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# Air Force Institute of Technology Research Report 2001

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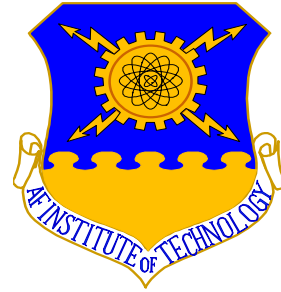
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AFIT/EN/TR-02-04  
TECHNICAL REPORT  
May 2002



# **Air Force Institute of Technology**

## **Research Report 2001**

Period of Report: 1 October 2000 to 30 September 2001

Graduate School of Engineering and Management

**GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT  
AIR FORCE INSTITUTE OF TECHNOLOGY  
WRIGHT-PATTERSON AIR FORCE BASE, OHIO**

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# **AIR FORCE INSTITUTE OF TECHNOLOGY**

Wright-Patterson Air Force Base, Ohio

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Edited and produced by the Office of Research and Consulting, Graduate School of Engineering and Management, Air Force Institute of Technology.

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or visit the AFIT website: [www.afit.edu](http://www.afit.edu)



## **Air Force Institute of Technology Research Report 2001 Foreword**

The Graduate School of Engineering and Management at the Air Force Institute of Technology (AFIT) provides responsive, defense focused graduate education and research to help sustain the technological supremacy of the United States Air Force (USAF). AFIT maintains close affiliations with USAF research organizations and operational communities, Department of Defense (DoD) agencies and premier graduate education institutions to ensure continued relevance and high quality of our academic and research programs. AFIT's unique focus provides an outstanding environment for educating future managers and engineers in disciplines critical to anticipated defense needs.

Research experience is an essential element of a quality technical education, providing both in-depth knowledge and broadly applicable critical thinking skills that will be used throughout a graduate's career. In addition to delivering long-term educational advantages, AFIT strives to ensure that the research program provides immediate benefits to the USAF and DoD. AFIT also cooperates with commercial enterprises to ensure timely transfer of new technology to US industry whenever appropriate. AFIT welcomes new opportunities to engage in research projects that are of mutual interest to our customers, faculty, and students.

This Research Report is prepared annually to report on the significant contributions of this institution, to solicit continued involvement and support from Air Force laboratories and DoD agencies, and to encourage new sponsors to participate in AFIT's research program.

A handwritten signature in dark ink, reading "Michael L. Heil". The signature is fluid and cursive.

**MICHAEL L. HEIL, Colonel, USAF  
Commandant  
Air Force Institute of Technology**

A handwritten signature in dark ink, reading "Robert A. Calico, Jr.". The signature is fluid and cursive.

**ROBERT A. CALICO, JR.  
Dean, Graduate School of Engineering  
& Management**

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# 1. INTRODUCTION

## 1.1 OVERVIEW

This Research Report presents the FY01 research statistics and contributions of the Graduate School of Engineering and Management (EN) at AFIT. AFIT research interests and faculty expertise cover a broad spectrum of technical areas related to USAF needs, as reflected by the range of topics addressed in the faculty and student publications listed in this report. In nearly all cases, the research work reported herein is directly sponsored by one or more USAF or DoD agencies.

AFIT welcomes the opportunity to conduct research on additional topics of interest to the USAF and other DoD organizations, when adequate manpower and financial resources are available and/or provided by a sponsor. In addition, AFIT provides research collaboration and technology transfer benefits to the public through Cooperative Research and Development Agreements (CRADAs). Interested individuals may discuss ideas for new research collaborations, potential CRADAs, or research proposals with individual faculty using the contact information in the Appendix.

Additional information on the research programs at AFIT may also be found on the research web home page at <http://en.afit.edu/enr/>. The Office of Research and Consulting, Graduate School of Engineering and Management, points of contact are either Dr. Heidi R. Ries, PhD, Associate Dean for Research, (937) 255-3636, ext 4544 (DSN: 785-3636, ext 4544), email [afit.enrsta@afit.edu](mailto:afit.enrsta@afit.edu) or Mr. Gary M. Koenig, PE, Research Grants Engineer, (937) 255-3636, ext 4546 (DSN: 785-3636, ext 4546), email [afit.enrsta@afit.edu](mailto:afit.enrsta@afit.edu)

## 1.2 THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT RESEARCH COLLABORATION

AFIT offers master's and doctoral programs in a variety of disciplines through six departments: the Department of Mathematics and Statistics (ENC), the Department of Electrical and Computer Engineering (ENG), the Department of Engineering Physics (ENP), the Department of Operational Sciences (ENS), the Department of Systems and Engineering Management (ENV), and the Department of Aeronautics and Astronautics (ENY). In all these disciplines, research is an integral component of graduate education, developing an individual student's skills and providing new knowledge of interest to many.

AFIT sends out an annual *Research Activities* mailings in an effort to involve sponsor organizations in research and education. Over 300 responses were received last year from the *Research Activities* mailing, and approximately 5% resulted in research projects. The departments invite research collaboration in their research specialties.

The Department of Mathematics and Statistics invites MS theses suggestions and topics for the following research specialties:

**Applied Mathematics**  
**Statistical Analysis**

**Partial Differential Equations**  
**Numerical Analysis**

The Department of Electrical and Computer Engineering invites research topic suggestions and topics for the Electrical Engineering, Computer Engineering and Computer Science programs. The following research specialties are covered by the Department:

**Advanced Imaging and Information Processing**  
**Electromagnetics/Low Observables (Stealth)**  
**Guidance, Navigation and Control**  
**Micro Electromechanical Systems**  
**Software and Information Engineering, Visualization, and Exploration**

**Communications/Networks**  
**Evolutionary Algorithms**  
**Information Systems, Security & Assurance**  
**Parallel/Distributed Processing**

