

In 1998 the Chief of Naval Operations directed the U.S. Navy to begin a transition from navigating using conventional paper charts, to the use of an electronic charting system (digital charts). In response, the Electronic Chart Display and Information Systems-Navy (ECDIS-N) instruction was issued. This new technology will presumably reduce or prevent future collision and grounding incidents associated with navigational errors. The objective of this study is to determine the best possible ECDIS-N capable system or systems that will meet the future needs of the Navy. Also examined, are the possible annual repair cost savings that an ECDIS-N system could realize for the Navy. Data for two different periods of Navy collisions and groundings were compared and used to estimate the average incidents per ship and the average annual repair cost incurred by the Navy. The cost, capabilities and limitations of alternative ECDIS-N systems are evaluated in a cost-benefit comparison that justifies the Navy's implementation of certain ECDIS-N systems in different classes of ships. It is estimated that an ECDIS-N system integrated with an Automatic Radar Plotting Aid could have prevented 47% of the Navy's collisions and groundings from 1998 to 2000, saving 96.4% of the combined repairs costs.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Navigation)

KEYWORDS: Electronic Charting, Digital Navigation

WINDOWS IN THE CEILING: LEADERSHIP ADVICE AND STRATEGIES FROM SUCCESSFUL FEMALE EXECUTIVES

Colleen M. Setili-DoD Civilian

B.B.A., University of Michigan, 1982

M.S.A., Central Michigan University, 1997

Master of Science in Program Management-June 2001

Advisors: John Barrios-Choplin, Graduate School of Business and Public Policy

Thomas Bagwell, Tank-Automotive Research, Development, and Engineering Center (TARDEC)

This thesis provides a framework for understanding specific strategies and personal characteristics women can utilize to enable them to reach the top levels of an organization. In order to do so, current literature was reviewed that was written primarily from a female perspective, and civilian women in high-grade positions working for the Army were interviewed to obtain their own personal strategies, personal characteristics, and opinions regarding the glass-ceiling concept and how to achieve success. The goal is to help break down the invisible barriers to success (or glass-ceiling) and help women achieve the success they desire. In a world where powerful corporate women are still comparatively rare, women's success stories are welcome.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Leadership, Leadership Strategies, Personal Characteristics, Women in Leadership

BUSINESS ARCHITECTURE MODEL FOR NETWORK CENTRIC SURFACE COMBATANT LAND ATTACK WARFARE

William K. Shafley, III-Lieutenant, United States Navy

B.A., Miami University, 1994

Master of Science in Information Technology Management-September 2001

Advisors: Erik Jansen, Graduate School of Business and Public Policy

Floyd Brock, Department of Information Science

Land attack is a major mission area for the surface navy in the coming years. High levels of complexity characterize the land attack environment of 2015. The purpose of this research is to generate an understanding of the warfare architecture the land attack C4ISR-T systems will support. The Business Architecture Model for Network Centric Surface Combatant Land Attack Warfare depicts a networked resource structure of sensor, weapons, and decision makers that are transformed in a value added engagement process to achieve land attack goals. This structure was developed using the Eriksson-Penker Business Extensions Tool Kit for the Unified Modeling Language (UML). The Eriksson-Penker Business View comprises the Business Vision, the Business Structure, the Business Process, and the Business Behavior. The Business Model for Network Centric Surface Combatant Land Attack Warfare uses this structure to view the land attack warfare architecture in terms of goals and problems, resources, processes and events, and system wide behavior.

DoD KEY TECHNOLOGY AREAS: Computing and Software

KEYWORDS: Business Architecture Model, C4ISR-T Systems, Business Architecture Model for Network Centric Surface Combatant Land Attack Warfare

THESIS ABSTRACTS

FACTORS AFFECTING FIRST-TERM REENLISTMENT DECISIONS IN THE UNITED STATES ARMY

**Clayton O. Sheffield-Major, United States Army
B.S., University of Florida, 1995**

Master of Science in Management-June 2001

**Advisors: Gregory G. Hildebrandt, Graduate School of Business and Public Policy
Raymond E. Franck, Jr., Graduate School of Business and Public Policy**

The purpose of this thesis is to analyze factors that influence first-term reenlistment decisions in the United States Army. The main focus of the thesis is the analysis of information collected from soldier's official records that bear on the reenlistment decision. Data from the U.S. Army Small Tracking File (STF) and records from the Defense Manpower Data Center (DMDC) cohort files were employed. The Army currently categorizes enlistees into ten characteristic groups (C-groups) based on gender, education, Armed Forces Qualification Test (AFQT) scores, and initial enlistment term. This thesis examined data across all C-groups and for enlistees from three cohorts: 1990, 1991 and 1992. The data was evaluated using descriptive statistics, cross-tabulation analysis, and logistics regression. The estimated model compares the results across C-groups using C-group 1 as the base group. Results indicate that certain factors affect the various C-groups differently. Not all factors were significant for all C-groups, but race, age, and youth organization participation were key influences across most C-groups. The family status and enlistment term variables were significant, however, they affected men and women differently. This thesis should be helpful to Army personnel responsible for establishing reenlistment policy.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Retention, Attrition, Recruiting, Multi-Nomial Logit Model, JROTC, Enlistment incentive

MEDICAL SERVICE CORPS: JUNIOR OFFICER AND RECENT RETIREE STAY/LEAVE DECISIONS

**Lillian M. Shepherd-Lieutenant, United States Navy
B.A., William Jewell College, 1985**

Master of Science in Management-March 2001

**Advisors: Cary A. Simon, Graduate School of Business and Public Policy
Alice M. Crawford, Graduate School of Business and Public Policy**

This thesis examines stay/leave decisions of Medical Service Corps (MSC) Officers in pay grades O-1 through O-4. Reasons why they choose to stay or leave the Navy and their attitudes toward continued service are identified and explored. Since few studies have been conducted on turnover intent in officers within the Navy Medical Department, previous studies, theories, and influences on stay/leave decisions in Department of Defense officers are examined and compared with actual perceptions of MSC officers obtained through interviews. Thirty active duty and eight recently retired Medical Service Corps junior officers stationed on the East and West coasts were interviewed. Results indicated that active duty MSC officers' stay decisions are primarily influenced by the following factors: pay and benefits; job satisfaction; spouse and/or family; graduate education opportunities; and military leadership. The strongest influences are: pay and benefits and job satisfaction. Recently retired MSC officers stated that the following factors mainly influenced their decision to leave: the booming economy (job availability); permanent change of station (PCS) moves; disconnection with leadership; the changing military; and being retirement eligible. Recommendations for further study are offered to aid recruitment and retention of Medical Service Corps officers.