The Department of Engineering Physics invites research topic proposals for the Engineering Physics, Nuclear Engineering, Electro-Optics (Electro-Optics shared between Electrical Engineering and Engineering Physics), Materials Science (Shared between Aeronautical Engineering and Engineering Physics), and Meteorology programs. The areas covered by these programs include:

**Atmospheric Science**  
**Electronic and Photonic Materials**  
**Modeling and Simulation**  
**Remote Sensing & Signature Analysis**

**Counterproliferation**  
**Lasers and Electro-Optics**  
**Nuclear Weapons and Effects**  
**Space Weather**

The Department of Operational Sciences invites research topics within the areas of operations research and logistics management. The following research specialties are covered by the Department:

**Campaign Planning and Execution**  
**Information Operations/Information Warfare**  
**Operational Problems and Heuristic Modeling**  
**Transportation and Strategic Mobility**

**Decision and Risk Analysis**  
**Operational Modeling and Simulation**  
**Stochastic Systems Analysis**  
**Supply Chain Management**

The Department of Systems and Engineering Management is seeking research topic proposals for the Engineering and Environmental Management, Acquisition Management, and Information Resource/Systems Management programs. The following research specialties are covered by the Department:

**Applied Environmental Sciences**  
**Cost Analysis**  
**Human Resource Management**  
**Information Resource Management**  
**Systems Management**

**Contract Management**  
**Environmental Systems Analysis**  
**and Management**  
**Quantitative Decision Making**  
**Strategic Purchasing**

The Department of Aeronautics and Astronautics invites research collaboration proposals for the Aeronautical, Astronautical and Systems Engineering programs. The Department covers the following research specialties:

**Computational Fluid Dynamics**  
**Materials and Structural Analysis**  
**Systems Engineering**

**Dynamics and Control**  
**Propulsion Systems**

If you would like to collaborate with AFIT on research, here are some ideas:

- Look through the credentials and interests of the AFIT faculty members at Appendix A. Match your areas of interest with the research interests of one or more faculty.
- Read through the list of recent graduates' theses titles in this report. You may find one or more AFIT Faculty Advisors who have dealt with a topic in your interest area.
- Contact a faculty member to discuss your idea for a research collaboration. A topic that has strong faculty endorsement and support is much more likely to be chosen by the students than one that lacks faculty advocacy. Topics that fall outside the collective areas of faculty competence cannot be approved, even if chosen. For maximum effectiveness all around, please talk to AFIT faculty before you submit a research suggestion. The faculty member's phone number is found in the Appendix A of this report.
- After talking to an AFIT faculty member, prepare and send your research collaboration proposal as soon as possible. Use the following sample proposal format on the following page, or make up your own. Send your proposal to the faculty member, to the department, or to AFIT/ENR, Bldg 640, 2950 P St., Wright-Patterson AFB OH 45433-7765 or email us at [afit.enrsta@afit.edu](mailto:afit.enrsta@afit.edu).

\*\*\*\*\* S A M P L E \*\*\*\*\*

## PROPOSED RESEARCH TOPIC FORMAT

1. **RESEARCH TOPIC:** Secure Optical Fiber Links Based on Chaotic Cryptography

2. **INDIVIDUAL SPONSOR:** Dr. Mary Jones, AFRL/XN (DSN: 123-4567)  
1234 Casimir Creek Road  
WPAFB OH 45433-5632

3. **AFIT FACULTY CONTACTED:** Lt Col Tom P. Smith, AFIT/ENG

4. **BACKGROUND/PROBLEM:** The output emission power of semiconductor laser diodes is extremely stable under normal operating conditions for standard device designs. It is, however, possible to design and operate devices in unstable, chaotic regimes. Secure optical communication systems based on standard encryption techniques are essential to current military operations. When combined with new solid-state chaotic light and detection sources, the ability to crack the codes of intercepted communications is, for all practical purposes zero. Arrays of low-cost, high-efficiency, robust microlaser diodes are ideal for this secure communication application.

5. **OBJECTIVE/APPROACH:**

- a. Develop numerical models of chaotic microlasers
- b. Develop time-based encryption algorithms
- c. Design and fabricate arrays of chaotic microlasers
- d. Characterize the device and system performance

6. **RESOURCE REQUIREMENTS:**

- a. Minimum computational requirement: Sun Microsystems Sparc2 or equivalent
- b. Clean room for device fabrication
- c. Photonics measurement equipment for device and system characterization

7. **REFERENCES:** None.

\*\*\*\*\* S A M P L E \*\*\*\*\*



### 1.3 RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS

An AFIT Research Assessment Questionnaire, shown on the following page, was sent to each sponsor of a master's thesis and doctoral dissertation project during FY 2001 to determine the projects contribution, significance and cost avoidance. Detailed results of the questions asked are shown in Table 1.1. The data in this table are based on 63 questionnaires returned out of the 205 questionnaires mailed.

Table 1.1: Sponsor Assessment of AFIT Research

QUESTION	EN
Did this research contribute to a current Air Force/DoD project? (Yes answers)	97%
The thesis work was: Highly significant Significant Slightly significant Not significant	30% 55% 13% 2%
Average man-years of effort saved by the sponsors.	1.05
Average cost avoided per thesis/dissertation by the sponsors.	\$114,334
Total cost avoided for all theses and dissertations sponsored	\$23,438,470
Rank of respondents Colonel (GM-15) Lt Col (GM-14) Major (GM-13) Captain (GS-12) Other	29% 40% 21% 10% 0%



## RESEARCH ASSESSMENT QUESTIONNAIRE

**TO:**

Thank you for sponsoring the AFIT thesis or dissertation listed below. AFIT is working hard to keep its research focused on defense technologies of interest to the Air Force and to the nation.

Title:

Student Author:

Designator:

Faculty Advisor:

Please help us determine the value and contribution of this research to your organization's mission by answering the questions below:

1. Did this research contribute to a current task or goal of interest to your organization? Y / N
2. Would you have completed this work if AFIT had not done it? Y / N
3. Regardless of your answers above, how would you rate this work?  
Highly significant  
Significant  
Slightly significant  
No significance
4. If AFIT had not done this work, please estimate what it would have cost your organization to perform it, either by using in-house resources or by contract. \*Man-Years \_\_\_\_ \$ \_\_\_\_\_  
*\*Please note that typically an MS thesis requires 0.5MY of the student's time and one month of the faculty advisor's time. For a PhD dissertation the numbers are 2MY for the student and 4 months for the advisor.*
5. Would you like to make any remarks? (These will be shared with the academic department and the faculty chairperson.) (If necessary, please continue on reverse side)

You may mail this to AFIT/ENR, 2950 P Street, Wright-Patterson AFB OH 45433-7765, or fax it to (937) 656-7302 (DSN: 986-7302), or just e-mail your answers (only) to 1 to 5 to [afit.enrsta@afit.edu](mailto:afit.enrsta@afit.edu) . If you use e-mail, please include the designator above so that we might identify the project.

Thank you.

\_\_\_\_\_  
Name of Evaluator

\_\_\_\_\_  
Office Symbol

\_\_\_\_\_  
Grade/Rank of Evaluator

## 2 RESEARCH STATISTICS

### 2.1 RESEARCH AND CONSULTING OUTPUT MEASURES

Technology sharing and transfer are critical to the timely development of new operational capabilities. There are measurable indicators of AFIT's contribution to the engineering and scientific community and AFIT's success in staying well informed of technical possibilities and scientific opportunities. These include the number and quality of technical publications accepted by the editors of journals, the number of presentations accepted for regional, national and international conferences, the number of research projects conducted, the number of consultations performed for Air Force and DoD customers, and finally the number of student MS theses and PhD dissertations that are completed and submitted to the Defense Technical Information Center. For FY01, these output measures are shown in Table 2.1 and in Figure 2.1.

Table 2.1: Faculty Research and Consulting Output

Graduate School Department	Number of Faculty	Refereed Publications	Other Publications	Presentations	Funded Research Projects	Substantial Consultations	Masters Theses Advised	Doctoral Dissertations Advised
Math (ENC)	10	4	3	7	6	0	1	0
Elec (ENG)	20	15	89	101	34	58	40	2
Phys (ENP)	18	23	10	33	26	2	23	1
Op Sc (ENS)	15	14	14	64	15	5	48	3
Sys & Eng Man (ENV)	15	8	16	15	7	7	57	0
Aero (ENY)	18	18	54	26	32	13	20	0
Total	96	82	186	245	120	85	189	6

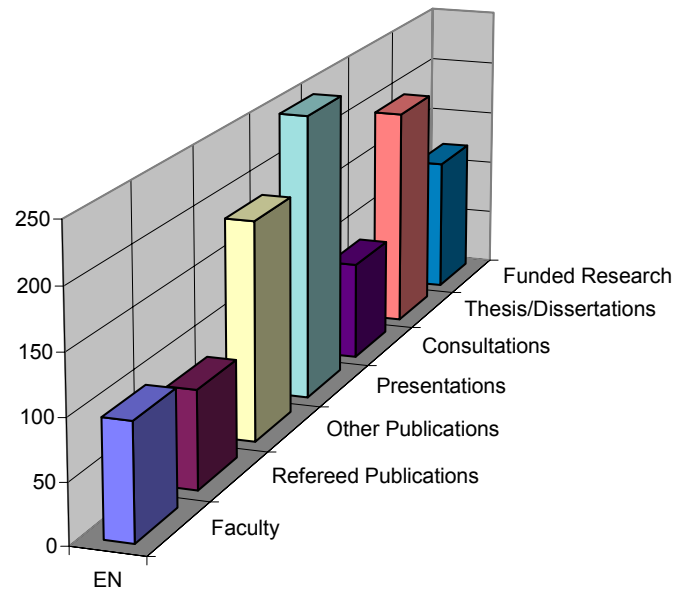


Figure 2.1: Research Output Measures

## 2.2 RESEARCH AND CONSULTING SPONSORSHIP

As members of an Air Force institution, the faculty of the AFIT focus their research on current problems as well as future systems of the Air Force and other DoD organizations. Evidence of this focus is that 96% of all theses and dissertations listed in Table 1.2 were externally sponsored by Air Force, DoD and Government agencies. In addition, most of the research projects and consultations were carried out for Air Force and DoD units. The data are summarized in Table 2.2 and Figure 2.2.