DoD KEY TECHNOLOGY AREA: Command, Control, and Communications

KEYWORDS: Attrition, Retention, Retirement, Medical Services Corps, Stay/Leave Decisions, Turnover

THESIS ABSTRACTS

ANALYSIS OF THE CURRENT NAVY ENLISTED DETAILING PROCESS

Melissa M. Short-Lieutenant, United States Navy

B.B.A., Texas Tech University, 1991

Master of Science in Management-December 2000

Advisors: William Gates, Department of Systems Management

CDR William Hatch, USN, Department of Systems Management

America's diverse political climate and flourishing economic conditions have forced the Navy to look inward to combat recruiting and retention shortfalls. The detailing process, if properly managed, can positively affect Navy retention rates. The enlisted detailing process accomplishes its mission: assigning Sailors to billets; however, it may do so without optimizing efficiency or effectiveness. Sailor preferences and command requirements provide crucial insights ensuring the Navy focuses on improving operational readiness, maintaining fleet balance, and retaining quality Sailors. Reviewing the detailing process, stakeholders, and policies reveals concerns with the current detailing system biases and inaccessibility. Four areas of pathology within the system are: policy and procedure issues, information systems concerns, career counseling matters, and detailer considerations. Research indicates that current electronic-based interaction has a positive affect and that additional interaction might continue to positively affect the detailing process.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Detailing, Enlisted Personnel, Assignment, JASS, EAIS, Retention, Command Career Counselor

ASSESSING THE OUTCOMES OF REGIONALIZATION IN THE NAVY REGION, SOUTHWEST

Tracy L. Sims-Lieutenant Commander, United States Navy

B.S., United States Naval Academy, 1987

Master of Science in Management-June 2001

and

Angela C. Muhammad-Lieutenant Commander, United States Naval Reserves

B. A., Point Loma Nazarene University, 1990

Master of Science in Management-June 2001

Advisors: Lawrence R. Jones, Graduate School of Business and Public Policy

Cary A. Simon, Graduate School of Business and Public Policy

Regionalized base operating support management was implemented in the Navy Region Southwest on 1 October 1998, as part of a Navy-wide plan to reduce infrastructure costs and improve services. Due to the scope of this reorganization, the full effect of the change in terms of measurable cost-savings and improved customer service will not be realized for at least five years. However, interim effects may be analyzed. This study conducts a mid-transition review and analysis of the current outcomes in terms of cost savings and level of service in the Navy Region Southwest to evaluate the effectiveness of the regionalization process. Specifically, the study examines the strengths and weaknesses of regionalization to determine if the goals set forth in the Chief of Naval Operations Strategic Plan when restructuring began are being met: to apply state-of-the-market business practices and reduce infrastructure costs to improve efficiency and increase customer service quality. Findings indicate that, although the Region faces budgetary challenges, the processes established through regionalization are reducing costs and improving the overall level of service for customers throughout the Region.

DoD KEY TECHNOLOGY AREA: Other (Installation Management)

KEYWORDS: Regionalization, Shore Installation Management, Navy Region, Southwest, Infrastructure

THESIS ABSTRACTS

OUTSOURCING MARKET RESEARCH IN DEPARTMENT OF DEFENSE COMMODITY ACQUISITION: THE ISSUES, CONCERNS, AND PRIVATE INDUSTRY CAPABILITIES

Michelle C. Skubic-Lieutenant Commander, United States Navy

B.A., California State University, Fullerton, 1988

Master of Science in Management-June 2001

Advisors: CDR James M. Barnard, USN, Graduate School of Business and Public Policy

David V. Lamm, Graduate School of Business and Public Policy

This thesis investigates the role of market research in Department of Defense commodities acquisition. It examines the feasibility of outsourcing market research functions in this acquisition arena, focusing on which elements of market research would be most practicable to outsource, and what capacity exists in private industry to provide market research services for the Federal acquisition environment.

Given the reduction in the defense acquisition workforce, budgetary constraints, and emphasis on acquisition reform, effective market research significantly enhances optimal use of available resources. However, general consensus among defense acquisition professionals is that market research is not conducted as effectively as possible due to limitations of time, training and management attention. While legislation has directed the use of market research for multiple aspects of the acquisition cycle, to include requirements development, maximization of competition, source selection, and emulation of better business practices, market research skills vary among DoD acquisition personnel, as does appreciation for its value as a management tool.

The conclusion is that while there are issues and concerns to be addressed when considering outsourcing market research, private industry does offer a viable alternative for conducting market research functions in DoD commodity acquisitions.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Market Research, Commodity Acquisition, Outsourcing, Market Surveillance, Market Investigation, Purchasing Research

CONTRACT SECURITY IN THE PAPERLESS REALM

Phillip E. Smallwood-Captain, United States Army

B.B.A., Radford University, 1991

Master of Science in Management-June 2001

Advisors: William J. Haga, Graduate School of Business and Public Policy

Jeffrey R. Cuskey, Graduate School of Business and Public Policy

This thesis examines the security vulnerabilities facing the Standard Procurement System and argues that security issues impede the implementation of the system. It proposes two IT security enhancements as a solution: (1) reformation of DoD security policy and procedural guidance and (2) a security solution tailored for special contracting offices that require security above the Sensitive but Unclassified (SBU) level.

These solutions involve Public Key Infrastructure (PKI), smart card technology and biometrics authentication.

DoD KEY TECHNOLOGY AREAS: Acquisition and Contracting, Computing and Software

KEYWORDS: Standard Procurement System, Computer Security, Public Key Infrastructure, Smart Card Technology

THESIS ABSTRACTS

A BUSINESS CASE FOR USING MODELING AND SIMULATION IN DEVELOPMENTAL TESTING

Joan M. Smith-DoD Civilian

B.S., University of Alabama in Huntsville, 1988

Master of Science in Program Management-June 2001

Advisors: Michael Boudreau, Graduate School of Business and Public Policy

C. David Brown, U.S. Army Developmental Test Command

Modeling and Simulation (M&S) technology uses models to develop data as a basis for making managerial or technical decisions. M&S can be a valuable tool for decision-makers but it is usually under used. The United States Army Developmental Test Command (DTC) is leveraging M&S to accomplish its missions through the Virtual Proving Ground (VPG) Program. DTC supplies a customer decision-maker, usually a Program Manager (PM), with data on the cost-effectiveness of new virtual and physical test technologies in order to plan test activities. DTC requires a methodology to develop a business plan that supports the use of M&S and to provide a cost benefit analysis of particular virtual test capabilities. DTC commissioned independent studies of past test programs to estimate the costs to achieve the same scope of testing, as tested using available virtual test techniques and as using previous, less VPG-intensive test methodologies. The studies showed that virtual testing provided significant cost benefits to each PM. An objective is to examine cost avoidance results from those studies and additional data with a methodology consistent with current cost estimation guidance to determine a return on investment relationship. This thesis will endeavor to establish an equitable methodology for accounting or realizing the direct benefits associated with using M&S in testing. The details of the steps will be developed as necessary to perform a business case analysis.

DoD KEY TECHNOLOGY AREAS: Modeling and Simulation, Chemical and Biological Defense, Command, Control and Communications, Computing and Software, Conventional Weapons, Ground Vehicles

KEYWORDS: Modeling and Simulation, Simulation Based Acquisition, Virtual Proving Ground, Developmental Testing, Testing, Business Case, Cost Benefit Analysis, Cost Avoidance, Cost Savings, Return On Investment

THE COAST GUARD KNOWLEDGE BASE: BUILDING ONLINE COMMUNITIES, TEAMS AND EXPERTS TO FACILITATE RAPID CREATION, CAPTURE AND SHARING OF SERVICE RELATED KNOWLEDGE

Andrew J. Sorenson-Lieutenant Commander, United States Coast Guard

B.S., United States Coast Guard Academy, 1988

Master of Science in Information Technology Management-June 2001

Advisor: Mark E. Nissen, Graduate School of Business and Public Policy

Associate Advisor: Roger D. Evered, Graduate School of Business and Public Policy

The U.S. Coast Guard is reaching the limits of incrementalism. Extending aircraft and cutter service-lives, increasing work hours to compensate for reduced manpower, responding to data calls faster and squeezing another penny out of costs are the challenges of leaders today. But pursuing incremental improvements is similar to paving over cow paths. Today's technology provides the Coast Guard with the opportunity to make exponential improvements in processes for managing knowledge, and to revolutionize business practices.

This thesis presents a knowledge management architecture that addresses articulable limits to fast, efficient, knowledge management within the cutter community. Building upon a foundation of messaging and collaboration, the architecture provides modules maximizing the ability to manage informal and formal knowledge. The results are a transparent interface for the creation, sharing and capture of organizational knowledge. Successful implementation is dependent upon the improvement of the Coast Guard's IT infrastructure and the creation of a culture friendly to knowledge sharing.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREAS: Battlespace Environments, Command Control and Communications, Computing and Software, Human Systems Interface, Manpower Personnel and Training

KEYWORDS: Coast Guard, Knowledge Management, Information Technology, Knowledge Architecture, High Endurance Cutters, Medium Endurance Cutters

A CASE STUDY OF THE ARMY REVERSE AUCTION

Gary D. Stephens-Major, United States Army

B.S., Murray State University, 1988

Master of Science in Management-June 2001

Advisors CDR E. Cory Yoder, USN, Graduate School of Business and Public Policy

Lee Edwards, Graduate School of Business and Public Policy

Acquisition reform has attempted to change the procurement process over the past several years. Some believe the reform measures have been changes in policy or revisions of a paperwork process. The draw down of the workforce and financial constraints demand acquisition professionals conduct business in a smarter, more efficient manner. The technology today provides Internet platforms that allow the commercial marketplace to take advantage of electronic commerce. The Army has implemented a reverse auction program designed to capture many of the practices in use in the commercial industry. Foremost, dynamic pricing replaces fixed pricing models observed in traditional procurement strategies. Reverse auctions offer the Government the means to replicate a successful commercial practice that is becoming the accepted way of doing business. This thesis reviews performance of the Army's Reverse Auction pilot program after its first year of use. Three buying cases and 40 other reverse auctions are reviewed. The comparative analysis identifies commonalities for success and differences between past experiences with the reverse auction. The thesis concludes acquisitions for items that resemble commercial products and based on price are most successful in reverse auctions. The 43 auctions reviewed resulted in \$1,606,395 saved. The mean savings was 21.83% for the auctions reviewed.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Acquisition Reform, Reverse Auction, Pricing

ANALYSIS OF THE SELECTION PROCESS FOR EXECUTIVE MANAGEMENT POSITIONS AT NAVY MEDICAL/DENTAL TREATMENT FACILITIES

Mark J. Stevenson-Lieutenant Commander, United States Navy

M.H.A., Chapman University, 1995

B.S., Southern Illinois University, 1989

Master of Science in Management-March 2001

and

Chad E. Roe-Lieutenant, United States Navy

M.B.A., Ball State University, 1994

B.S., Indiana University, 1993

Master of Science in Management-March 2001

Advisors: Cary A. Simon, Graduate School of Business and Public Policy

Benjamin J. Roberts, Office of Continuous Learning

This study describes, analyzes and compares Navy Medicine's command screening process. Organizational structure and behavioral models, and public policy models are used to explain the process and to provide the theoretical framework for the study. Twenty-one semi-structured interviews were conducted with senior stakeholders involved in the process. A written questionnaire (Likert-scaled and closed-ranking) was developed to assess the knowledge and perceptions of Navy Medicine Captains (n=146). Statistically significant survey responses were obtained. Results showed the following: the overall process is perceived to be fair and objective and meets the needs of Navy Medicine; self-exemption from selection is an acceptable part of the process and fits the organization's highly professional nature; and the "best record" is

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selected. Candidates' primary reasons for seeking command assignments were to improve Navy Medicine, obtain increased responsibility, and personal satisfaction. Recommendations include: continue improving communications between decision makers and prospective candidates; prepare, groom and select officers earlier in the process; and improve fitness report accuracy in terms of describing actual performance and potential for command.

DoD KEY TECHNOLOGY AREAS: Manpower, Personnel, and Training, Other (Healthcare), Command, Control, and Communications

KEYWORDS: Manpower Policy Issues/Special Studies, and Leadership

UNDERSTANDING HOW PROGRAM MANAGERS SUCCESSFULLY MANAGE INNOVATION IN MAJOR DEFENSE ACQUISITION PROGRAMS: AN EXPLORATORY STUDY

Benjamin P. Stinson-Captain, United States Marine Corps

B.S., Oregon State University, 1991

M.P.A., University of Oklahoma, 2000

Master of Science in Management-March 2001

Advisors: Nancy C. Roberts, Graduate School of Business and Public Policy

LTC Brad C. Naegle, USA, Graduate School of Business and Public Policy

Senior DoD leadership, under the banner of acquisition reform, seek change in the acquisition process and within acquisition programs to reduce program cycle-time and total ownership cost. Key to achieving acquisition reform is the program manager (PM). PMs are tasked with the overall responsibility for their program's cost schedule and performance goals. The DoD 5000 Series encourages PMs to, "continually search for innovative practices that reduce cycle-time, reduce cost, and encourage team-work," yet little is contained in the DoD 5000 Series or any other acquisition documents to assist the PM in understanding or achieving innovation. In this exploratory study, the author chose five previous PMs known for successful innovation and interviewed them about their innovations. In an effort to aid future PMs, interview data are compared and analyzed to produce preliminary acquisition innovation "best practices."

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Innovation, Public Entrepreneur, Acquisition Reform, Program Management

A COST-BENEFIT ANALYSIS OF THE REQUIREMENT THAT STUDENTS COMPLETE A THESIS AT THE NAVAL POSTGRADUATE SCHOOL

Michael R. Strobl-Major, United States Marine Corps

B.B.A., Mesa State College, 1987

M.B.A., Averett College, 1995

Master of Science in Management-March 2001

Advisors: Stephen L. Mehay, Graduate School of Business and Public Policy

Julie P. Filizetti, Graduate School of Business and Public Policy

This thesis identifies and compares the benefits and costs of the policy requiring master's degree candidates at NPS to complete a thesis. It uses fiscal year 2000 data. The goal is to evaluate the existing policy to determine if the economic benefit of requiring a thesis is greater than the economic cost.

The direct benefit of the thesis requirement is the increased productivity of officers due to having completed a thesis. Indirect benefits are found in the valuable research provided by many theses to the DoD. The most prominent cost of the thesis requirement is the opportunity cost of the student's time necessary to stay at NPS, and therefore out of the Fleet, in order to write a thesis.

This thesis estimates that the costs of the thesis requirement were approximately \$19.8 million in FY2000. The indirect benefits of research completed by thesis students were between \$8.3 million and \$18.4 million. The direct benefits, in terms of its educational value, could not be quantified. Therefore,

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this report recommends that, until the direct benefits can be accurately quantified and monetized, the current requirement for thesis work remain as a condition for graduation from NPS.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Training and Education, Manpower Policy, Cost-Benefit Analysis

AN ANALYSIS OF THE PROBLEMS AND PROSPECTS FOR ADOPTING A PPBS-LIKE SYSTEM BY THE POLISH MINISTRY OF NATIONAL DEFENSE

Konrad Struczyk-First Lieutenant, Polish Air Force

M.S., Polish Military Academy of Technology, 1996

Master of Science in International Resource Planning and Management-June 2001

Advisors: John E. Mutt, Graduate School of Business and Public Policy

Richard B. Doyle, Graduate School of Business and Public Policy

This thesis analyzes the possible problems and potential benefits that the Polish Government and the Polish Ministry of National Defense (PMND) might experience if these institutions implemented a system similar to the US Planning, Programming, and Budgeting System (PPBS). The thesis provides an overview of the PPBS at the Department of Defense level including a description of the main participants. It also provides a comparison of the different processes used by the US services. This is followed by a thorough description of the Polish Budgetary System. The analysis of the two systems reveals several significant differences. These differences stem from the laws, national interests and finally from the different structures of the armed forces. Even with these differences, the analysis shows several potential benefits that support incorporating a system based on the PPBS. These benefits include a strategic planning approach toward managing scarce resources, long-term planning, and efficiencies that would ensue in the defense industry. Finally, a recommendation is made to implement a system similar to the PPBS in the Polish Ministry of National Defense.