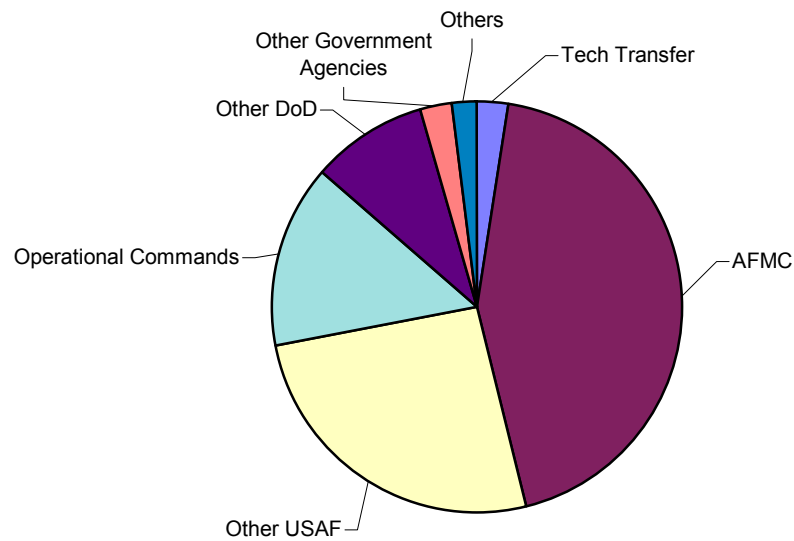


Figure 2.2: Sponsors of AFIT Theses and Dissertations

Table 2.2: Sponsorship of AFIT Research

<b>SPONSOR ORGANIZATION</b>	<b>Masters' Theses</b>	<b>PhD Dissertation</b>	<b>Funded Research</b>	<b>Significant Consultations</b>
AIR FORCE	12		12	9
AIR COMBAT COMMAND	3			2
Air Force Information Warfare Center	1			
UAV Battlelab	2			
AIR EDUCATION & TRAINING COMMAND			2	1
Air Force Institute of Technology	34			2
Air Force Recruiting Service	1			
AIR FORCE MATERIEL COMMAND	9		2	6
Aeronautical Systems Center	5		1	5
Air Force Research Laboratory	47	2	27	36
Air Force Research Lab/Air Force Office of Scientific Research	16	1	41	3
F-22 Systems Program Office	1			
Space & Missile Systems Center	7			
Air Force Flight Test Center	2			
AIR FORCE SPACE COMMAND				
Space Warfare Center	1			
AIR MOBILITY COMMAND	4	1		
USAF FIELD OPERATING AGENCIES				
Air Force Center for Environmental Excellence	4			
Air Force Civil Engineer Support Agency	5			
Air Force Combat Climatology Center	1			
Air Force Logistics Management Agency	1			
Air Force Personnel Center	1			
Air Force Safety Center	1			
Air Force Studies Analyses Agency		2		
Air Force Technical Applications Center	3			
Air Force Weather Agency	3		1	
USAF DIRECT REPORTING UNIT				
Air Force Communication Agency	2		1	3
Air Force Academy	1			
ARMY			1	
US Army Safety Center	1			
DEPARTMENT OF DEFENSE			4	3
Defense Advanced Research Projects Agency	8			2
Government Supply Agency	1			
Joint Warfare Analysis Center	1		1	
National Reconnaissance Office	2			
Office of the Secretary of Defense	3		1	
Undersecretary of Defense for Environmental Security	1			
United States Commander in Chief Pacific Command	1			
USSTRATCOM	1			
DEPARTMENT OF ENERGY	1			
NATIONAL SECURITY AGENCY	4		1	
DAYTON AREA GRADUATE STUDIES INSTITUTE	5		21	5
NATIONAL CONTRACT MANAGEMENT ASSOCIATION	2			
THE OHIO STATE UNIVERSITY	1			
ROYAL AUSTRALIAN AIR FORCE	1			
OTHERS			3	16
<b>TOTALS</b>	<b>200*</b>	<b>6</b>	<b>119</b>	<b>93*</b>

\*Multiple Sponsors

## 2.3 OUTSIDE FUNDING FOR THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT

Many of the Graduate School of Engineering and Management's theses and research projects completed under faculty supervision (sponsored or unsponsored) are funded in part by other Air Force, DoD and government units and agencies. Often this funding results from collaboration between faculty and thesis sponsors and occurs when the research project can be leveraged by the purchase of equipment or services not otherwise available. Table 2.3 and Figure 2.3 summarize outside funding for FY01.

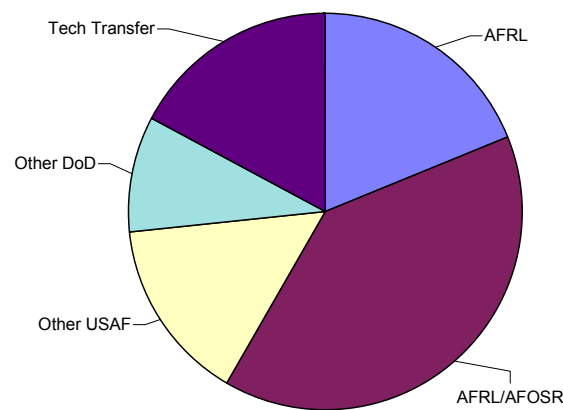
Table 2.3: Sponsoring Organizations for Funded Research

<b>Sponsoring Organization</b>	<b>Funded Projects</b>	<b>Dollars (\$)*</b>
Air Force Research Lab (AFRL)	27	\$ 612,182
AFRL/Air Force Office Scientific Research (AFOSR)	41	\$ 1,291,437
Other USAF	19	\$ 480,483
Other DOD	10	\$ 311,349
Tech Transfer (CRADAs)	22	\$ 560,985
<b>TOTAL</b>	<b>119</b>	<b>\$ 3,256,436**</b>

\* Includes carry over funding from FY00 of \$510,585.

\*\*DoD regulations limit AFIT's charges to DoD organizations. Accounting for these nonchargeable items, the cost of our research program at a comparable civilian university would have been approximately \$8 million.

Figure 2.3: FY01 Funded Research



## 2.4 FACULTY FELLOWS

**Bridgman, Charles J.**, Professor Emeritus of Nuclear Engineering, Department of Engineering Physics, Fellow of the American Nuclear Society.

**D'Azzo, John J.**, Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

**Franke, Milton E.**, Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers.

**Houpis, Constantine H.**, Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

**Mall, Shankar**, Air Force Research Laboratory, Professor, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers.

**Maybeck, Peter S.**, Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

**Pachter, Meir**, Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

**Palazotto, Anthony N.**, Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Civil Engineers.

**Torvik, Peter J.**, Professor Emeritus of Aerospace Engineering and Engineering Mechanics, Department of Aeronautics and Astronautics, Fellow of the American Institute of Aeronautics and Astronautics, Fellow of American Society of Mechanical Engineers.