DoD KEY TECHNOLOGY AREA: Other (Budget)

KEYWORDS: The PPBS, Defense Budget, Poland

AN ECONOMIC ANALYSIS OF RE-LOCATING THE PHYSICAL EVALUATION BOARD'S FORMAL HEARING PANEL FROM BETHESDA, MD TO PORTSMOUTH, VA

Terry M. Surdyke-Lieutenant Commander, United States Navy

B.S., University of South Carolina, May 1987

Master of Science in Management-December 2000

and

Joseph M. Vitelli-Lieutenant Commander, United States Navy

B.S., United States Naval Academy, May 1989

Master of Science in Management-December 2000

Advisors: Shu Liao, Department of Systems Management

Doug Moses, Department of Systems Management

The Naval Council of Personnel Boards requested an economic analysis of the potential re-location of the their formal Hearing Panel from Bethesda, MD to Portsmouth, VA. The goal of this thesis is to assist the Director, Naval Council of Personnel Boards, by providing a formal economic analysis. OMB Circular A-94 is used as the guideline in conducting this thesis. Therefore, as is prescribed, the net present value model is utilized to present the quantifiable results. In this case, in consideration of the incremental costs and benefits, the net present value of relocating the Hearing Panel is \$403,764. This represents the total net savings that are expected to be realized by moving the hearing panel. Additionally, the analysis indicates the time to recoup the initial investment (payback period) is 1.74 years and the internal rate of return is approximately 57%. Furthermore, there are some other issues (non-quantifiable) that are discussed in this

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analysis. The quantified results and non- quantifiable issues are presented to assist the decision maker in determining whether or not to relocate the Hearing Panel.

DoD KEY TECHNOLOGY AREA: Other (Financial Management)

KEYWORDS: Economic Analysis, Cost-Benefit Analysis, Re-location, Physical Evaluation Board, Formal Hearing Panel, Incremental Costs

ANALYSIS OF AVIATION DEPOT SUPPLY SUPPORT

Keith E. Sykes-Lieutenant Commander, United States Navy

B.A., Virginia Military Institute, 1989

Master of Science in Management-December 2000

and

Nora A. Burghardt-Lieutenant Commander, United States Navy

B.S., United States Naval Academy, 1989

M.S.A., Central Michigan University, 1997

Master of Science in Management-December 2000

Advisors: William R. Gates, Department of Systems Management

Donald R. Eaton, Department of Systems Management

The Office of the Secretary of Defense (OSD) issued a Program Budget Decision (PBD) requesting a study of supply material availability (SMA) and related issues for Naval Aviation Depots (NADEPs).

PBD-405 shows a disparity between percentage levels of supply support for the NADEPs and the current overall fill rates published by the Navy Inventory Control Point-Philadelphia (NAVICP-P) and the Defense Logistics Agency (DLA). This thesis evaluates the effectiveness of SMA and determines if SMA is a valuable measurement tool for NADEPs, determines if supply support has an impact on production, and determines if NADEPs are receiving poor supply support. This thesis evaluates the Air Force and United Airline Services (UAS) depot support to determine any common trends or ways to improve NADEP support. After conducting procedure and policy reviews, interviews and site visits to NADEP North Island, ALC Hill, UAS San Francisco and Defense Supply Center Richmond (DSCR), this research concludes that SMA, in its current formulation, is not effective as a measurement tool to indicate supply effectiveness in terms of operational readiness. Also, this research has determined that there is a major link between poor material support and production cycle time. The study recommends the government review post production support plans, pursue standardization, review contract specialist and item manager staffing, and identify and analyze readiness measurement tools.

DoD KEY TECHNOLOGY AREA: Materials, Processes and Structures

KEYWORDS: Material Logistics, Supportability, Material Availability, NADEPs, Air Logistics Centers (ALCs), United Airline Services (UAS)

AGING AIRCRAFT WIRING: A PROACTIVE MANAGEMENT METHODOLOGY

Vasileios Tambouratzis-Captain, Hellenic Air Force

B.S., Hellenic Air Force Academy, 1993

Masters of Science in Management-June 2001

Advisors: Donald R. Eaton, Graduate School of Business and Public Policy

Raymond Franck, Graduate School of Business and Public Policy

During the last years, military budgets have been dramatically reduced and the services have been unable to acquire sufficient new systems. Military aviation is one of the areas that have been severely impacted. The result is that the current fleet faces significant aging aircraft problems.

Aircraft wiring is one of the areas that have severely affected by the aging process. Recent accidents involving aging wiring problems and reduced operational readiness due to aging wiring have made clear

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that aging aircraft wiring presents a difficult and complicated problem for the military aviation. However, current maintenance practices fall short in successfully inspecting and maintaining wiring.

The purpose of this thesis is to provide a proactive management plan to deal with aging wiring. The objective is to come up with a systematic process in order to identify and prevent serious failures caused by electrical faults of wiring systems. This process will be based on the principle of Reliability Centered Maintenance (RCM).

DoD KEY TECHNOLOGY AREA: Air Vehicles

KEYWORDS: Aging Aircraft, Aircraft Wiring, Reliability Centered Maintenance

DESIGNING ECONOMICS EXPERIMENTS TO DEMONSTRATE THE ADVANTAGES OF AN ELECTRONIC EMPLOYMENT MARKET IN A LARGE MILITARY ORGANIZATION

Suan Jow Tan-Major, Republic of Singapore Navy

B. Eng., University of London, 1990

Master of Science in Management-March 2001

and

Chee Meng Yeong-Major, Republic of Singapore Air Force

B. Eng., University of Manchester, 1992

Master of Science in Management-March 2001

Advisors: William R. Gates, Graduate School of Business and Public Policy

CDR William D. Hatch, II, USN, Graduate School of Business and Public Policy

The Navy detailing process is complicated and detailers spend many hours trying to assign sailors to jobs. There are many factors to be considered for each job assignment: sailors' preferences, commands' requirements and the numerous policies that affect both sailors and commands, manning priority levels, etc. Often this process is fraught with subjectivities, as each resultant job assignment will vary, depending on the detailer making the assignment. It is therefore timely to explore another way of doing business: a two-sided matching process that considers sailors' preferences and commands' requirements and assigns sailors to jobs in an equitable and fair manner. This new process is better able to cope with the complexities of job detailing and other additional information requirements. This thesis compares the differences between the current detailing systems and a two-sided matching process, and presents the advantages of adopting the latter. This new way of doing business brings about major benefits for large organizations such as the U.S. Navy.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Detailing, Enlisted Personnel, Assignment; Jass, Two-Sided Matching

NON-MONETARY PERFORMANCE METRICS FOR USE IN A TECHNOLOGY EXCHANGE ORGANIZATION

Rick T. Taylor-Lieutenant Commander, United States Navy

B.S., Iowa State University, 1987

Master of Science in Management-June 2001

Advisors: David R. Henderson, Graduate School of Business and Public Policy

LTC Brad R. Naegle, USA, Graduate School of Business and Public Policy

The Joint Technology Exchange Group (JTEG), a part of the Joint Depot Maintenance Activity Group (JDMAG), exists to disseminate information on new technologies throughout the DoD depot community. Its objectives are to reduce redundancy and enhance the capabilities of depots, potentially lowering sustainment costs for the equipment they work on. However, because JTEG operates in a technology environment where financial benefits are vague and uncertain, JDMAG has identified a need to assess the effectiveness of the JTEG. To judge which attributes are most beneficial, this thesis performed a review of technology transfer, value of information, communication, and current performance measurements in

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organizations. Four depots were visited to understand their use of new technology. An analysis of the roles and abilities of JTEG and needs of the depots is done, and metrics are developed to properly capture the effectiveness of JTEG. Performance metrics are based on balanced scorecard methodologies to emphasize effort that is linked to goals. The study finds the service JTEG supplies is not in line with what depots demand. The performance metrics highlight two major areas of activity for JTEG, processes and projects. Metrics generative are primarily non-monetary in nature, and bring visibility to how effort is linked to organizational goals. This study has applicability to other service-oriented, public organizations.

DoD KEY TECHNOLOGY AREAS: Materials, Processes, and Structures, Manufacturing Science and Technology

KEYWORDS: Technology Transfer, Information Exchange, Performance Measures, Metrics, Depot Maintenance

LOW-RATE INITIAL PRODUCTION (LRIP): ORIGINS, IMPLEMENTATION AND ANALYSIS

Mark A. Thompson-Major, United States Marine Corps

B.A, Virginia Military Institute, 1986

Master of Science in Management-December 2000

Advisors: Richard B. Doyle, Department of Systems Management

Frank J. Barrett, Department of Systems Management

Low-Rate Initial Production (LRIP) provides units to be used in the acquisition system for operational testing and to validate the production process. This thesis examines the evolution of LRIP to identify its primary purposes and the problems that have been encountered during its implementation. To provide this information, historical and current statutory, legislative and regulatory data were reviewed. GAO and DODIG audits and reports provided critical information relating to LRIP problems. It was found that the most important LRIP problems centered on the issue of the appropriate number of units to be produced and the timing of the migration of programs into and out of LRIP. The principal cause of these problems was the absence of clear and definitive legislative and regulatory guidance. New acquisition regulations and a new acquisition model are likely to minimize the ambiguity surrounding the use of LRIP in the acquisition process.

DoD KEY TECHNOLOGY AREAS: Materials, Processes, and Structures, Manpower, Personnel, and Training, Other (Acquisition)

KEYWORDS: Low-Rate Initial Production, Procurement Process, Acquisition History

CONCEPT EXPLORATION FOR A FUTURE FRIGATE/DESTROYER SIZE WARSHIP PLATFORM

Ralf Trappe-Korvettenkapitan, German Navy

B.Eng., Plymouth University, 1994

Master of Science in Management-March 2001

Advisors: David W. Byers, Department of Mechanical Engineering

CDR James M. Barnard, USN, Graduate School of Business and Public Policy

Second Reader: Keebom Kang, Graduate School of Business and Public Policy

The purpose of this thesis is to make a clean sheet of paper approach to develop a platform for a future frigate/destroyer size warship based on the operational requirements in the context of future crisis management and constrained resources. The envisioned timeframe is the beginning of the next decade, i.e. 2010 +.

Basic operational requirements regarding the bare warship platform will be weighted and discussed. The study is concentrating on the hull and propulsion configuration to support the derived operational needs. All weapons and control systems will be handled as interchangeable modules, hence only spaces and

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interfaces will be discussed in this thesis. Special emphasis is given to Total Ownership Costs and the risk from incorporating not yet introduced technologies.

In addition to the classical monohull approach, Catamaran, Trimaran, SWATH and the O'Neill hull form configurations will be investigated as well. In comparison to the Combined Diesel and Gas Turbine (CODAG) and Combined Diesel or Gas Turbine (CODOG) propulsion; Diesel Electric, Gas Turbine Electric and possible combinations of these propulsion concepts will be evaluated.

DoD KEY TECHNOLOGY AREA: Surface/Under Surface Vehicles - Ships and Watercraft

KEYWORDS: Navy, Future Platforms, Frigate, Destroyer, Hull Forms, O'Neill Hull Form, Power Generation, Propulsion, Modularity, Requirements Analysis, Total Ownership Cost

EXAMINATION OF THE READINESS OF TWO UNITS OF HELLENIC NAVY TO IMPLEMENT ACTIVITY BASED COST MANAGEMENT

Georgios Tsiakiris-Lieutenant Commander, Hellenic Navy

B.S., Aristotelian University of Thessalonica, 1986

Master of Science in Management-December 2000

Advisors: K.J. Euske, Department of Systems Management

Laura Zander, Office of Strategic Planning, Education and Research

A growing concern in the Hellenic Navy (HN) about doing the best with the resources provided has initiated an interest of adopting "best practice" methods such as Activity Based Cost Management (ABCM) for understanding and controlling cost. The purpose of this thesis is to examine the readiness of two units of the HN, the Naval Logistic Center (NLC) and the Naval Base of Crete (NBC) to implement ABCM. To examine the readiness of those organizations a questionnaire was used. This questionnaire was designed by the Consortium for Advanced Manufacturing - International (CAM-I). Five respondents from each organization were selected to answer the questionnaire. Although the sample size is small, it is considered adequate for a general indication of readiness. Based on respondents' answers a series of indicators of readiness for a successful ABCM implementation was examined. Major risks to a successful ABCM implementation were identified. Furthermore, managerial actions for facilitating an ABCM implementation from literature are provided. The conclusion is that both organizations could implement successfully an ABCM initiative in the near future if a series of actions takes place.

DoD KEY TECHNOLOGY AREA: Other (Financial Management)

KEYWORDS: Cost, Activity, Management, Activity Based Cost Management, ABCM, ABC, Hellenic Navy, HN

GREEK MILITARY STRATEGY: THE DOCTRINE OF DETERRENCE AND ITS IMPLICATIONS ON GREEK-TURKISH RELATIONS

Stergios Tsilikas-Major, Hellenic Air Force

B.S., Hellenic Air Force Academy, 1986

Master of Science in International Resource Planning and Management-June 2001

Advisors: Donald Abenheim, Department of National Security Affairs

Roger D. Evered, Graduate School of Business and Public Policy

The invasion of Cyprus by Turkey in 1974 and the occupation of 37 percent of its territory proved to be a benchmark year for Greek-Turkish relations. Since then, new frictional issues have generated in the region, making the prospects for reconciliation harder and an all out confrontation more likely. Greek policy-makers and officials believe that Turkey has adopted an expansionist and revisionist policy over the last 25 years with the aim to alter the status quo in the region. To counter this threat, Greece is trying to build up those elements in its military doctrine and defense posture that will fulfill its security concerns.

The recent dynamics of Greek-Turkish interaction are driven by the central factor of the growing Turkish military advantage, which makes an escalation towards warfare, even if unintended, more likely.

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External factors, namely the U.S., NATO, and EU, that can contribute toward a de-escalatory direction, are not effective enough to guarantee the prevention of an all out confrontation in the foreseeable future.

This thesis maintains that Greece's deterrence doctrine presents, under certain conditions, a unilateral effort that may provide an additional source of stability in addition to third party mediations. It concludes that the risk of warfare will remain significant between the two countries, unless Greece succeeds to restore the strategic balance with Turkey.