## **2.5 PROFESSIONAL CERTIFICATION**

**Brady, Stephan P.**, Certified Professional Logistician, Society of Logistics Engineers

**Brothers, Heidi S., P.E.**, Professional Engineer, State of Oregon and California, C44500

**Chrissis, James W.**, Professional Engineer, State of Florida, 0037247

**D'Azzo, John J.**, Professional Engineer, State of Ohio, E-12550

**Goltz, Mark N., DEE**, Diplomate Environmental Engineer, American Academy of Environmental Engineers,  
Hazardous Waste Management Specialty Certification

**Goltz, Mark N., P.E.**, Professional Engineer, State of Minnesota, 13978

**Greiner, Michael A.**, Certified Cost Estimator/Analyst, Society of Cost Estimating and Analysis

**Gunsch, Gregg H.**, Professional Engineer, State of Ohio, 56828

**Heil, Michael L.**, Professional Engineer, State of Colorado, 167712

**Houpis, Constantine H.**, Professional Engineer, State of Ohio, E-19084

**Jodoin, Vincent J.**, Professional Engineer, State of Ohio, E-57166

**Palazotto, Anthony N.**, Professional Engineer, State of Ohio, E-39937

**Perram, Glen P.**, Professional Engineer, State of Ohio, E-060534

**Quinn, Dennis W.**, Professional Engineer, State of Ohio, E-056873

**Spenny, Curtis H.**, Professional Engineer, State of Ohio, E-038759



### 3. CONTRIBUTIONS TO THE AIR FORCE

#### 3.1 DOCTORAL DISSERTATIONS

Arb, Harold A. *Hidden Markov Models for Visual Speech Synthesis in Limited Data*. AFIT/DS/ENG/01-01. Faculty Advisor: Dr. S. C. Gustafson, DSN: 785-3636, ext. 4598. Sponsor: AFRL/HECA.

Denhard, David R. *Theater-Level Stochastic Air-to-Air Engagement Modeling via Event Occurrence Networks Using Piecewise Polynomial Approximation*. AFIT/DS/ENS/01-01. Faculty Advisor: Dr. Jack M. Kloeber, Jr. Sponsor: Air Force Studies and Analyses Agency.

Dolezal, Michael W. *Spectroscopic Constants, Lifetimes and Predissociation Rates for Bi2A(0u+)*. AFIT/DS/ENP/01-01. Faculty Advisor: Dr. Glen P. Perram, DSN: 785-3636, ext 4504. Sponsor: AFOSR/NL.

Forsythe, Steven L. *Computer-Based Methods for Constructing Two-Level Fractional-Factorial Experimental Designs with a Requirement Set*. AFIT/DSS/ENS/97M-04. Faculty Advisor: Dr. Richard F. Deckro, DSN 785-6565, ext 4325. Sponsor: Air Force Studies and Analyses Agency.

Huang, Yih-Shiun. *Adaptive and Reconfigurable Flight Control*. AFIT/DS/ENG/01-02. Faculty Advisor: Dr. M. Pachter, DSN: 785-3636, ext 4593. Sponsor: AFRL/VACA.

Wright, Samuel A. *Covalidation of Dissimilarly Structured Models*. AFIT/DS/ENS/00-02. Faculty Advisor: Dr. Kenneth W. Bauer, Jr., DSN: 785-6565, ext 4328. Sponsor: HQ AMC/XPY.

## 3.2 MASTERS THESES BY PROGRAM

### 3.2.1 ACQUISITION MANAGEMENT

Borchers, Jason R. *Dollarizing Qualitative Discriminators Used in Best Value Source Selections.*

AFIT/GAQ/ENV/01M-01. Faculty Advisor: Lt Col William Stockman, DSN: 785-3636, ext 4796. Sponsor: AFIT/EN.

Brandau, Amanda G. *Factors Influencing Air Force Members' Tolerance of Fraternization.*

AFIT/GAQ/ENV/01M-02. Faculty Advisor: Major Paul W. Thurston. Sponsor: AF/JAG.

Corbett, John F. *An Identification and Discussion of Key Success Factors in the Acquisition of Commercial-off-the-shelf (COTS-) Based Systems.* AFIT/GAQ/ENV/01M-03. Faculty Advisor: Lt Col David Petrillo. Sponsor: SMC/DET 11/CZSI.

Elyea, William B. *An Investigation of the Contracting Officer Career Pyramid.* AFIT/GAQ/ENV/01M-04. Faculty Advisor: Lt Col David Petrillo. Sponsor: SAF/AQCX.

Fife, Anthony W. *Predicting Software Development Cost for Command and Control Systems.*

AFIT/GAQ/ENV/01M-05. Faculty Advisor: Lt Col William K. Stockman, DSN: 785-336, ext 4798. Sponsor: AFIT/EN.

Gates, Tommy M. *Evaluation of Strategy-Structure Fit of Space and Missile Systems Center Detachment 11.*

AFIT/GAQ/ENV/01M-06. Faculty Advisor: Major Michael L. Rehg, DSN: 785-3636, ext 4711. Sponsor: SMC/DET 11.

Harris, Rachael A. *Award Term Incentive Contracting: An Investigation of United States Air Force Strategic*

*Purchasing.* AFIT/GAQ/ENV/01M-07. Faculty Advisor: Lt Col David Petrillo. Sponsor: HQ AFMC/PKPC.

Heaps, Brian J. *An Analysis of the Acquisition Process for Simplified Acquisition of Base Engineering Requirements (SABER) Contracts and its Potential Impact on Contractor Performance.* AFIT/GAQ/ENV/01M-08. Faculty Advisor: Lt Col David Petrillo. Sponsor: AFIT/CEM & SAF/AQC.

Mendoza, Noelia. *Establishing a Career Development Plan for the System Support Manager.*

AFIT/GAQ/ENV/01M-09. Faculty Advisor: Major Paul W. Thurston. Sponsor: SMC/DET 11

Porter, Paul H. *Revising R & D Program Budgets When Considering Funding Curtailment With a Weibull Model.*

AFIT/GAQ/ENS/01M-01. Faculty Advisor: Lt Col Mark A. Gallagher. Sponsor: OSD PA&E (RA).