DoD KEY TECHNOLOGY AREA: Other (National Security)

KEYWORDS: Greek Military Doctrine, Greek-Turkish Relations

USING EFFECTIVE CONTRACTUAL INCENTIVES TO OBTAIN SUPERIOR CONTRACTOR PERFORMANCE

Timothy B. Venable-Captain, United States Marine Corps

B.S., Valdosta State University, 1993

M.B.A., University of Phoenix, 1998

Master of Science in Management-December 2000

Advisor: Michael W. Boudreau, Department of Systems Management

Second Reader: David V. Lamm, Department of Systems Management

The purpose of this thesis is to provide the reader with the ability to analyze the effectiveness of incentives and to document innovative approaches to incentive contracting that can be applied to Cost Plus Award Fee (CPAF) contracts. While a CPAF contract is a vehicle to obtain products or services needed by the Government, it also acts as a management tool for the awarding entity, which focuses on the impact of meeting or exceeding award criteria. The need for improved procurement effectiveness necessitates the exploration of innovative arrangements. Contracting officers must take advantage of reforms and become innovative in their approach to provide best value in programs. More efficient ways of doing business are available and must be capitalized upon. Changes in the regulations have given the contracting officer the freedom to innovate. They must use this new freedom in order to meet DoD's expanding requirements with increasingly limited resources. The use of innovative incentives to contractor performance is beginning a period of renaissance. Numerous Government entities have embraced the use of innovative arrangements in the effort to get goods and services better, faster, and cheaper. The contracting officer must determine which incentive is most effective for a program based upon numerous variables.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Contractual Incentives, Cost Plus Award Fee Contracts, Innovative Agreements

MODERNIZATION OF THE CZECH AIR FORCE

Vaclav Vlcek-Captain, Army of the Czech Republic

Eng., Military Academy in Brno, 1992

Master of Science in Management-June 2001

Advisors: Raymond Franck, Graduate School of Business and Public Policy

Gregory Hildebrandt, Graduate School of Business and Public Policy

This research explores the decision-making problem for the purchase of modern fighter aircraft for the Czech Republic. This represents a specific case of a complex issue of military hardware acquisition.

The author starts with a general overview of Czechoslovak and Czech Air Force's (CAF) history and the major stages of its development. This historical overview is followed by a description of the present situation of the CAF with the emphasis on current problems. The CAF operates obsolete second-generation aircraft, rapidly approaching the end of their operational life. A partial solution would be a purchase of 72 L-159 Advanced Light Combat Aircraft to supplement 36 front-line fighters.

The aircraft under consideration are F/A-16, F/A-18, Mirage 2000-5, JAS-39, and Eurofighter. The MiG-29 SMT is included for comparison. The main contribution of this study is a prediction of Life Cycle

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Costs (LCC) for each aircraft together with an estimate of quality or relative effectiveness based on TASCFORM-AIR model. These should be the most important criteria for proper decision-making.

The study includes a brief description of the Czech economy, military budget, a summary of world industrial base, and future military aircraft developments. A final recommendation is provided.

DoD KEY TECHNOLOGY AREA: Air Vehicles

KEYWORDS: Czech Air Force, Fighter Aircraft, Life Cycle Cost, Aircraft Effectiveness

KNOWLEDGE PORTAL SUPPORT TO THE NAVAL POSTGRADUATE SCHOOL'S ADVANCED DISTRIBUTED LEARNING PROGRAM FOR THE INFORMATION SYSTEMS AND OPERATIONS CURRICULUM

Allisa M. Walker-Lieutenant, United States Navy

B.S., Memphis State University, 1994

Master of Science in Information Technology Management-December 2000

Advisors: Mark E. Nissen, Department of Systems Management

Carl R. Jones, Information Systems Academic Group

The Naval Postgraduate School is in the process of migrating the Information Systems and Operations curriculum to a nonresident mode of delivery. Once the migration is complete, there will be a knowledge base available for use by battle staffs as well as policy and acquisition leaders. A knowledge portal may be the solution to facilitating the use of the knowledge base by both learners and operators. The goal of this research is to show how developing a knowledge portal for use with the Information Systems and Operations curriculum knowledge base could expand the use of tacit and explicit knowledge by the operators. By providing access to this repository of information and knowledge, users can capture the most up-to-date knowledge on issues in the world's political and military environment, have the ability to collaborate with experts in the field, and receive answers to questions that will aide in resolving complex issues.

DoD KEY TECHNOLOGY AREA: Other (Information Technology)

KEYWORDS: Knowledge Management, Re-Engineering, Knowledge Portal, Advanced Distributed Learning, Analysis and Design, Information Technology, Information Systems

A MODEL FOR THE EFFECTIVE INTEGRATION OF PAST PERFORMANCE INFORMATION INTO ORGANIZATIONAL ACQUISITION AND CONTRACTING PROCESSES

Mark F. Walkner-Major, United States Marine Corps

B.S., Iowa State University, 1990

Master of Science in Management-December 2000

Advisors: Keith F. Snider, Department of Systems Management

David V. Lamm, Department of Systems Management

The need to deliver high quality goods and services in less time and at a lower total cost has resulted in a Revolution in Business Affairs throughout the Federal acquisition community. When the lowest price is not the driving factor during procurements, the Federal Acquisition Regulation allows procurement officials to make trade-offs between cost or price, past performance, and technical merit to ensure the best value to the Government. One of the tools that Government procurement officials have for reducing procurement risk is the ability to request, via the request for proposal, information regarding a supplier's past performance and to use this information in selecting sources of supply.

This thesis investigates the use of past performance information in the Federal acquisition process. It reviews the current policies and best practices for the collection and evaluation of past performance information. It then categorizes and analyzes the past performance protest decisions handed down by the Comptroller General from October 1, 1997, to June 30, 2000. Following the review and analysis, the overall best practices and case principles are linked with the phases of the Federal acquisition process to

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develop a managerial model that will aid contracting officials in more effectively incorporating the use of past performance information into their acquisition and contracting processes.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Past Performance Information, Federal Acquisition Process, Best Practices, GAO Comptroller General Decisions

ANALYSIS OF THE U.S. ARMY ASSIGNMENT PROCESS: IMPROVING EFFECTIVENESS AND EFFICIENCY

Todd R. Wasmund-Captain, United States Army

B.S., United States Military Academy, 1991

Master of Science in Management-June 2001

Advisors: William Gates, School of Business and Public Policy

CDR William D. Hatch, II, USN, Graduate School of Business and Public Policy

Since the conclusion of the Cold War and subsequent downsizing, the U.S. Army has struggled with the challenge of recruiting and retaining the highest quality soldiers to ensure future readiness. Each year, the Army plans and executes over 100,000 permanent change of station assignments for its 345,000 enlisted soldiers. The inherently complex challenge of assignment planning consists of balancing Army requirements and readiness with soldiers' professional needs and personal preferences. The Army's centralized and hierarchical assignment process could be improved using proven information technologies. Specifically, the process could be made more efficient using web-based markets and intelligent agents to more effectively plan and assign soldiers to billets. This thesis evaluates the strengths and weaknesses of the Army's assignment process and its outcomes, compares and contrasts it with the Navy's assignment process, estimates and evaluates the utility of one- and two-sided matching processes using a computer simulation, and makes recommendations, where appropriate.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Army, Assignment, Manpower, Detailing, Retention, Quality of Life

TACTICAL SIGNALS INTELLIGENCE IN MARINE FORCES PACIFIC: BUILDING THE NEW FIRST RADIO BATTALION

Scott A. Westerfield-Captain, United States Marine Corps

B.A., Florida State University, 1995

Master of Science in Management-December 2000

Advisors: William Gates, Department of Systems Management

Erik Jansen, Command, Control, Communications, Computers and Intelligence Academic Group

The reorganization and relocation of First Radio Battalion by Headquarters Marine Corps (HQMC) and Marine Forces Pacific presents a number of logistical and fiscal challenges to coordinate moving manpower and equipment over thousands of miles. This thesis attempts to document and seek solutions to the operational difficulties that have beset the battalion for over 25 years.