Purvis, Christopher D. *Estimating C-17 Operating and Support Costs: Development of a System Dynamics Model.*

AFIT/GAQ/ENV/01M-10. Faculty Advisor: Lt Col William L. Stockman, DSN: 785-3636, ext 4796. Sponsor: ASC/YCF.

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- Hartsfield, Carl. *Analysis of the Application of A Triggered Isomer Heat Exchanger As A Replacement For The Combustion Chamber In An Off-The-Shelf Turbojet*. AFIT/GAE/ENY/01M-04. Faculty Advisor: Dr. Paul I. King, DSN: 785-255-3636 x4628. Sponsor: AFRL/DEPA.
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- Johnson, Max E. *Modeling Biodegradation of Chlorinated Groundwater Contaminants Under Iron-reducing Conditions of a Constructed Wetland: A System Dynamics Approach*. AFIT/GEE/ENV/01M-04. Faculty Advisor: Dr. Michael L. Shelley, DSN: 785-2998. Sponsor: AFRL/MLQ.
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- Kale, William H. *Weapon System Environmental Life Cycle Cost Methodologies and Models*. AFIT/GEE/ENV/01M-06. Faculty Advisor: Lt Col Heidi S. Brothers, DSN 785-3636, ext 4800. Sponsor: ASC/FBJ & DUSD(ES).
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Denney, Gary D. *Influence of Feedback and Comment Labels on Information Sharing in a Computer Mediated Collaborative Environment*. AFIT/GIR/ENV/01M-05. Faculty Advisor: Major Paul W. Thurston. Sponsor: AFIT/EN.

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Avram, Jason. *Fatigue Response of Thin Stiffened Aluminum Cracked Panels Repaired With Bonded Composite Patches.* AFIT/GMS/ENY/01M-01. Faculty Advisor: Dr. Shankar Mall, DSN: 785-255-3636 x4587. Sponsor: AFRL/MLSA & AFRL/VASE.

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Cook, Dayne G. *Solar Radiation Pressure Modeling Issues For High Altitude Satellites*. AFIT/GSO/ENY/01M-01. Faculty Advisor: Dr. Steven G. Tragesser, DSN: 785-255-6565 x4286. Sponsor: HQ SWC/AE.

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AFIT/GLM/ENS/01M-03. Faculty Advisor: Major Marvin A. Arostegui. Sponsor: Deputy Chief of Staff for Installations & Logistics.

Bower, William D. *Development of a Decision Framework for Knowledge Management Projects.*

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Brandau, Amanda G. *Factors Influencing Air Force Members' Tolerance of Fraternization.*

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Gilpin, Douglas W. *An Analysis of the Effectiveness of Pollution Prevention in Reducing Environmental*

*Compliance Costs.* AFIT/GEE/ENV/01M-03. Faculty Advisor: Lt Col Alfred E. Thal, Jr., DSN: 785-336, ext 4591. Sponsor: HQ USAF/ILEVQ.

\*Heaps, Brian J. *An Analysis of the Acquisition Process for Simplified Acquisition of Base Engineering Requirements (SABER) Contracts and its Potential Impact on Contractor Performance.*

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\*Bennett, Sheila G. *A Process for Vectoring Offensive Information Warfare as a Primary Weapon Option Within the United States Air Force.* AFIT/GIR/ENS/01M-01. Faculty Advisor: Dr. Richard Deckro, DSN: 785-6565, ext 4325. Sponsor: Institute for National Security Studies, 39th Information Operations Squadron & 23rd Information Operations Squadron.

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Brown, Darin T. *Routing Unmanned Aerial Vehicles While Considering General Restricted Operating Zones*. AFIT/GOR/ENS/01M-04. Faculty Advisor: Lt Col Raymond Hill, DSN: 785-6565, ext 4323. Sponsor: UAV Battlelab.

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Borchers, Jason R. *Dollarizing Qualitative Discriminators Used in Best Value Source Selections*. AFIT/GAQ/ENV/01M-01. Faculty Advisor: Lt Col William Stockman, DSN: 785-3636, ext 4796. Sponsor: AFIT/EN.

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Autrey, Jon C. *The Influence of Framing Effects on Perceived Ease of Use, Perceived Usefulness, and Behavioral Intention in Information Technology Systems*. AFIT/GIR/ENV/01M-01. Faculty Advisor: Major Michael G. Morris. Sponsor: AFMC/SCDX.

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\*Eppich, Todd G. *Towards Cognitively Based Intrusion Detection*. AFIT/GIR/ENV/01M-06. Faculty Advisor: Lt Col David P. Biros, DSN: 785-3636, ext 4826. Sponsor: AFRL/HEC & AFIWC/IOTN.

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## **AERONAUTICAL SYSTEMS CENTER**

Bartolomei, Jason E. *The Use of Systems Engineering Processes and Tools To Develop A System Dynamic Simulation Model of Engineering Support During The Development Phase of An Acquisition Program*. AFIT/GSE/ENV/01M-01. Faculty Advisor: Lt Col Price E. Smith, DSN: 785-255-6565 x4318. Sponsor: ASC/EN.

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\*Mackenna, James A. *Requirements-Based Methodology for Determining Age Inventory Levels*. AFIT/GLM/ENS/01M-15. Faculty Advisor: Lt Col Raymond R. Hill, DSN: 785-6565, ext 4323. Sponsor: HQ/ AMC/LGBEA, AFRL/HES & ASC/ENMS.

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Bordner, Ralph E., III *Estimation of Relative Satellite Formation Elements In Near Circular Orbits*. AFIT/GA/ENV/01M-01. Faculty Advisor: Dr. Willim E. Wiesel, DSN: 785-255-6565 x4312. Sponsor: AFRL/VA.