First, the battalion's existing tables of organization and equipment have been modified, given the limitations of current structure and expected future operational requirements. Next, the modified tables have been produced as appendices to the thesis to document the finished results. Finally, costs were estimated for personnel transfer and vehicle shipment using the Crystal Ball Microsoft EXCEL spreadsheet add-in. The resulting analyses yield recommendations for relocating and reorganizing the battalion at Camp Pendleton.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Systems Analysis)

KEYWORDS: Cost Estimation, Systems Analysis, Relocation, Reorganization, Organizational Theory, Resource Allocation

**HUMAN FACTORS IN COAST GUARD COMPUTER SECURITY - AN ANALYSIS
OF CURRENT AWARENESS AND POTENTIAL TECHNIQUES
TO IMPROVE SECURITY PROGRAM VIABILITY**

Timothy J. Whalen-Lieutenant, U.S. Coast Guard

B.S., United States Merchant Marine Academy, 1990

Master of Science in Information Technology Management-June 2001

Advisors: Cynthia Irvine, Department of Computer Science

Douglas E. Brinkley, Graduate School of Business and Public Policy

The Coast Guard is becoming increasingly reliant upon our nation's information infrastructure. As such, our ability to ensure the security of those systems is also increasing in import. Traditional information security measures tend to be system-oriented and often fail to address the human element that is critical to system success. In order to ensure information system security, both system and human factors requirements must be addressed.

This thesis attempts to identify both the susceptibility of Coast Guard information systems to human factors-based security risks and possible means for increasing user awareness of those risks. This research is meant to aid the Coast Guard in continuing to capitalize on emerging technologies while simultaneously providing a secure information systems environment.

DoD KEY TECHNOLOGY AREA: Command, Control and Communication, Computing and Software, Human Systems Interface

KEYWORDS: Computer Security, Human Factors, Human Computer Interaction, Coast Guard, Trust, INFOSEC

**IMPROVING LIFE-CYCLE COST MANAGEMENT IN THE U.S. ARMY: ANALYSIS OF THE
U.S. ARMY AND COMMERCIAL BUSINESSES LIFE-CYCLE COST MANAGEMENT**

Bradley A. White-Major, United States Army

B.S., Kearney State College, 1990

Master of Science in Management-June 2001

Advisors: James E. Suchan, Graduate School of Business and Public Policy

LTC Brad R. Naegle, USA, Graduate School of Business and Public Policy

The roles and responsibilities of the Army acquisition and logistics communities, as they pertain to the life-cycle management, are undergoing fundamental change. The early identification and total control of life-cycle cost, in particular operations and sustainment costs which comprises as much as 70-80% of a systems total life-cycle cost, is a high priority for the Army. The basis of this change is adoption of commercial best practices to support the Army's goal to organize, train, equip, and manage multiple missions in the most cost effective manner.

This thesis describes how the U.S. Army and four commercial businesses (FEDEX, Boeing Commercial Airplanes, Lockheed Martin, and a Communications Systems Company) manage life-cycle costs (LCC) for the equipment they use to manufacture products or to provide services. The research analyzes how the U.S. Army compares to these commercial businesses and how they are organized to perform the key functions of acquisition and sourcing, and operations and sustainment, to provide quality products or services to their customers while controlling total life-cycle costs of the capital equipment they use to provide their product or service. The thesis concludes with recommendations on how the U.S. Army can best organize and focus to better manage the total life-cycle costs of the equipment they purchase to complete their mission.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREA: Other (Management and Acquisition)

KEYWORDS: Life-Cycle Cost Management, Organization Design And Functions, Commercial Best Practices, Operation And Sustainment Costs, Acquisition

**RECRUITING THE NEXT GENERATION: A STUDY OF ATTITUDES,
VALUES, AND BELIEFS**

**Andrew G. Wilcox-Major, United States Marine Corps
B.B.A., Southwest Texas State University, 1988
Master of Science in Management-March 2001**

**Advisors: Mark J. Eitelberg, Graduate School of Business and Public Policy
Alice M. Crawford, Graduate School of Business and Public Policy**

This study examines the attitudes, values, and beliefs of teenagers regarding military service. Specifically, the study looks at generational theory, the characteristics and views of the so-called "Millennial" generation, factors that influence attitudes toward military service, and recruiting strategies used by the Navy and Marine Corps. The study identifies the uniqueness of the next generation of youth, or Millennials, because of the interconnected relationship of five forces of influence: "baby boomer" parents, education, the new economy, technology, and the media. Information on youth attitudes was collected through 36 focus groups, including 677 teenagers at nine high schools in six states. Data obtained from the focus groups reveal common trends across schools and states: teenagers exhibit relatively little knowledge or understanding of the military; higher education is the military's chief competitor for recruits; and the dissuaders of military service are far stronger than the persuaders of service (due largely to misperceptions and ignorance). Recommendations to improve recruiting are offered, particularly the need to better inform teens about the realities of military service. Efforts toward this end should enhance long-term military recruiting efforts.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Millennials, Generation Y, Military Recruiting, Youth Attitudes

**ORGANIZATIONAL CHANGE: A STUDY OF THE INTEGRATED CUSTOMER SUPPORT
SYSTEM AT UNITED STATES TRANSPORTATION COMMAND**

**Kim C. Williams-Lieutenant, United States Navy
B.S., University of Washington, 1993
Master of Science in Management-March 2001**

**Advisors: Ira A. Lewis, Graduate School of Business and Public Policy
James E. Suchan, Graduate School of Business and Public Policy**

This thesis examines the types of organizational change needed at United States Transportation Command to successfully implement the Integrated Customer Support (ICS) System, a Customer Relationship Management solution. This strategic objective to integrate ICS into the Defense Transportation System working environment is an attempt to provide immediate and complete responsiveness to external customer needs.

Based upon interviews with Transportation Specialists, areas for change and resistance were identified using the open system model framework. The system elements that need to be aligned in conjunction with the implementation of the Integrated Customer Support system include inputs, goals and strategies, and behavior and processes. ICS is not just a software program and if implemented as a stand-alone technology, unrelated to other business processes, it will have disastrous results.

More effective communication is needed from the top down throughout the Defense Transportation System so ICS users will be committed to system use and understand the behaviors that are expected of them. New measurement and feedback systems to monitor the performance of the Transportation Specialists need to be established. Additionally, to sustain commitment, the proper rewards and incentives need to be institutionalized at the command.

THESIS ABSTRACTS

DoD KEY TECHNOLOGY AREAS: Human System Interface, Computing and Software

KEYWORDS: Organizational Change, Customer Service, Customer Relationship Management

COST-BENEFIT ANALYSIS OF SINGLE SITTING DEPOT LEVEL MAINTENANCE FOR THE LIGHT ARMORED VEHICLE

**Ronald S. Wilson-Captain, United States Marine Corps
B.S., Auburn University, 1993**

Master of Science in Management-December 2000

Advisors: Kevin R. Gue, Department of Systems Management

Donald Eaton, Department of Systems Management

In 1998, Commander, Marine Corps Logistics Bases established the Executive Planning Group (EPG) to develop and coordinate strategy to enhance the depot's maintenance and supply capabilities in order to increase the competitiveness of their services and provide a direction for future depot operations. One of the initiatives introduced by the EPG was to conduct an analysis to determine if consolidating depot maintenance for the LAV from the current workload scenario at two depots, to a single site, results in the most efficient allocation of resources. Spreadsheet models were used to conduct a comparative cost and savings analysis between the current split workload scenario and a single site scenario at each depot. Costs and savings resulting from data such as infrastructure requirements, transportation, inventory reductions, and reduction in personnel structure requirements were addressed. Additional issues addressed include the impact on readiness and surge capacity. Results vary significantly depending on the selection of depot for single sitting. It is shown that single sitting at one depot results in annual savings from the current workload scenario, while single sitting at the other depot increases annual costs from the current workload scenario.

DoD KEY TECHNOLOGY AREA: Materials, Processes, and Structures

KEYWORDS: Single-Sitting, Consolidation, Transportation, Personnel Reductions, Surge Capacity

MOBILE DENTAL UNITS AT THE DECKPLATE

Peter G. Wish-Lieutenant, United States Navy

B.S., Troy State University, 1993

Master of Science in Management-March 2001

Advisors: William R. Gates, Graduate School of Business and Public Policy

CAPT James Scaramozzino, USN, Office of Continuous Learning

The concept of bringing dental care to the active duty member can be traced back as far as World War I. More than 80 years later, this still holds true. Today, Mobile Dental Units (MDU) seek out the patient, saving hundreds and thousands of manhours which would otherwise be consumed by patients traveling to a point where their needs could be met. The goal of this research project is to determine the optimal number of MDUs to meet the demands of the force they support. The site chosen for this analysis was Naval Dental Center, Southwest, in San Diego, California. This command was chosen because it is the largest dental command within Navy medicine; it has a fleet of MDUs, four of which are used to service local squadrons, Fleet Marine Force units and approximately 30 ships of the Pacific Fleet; and it is close to the Naval Postgraduate School.

In answering this question, a Cost Benefit Analysis and Cost Effectiveness Analysis were conducted, looking at fourteen months of MDU workload. The Cost Benefit Analysis showed a savings over ten years between \$467,409 and \$837,754 per MDU. Five metrics were created to determine cost effectiveness. This analysis identified areas for additional potential savings, ultimately saving DoD more money and making the MDUs more productive. Considering the implications of both the cost benefit and cost effectiveness analysis, the optimal number of MDUs for Naval Dental Clinic Southwest (NDCSW) is four.

Although manhour savings is a key determinant in using these valuable assets, these vehicles more importantly improve the dental health of our operational forces, increasing Operational Dental Readiness

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and improving our military's overall state of Operational Readiness. More importantly, these mobile units assist the Dental Corps and BUMED with the ultimate goal of ensuring, "Dentally Healthy Sailors and Marines."

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Utilization, Requirements Determination, Special Studies

IMPACT OF THE IMPLEMENTATION OF INFORMATION TECHNOLOGY ON THE CENTER FOR ARMY LESSONS LEARNED

Anthony M. Wizner-Captain, United States Army

B.S., United States Military Academy, 1991

Master of Science in Information Technology Management-March 2001

Advisor: Erik Jansen, Graduate School of Business and Public Policy

Second Reader: Shelley Gallup, Institute for Joint Warfare Analysis

As today's Army moves further into the Information Age and its mission evolves into a CONUS-based, Fore Projection Army with diverse mission requirements, the ability to collect and disseminate lessons learned never has been more important. Units must be able to use the lessons of those soldiers who have preceded them in order to maximize force multipliers, execute missions, right the first time, and save lives.

This research evaluates the impact that the implementation of an Information Technology infrastructure has had on the efficiency of Army's Lessons Learned Process and the overall effectiveness of the Center for Army Lesson Learned to conduct its primary mission. The objective is to determine how Information Technology has changed the organizational structure, culture, reward systems, processes, and personnel skill requirements within CALL.

Research includes an in-depth review of CALL as the Army's mechanism for creating organizational learning, a description of the Lessons Learned Process, an efficiency comparison between the current and previous collection, an analysis of dissemination processes using Extend Simulation Software, and an explanation of the organization's current IT architecture.

DoD KEY TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Learning Organization, Information Technology, Organizational Design, Center for Army Lessons Learned, Information Technology Architecture, Center for Army Lessons Learned, Collection and Observation Management Software

ANALYSIS OF AIRCRAFT MAINTENANCE CANNIBALIZATION WITH RESPECT TO AGING AIRCRAFT WITHIN THE EA-6B COMMUNITY

Daniel C. Worra-Lieutenant Commander, United States Navy

B.A., University of Illinois, 1989

Master of Science in Management-December 2000

Advisors: Donald R. Eaton, Department of Systems Management

Shu S. Liao, Department of Systems Management

Cannibalization is a management tool typically used to overcome failures in the logistics or maintenance support system. However, the effects of cannibalization do not come without a cost. Three highly cannibalized components of the EA-6B aircraft were examined to determine the costs associated with each cannibalization. Additionally, this thesis attempts to identify any correlation between the age of an aircraft and the frequency that its components are cannibalized. To address this issue, maintenance records from 1996 to 2000 were examined. A comparison was made between the components that were cannibalized and those that were not. Other costs were estimated by interviewing maintenance professionals to determine additional labor hours, consumables and flight hours used during the cannibalization. Finally, a regression analysis was performed comparing the number of cannibalizations to the age of the aircraft in order to determine if a relationship existed. The major findings were that cannibalization reduces the mean

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time to failure and increases its failure rate. Cannibalization also wastes many resources either due to frequency of cannibalization or man-hours required to perform a single cannibalization. Additionally, no statistically significant correlation was found to exist between the age of the aircraft and the number of cannibalizations.

DoD KEY TECHNOLOGY AREA: Air Vehicles, Manpower, Personnel and Training

KEYWORDS: Cannibalization, Aging Aircraft, Aircraft Maintenance

MAJOR WEAPON SYSTEMS ACQUISITION AND LIFE CYCLE COST ESTIMATION: A CASE STUDY

Numan Yoner-First Lieutenant, Turkish Army

B.S., Turkish Army Academy, 1995

Masters of Science in Management-June 2001

Advisors: David F. Matthews, Graduate School of Business and Public Policy

Keebom Kang, Graduate School of Business and Public Policy

The Major Weapon Systems Acquisition Process requires the acquiring organizations to make long-term resource commitments, whereas the defense budgets of many nations have declined over the past decade. Therefore, it is imperative for program managers and acquisition practitioners to make informed decisions not only considering the up-front costs, which are related to fielding of the system; but considering all the costs expected to be incurred throughout the system's planned life.

In this study, the major systems acquisition process, and its underlying concepts, life-cycle costing, and cost estimation techniques have been discussed, and the strategies that enable the PMO to optimize the life-cycle cost of the system are studied in a case study approach. The ATACMS IA missile system has been chosen as the study case. The life-cycle cost of the ATACMS IA missile system has been estimated; sensitivity and uncertainty analyses have been conducted by utilizing the Cost Analysis Strategy Assessment (CASA) estimating model in order to develop strategies, which will eventually reduce the life-cycle cost of the system. The performance and cost figures used in the model are assumed by the author, due to sensitivity of the actual data. However, the model and the analysis results provide valuable guidance for the PMO, and the analysis methodology is applicable to any weapon systems acquisition program.

DoD KEY TECHNOLOGY AREA: Other (Acquisition)

KEYWORDS: Major Weapon Systems Acquisition, Life Cycle Cost Estimation, Systems Engineering, Sensitivity Analysis, Uncertainty Analysis, Acquisition Logistics

UNITED STATES POLICY AND BUDGETING FOR THE RESERVE COMPONENT

Edward L. Zawislak-Lieutenant Commander, United States Navy

B.S., United States Naval Academy, 1990

Master of Science in Management-December 2000

Advisors: Richard B. Doyle, Department of Systems Management

Frank J. Barrett, Department of Systems Management

This study examines the Reserve Component of the United States, focusing on its composition, the Total Force Policy, the funding process and recent funding trends. Because of the increased use of the Reserves, it is important to understand the process of budgeting for the Reserves and how they have fared in the post-Cold War period of constrained resources. Since 1989, the output delivered by the Reserve Component to the Total Force has increase by more than 1300 percent. During this period, inflation-adjusted funding for the Reserve Component has decreased by slightly more than 12 percent. Additional missions in peacekeeping, weapons of mass destruction support teams and space operations have further burdened the Reserves. These new roles are contributing to the use of Reserves in peace. The research concludes that

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changes must occur to the Total Force Policy, assigned missions and funding for the Reserves to ensure the Reserve Component is a viable component of the Total Force in the future.

DoD KEY TECHNOLOGY AREA: Other (Financial Management)

KEYWORDS: Budgeting, Policy, Reserves, Reserve Component

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