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- Kudo, Terence Y. *Using Statistical Process Control Methods to Classify Pilot Mental Workload*. AFIT/GOR/ENS/01M-10. Faculty Advisor: Major Jeffrey W. Lanning, DSN: 785-6565, ext 4324. Sponsor: AFRL/HECP.
- \*Lange, Matthew A. *Single-Sided Noninvasive Inspection of Multielement Sample Using Fan-Beam Multiplexed Compton Scatter Tomography*. AFIT/GAP/ENP/01J-01. Faculty Advisor: Dr Larry Burggraf, DSN: 785-3636, ext 4507. Sponsor: AFRL/MLL & AFOSR/NA.
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- Michaud, Steven R. *Solving the Protein Structure Prediction Problem with Fast Messy Genetic Algorithms (Scaling the Fast Messy Genetic Algorithm to Medium-Sized Peptides by Detecting Secondary Structures)*. AFIT/GCS/ENG/01M-06. Faculty Advisor: Dr. Gary B. Lamont, DSN: 785-3636, ext 4718. Sponsor: AFRL/MLPJE.
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- Novy, Michael C. *Air Vehicle Optimal Trajectories for Radar Exposure Minimization*. AFIT/GAE/ENY/01M-07. Faculty Advisor: Lt Col David R. Jacques, DSN: 785-255-3636 x4723. Sponsor: AFRL/VACA.

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Ragsdale, Timmy A. *EWIR ML: Provider-Side Universal Dataset Production*. AFIT/GCS/ENG/01M-10. Faculty Advisor: Maj Karl S. Mathias, DSN: 785-3636, ext 4280. Sponsor: AFRL/SNZW.

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\*Shipman, William C. *The Development of A Finite Element Program To Model High Cycle Fatigue In Isotropic Plates*. AFIT/GAE/ENY/01M-08. Faculty Advisor: Dr. Anthony N. Palazotto, DSN: 785-255-3636 x4599. Sponsor: Department of Aerospace Engineering & Aviation, The Ohio State University.

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Autrey, Elizabeth A. *The Effect of Contextual-Based Training on Artifact-Based Deception Detection*. AFIT/GIR/ENV/01M-15. Faculty Advisor: Lt Col David P. Biros, DSN 785-3636, ext 4826. Sponsor: AFOSR.



- Cox, Joseph L. *Electronic Quenching of the  $A(0+u)$  State of  $Bi_2$* . AFIT/GAP/ENP/01M-02. Faculty Advisor: Dr. Glen P. Perram, DSN: 785-3636, ext 4504. Sponsor: AFOSR/NL.
- Davis, Donald J. *Environmental Disturbance Modeling For Large Inflatable Space Structures*. AFIT/GSO/ENV/01M-02. Faculty Advisor: Major Gregory S. Agnes, DSN: 785-255-6565 x4317. Sponsor: AFOSR/NA.
- \*Fields, Gregory S. *The Effect of External Safeguards on Human-Information System Trust in an Information Warfare Environment*. AFIT/GIR/ENV/01M-07. Faculty Advisor: Lt Col David P. Biros, DSN: 785-3636, ext 4826. Sponsor: AFOSR & AFRL/HEAL.
- \*Garcia, Fred E. *Aircrew Ionizing Doses From Nuclear Weapon Bursts*. AFIT/GNE/ENP/01M-02. Faculty Advisor: Lt Col (Sel) Vincent J. Jodoin, DSN: 785-3636, ext 4506. Sponsor: USSTRATCOM/J534 & AFOSR/CC.
- Henry, Jean W. *Use of Quantum Mechanical Calculations to Investigate Small Silicon Carbide Clusters*. AFIT/GAP/ENP/01M-04. Faculty Advisor: Dr. Larry W. Burggraf, DSN: 53636, ext 4507. Sponsor: AFOSR.
- Howe, Eric T. *Analysis and Numerical Solution of an Integral Equation Method for Electromagnetic Scattering from a Cavity in a Ground Plane*. AFIT/GAM/ENC/01S-01. Faculty Advisor: Prof Aihua Wood, DSN: 785-3098. Sponsor: AFOSR/NM.
- Irvin, David J. *A Study of Linear Vs. Nonlinear Control Techniques for The Reconfiguration of Satellite Formations*. AFIT/GA/ENV/01M-02. Faculty Advisor: Lt Col David Jacques, DSN: 785-255-3636 x4723. Sponsor: AFOSR/NM.
- Kauth, David A. *Dissolution of Chromium from Inhalable Primer Paint Particles into a Simulated Lung Fluid*. AFIT/GEE/ENV/01M-07. Faculty Advisor: Major Peter T. LaPuma, DSN: 785-6565, ext 4319. Sponsor: AFOSR/NR.
- Keller, Mark J. *Vibration Suppression of A Rotationally Periodic Structure Using An Adaptive/PPF Control Law*. AFIT/GAE/ENV/01M-05. Faculty Advisor: Major Greg Agnes, DSN: 785-255-6565 x4317. Sponsor: AFOSR/NA.
- \*Lange, Matthew A. *Single-Sided Noninvasive Inspection of Multielement Sample Using Fan-Beam Multiplexed Compton Scatter Tomography*. AFIT/GAP/ENP/01J-01. Faculty Advisor: Dr Larry Burggraf, DSN: 785-3636, ext 4507. Sponsor: AFRL/MLL & AFOSR/NA.
- Langhals, Brent T. *The Affect of Varying Arousal Methods Upon Vigilance and Error Detection in an Automated Command and Control Environment*. AFIT/GIR/ENV/01M-11. Faculty Advisor: Lt Col David P. Biros, DSN: 785-3636, ext 4826. Sponsor: AFOSR.
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- Novy, David B. *Chromate Content Bias as a Function of Particle Size in Aircraft Primer Paint Overspray*. AFIT/GEE/ENV/01M-12. Faculty Advisor: Major Peter T. LaPuma, DSN: 785-6565, ext 4319. Sponsor: AFOSR/NR.
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Yay, Cihangir. *Technology Selection for Enhancing F-16 Capability: An Analysis Using Value Focused Thinking*. AFIT/GOR/ENS/01M-19. Faculty Advisor: Capt Stephen P. Chambal, DSN: 785-6565, ext 4314. Sponsor: F-22 ACCSO-A.

## **SPACE AND MISSILE SYSTEMS CENTER**

Budai, Jeffrey W. *Analyzing the Effects of Meteorology on Radar Measured Index of Refraction Structure Parameter*. AFIT/GM/ENP/01M-1. Faculty Advisor: Lt Col Michael K. Walters, DSN: 785-3636, ext 4681. Sponsor: SMC/TMSW.

Corbett, John F. *An Identification and Discussion of Key Success Factors in the Acquisition of Commercial-off-the-shelf (COTS-) Based Systems*. AFIT/GAQ/ENV/01M-03. Faculty Advisor: Lt Col David Petrillo. Sponsor: SMC/DET 11/CZSI.

Early, Stephen A. *Investigation of the Relationship Between Optical Turbulence and Mechanical Turbulence in the Atmosphere*. AFIT/GM/ENP/01M-2. Faculty Advisor: Lt Col Michael K. Walters, DSN: 785-3636, ext 4681. Sponsor: SMC/TM.

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Oldenburg, James. *In Orbit Basing of An Anti-Satellite Mission*, AFIT/GSO/ENY01M-04, Faculty Advisor: Dr. William E. Wiesel Jr., DSN: 785-255-6565 x4312. Sponsor: SMC/XRD.

White, Christopher P. *An Analysis of Total System Performance Responsibility in Air Force Acquisitions*. AFIT/GAQ/ENS/01M-04. Faculty Advisor: Lt Col Alan W. Johnson. Sponsor: SMC Det 11.

## **AIR FORCE FLIGHT TEST CENTER**

Gilbreath, Greg. *Prediction of Pilot Induced Oscillations (P10) Due To Actuator Rate Limiting Using the Open-Loop Onset Point (OLOP) Criterion*. AFIT/GAE/ENY/01M-02. Faculty Advisor: Dr. Bradley S. Liebst, DSN: 785-255-3636 x4636. Sponsor: USAF/TPS/RP.

Henderson, Paul E. *Development and Testing of a Multiple Filter Approach for Precise DGPS Positioning and Carrier-Phase Ambiguity Resolution*. AFIT/GE/ENG/01M-15. Faculty Advisor: Major John F. Raquet, DSN: 785-3636, ext 4580. Sponsor: USAF Test Pilot School.

## **3.3.5 AIR FORCE SPACE COMMAND**

### **SPACE WARFARE CENTER**

Cook, Dayne G. *Solar Radiation Pressure Modeling Issues For High Altitude Satellites*. AFIT/GSO/ENY/01M-01. Faculty Advisor: Dr. Steven G. Tragesser, DSN: 785-255-6565 x4286. Sponsor: HQ SWC/AE.

### **3.3.6 AIR MOBILITY COMMAND**

Anaya, Victor A. *Analysis of the Next Generation Small Loader (NGSL) in Reducing the Mobility Footprint*. AFIT/GLM/ENS/01M-01. Faculty Advisor: Dr. William A. Cunningham, DSN: 785-6565, ext 4283. Sponsor: AMC/XPRS.

\*Mackenna, James A. *Requirements-Based Methodology for Determining Age Inventory Levels*. AFIT/GLM/ENS/01M-15. Faculty Advisor: Lt Col Raymond R. Hill, DSN: 785-6565, ext 4323. Sponsor: HQ/ AMC/LGBEA, AFRL/HES & ASC/ENMS.

Tekelioglu, Umit H. *A Reactive Tabu Search Metaheuristic Extension of the Air Refueling Tanker Assignment Problem*. AFIT/GOR/ENS/01M-16. Faculty Advisor: Dr James T. Moore, DSN: 785-6565, ext 4337. Sponsor: HQ AMC/XPY.

Tuttle, Robert E. *Air Mobility Command Passenger Reservation System Analysis*. AFIT/GLM/ENS/01M-23. Faculty Advisor: Dr. William A. Cunningham, DSN: 785-6565, ext 4283. Sponsor: HQ AMC/DONR.

### **3.3.7 USAF FIELD OPERATING AGENCIES**

#### **AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE**

Fernandez, Manuel. *Optimization of Palladium-Catalyzed In Situ Destruction of Trichloroethylene-Contaminated Groundwater Using a Genetic Algorithm*. AFIT/GEE/ENV/01M-02. Faculty Advisor: Dr. Mark N. Goltz, DSN: 785-3636, ext 4638. Sponsor: AFCEE/ERT.

Recker, Benjamin C. *Determining the Value of Groundwater Contamination Source Removal: A Methodology*. AFIT/GEE/ENV/01M-15. Faculty Advisor: Dr. Mark N. Goltz, DSN: 785-3636, ext 4638. Sponsor: AFCEE/ERT.

Stoppel, Christopher M. *A Model for Palladium Catalyzed Destruction of Chlorinated Ethenes in Contaminated Groundwater*. AFIT/GEE/ENV/01M-21. Faculty Advisor: Dr. Mark N. Goltz, DSN: 785-3636, ext 4638. Sponsor: AFCEE/ERT.

Young, Harold C. *Quantitative Validation of a Model of Chlorinated Ethene Natural Attenuation*. AFIT/GEE/ENV/01M-25. Faculty Advisor: Dr Mark Goltz, DSN: 785-33, ext 438. Sponsor: AFCEE/ERT.

#### **AIR FORCE CIVIL ENGINEER SUPPORT AGENCY**

Payne, Jeffrey A. *Organizational Design of Most Efficient Organization Air Force Civil Engineer Operations Flights*. AFIT/GEE/ENV/01M-14. Faculty Advisor: Lt Col Heidi S. Brothers, DSN: 785-3636, ext 4800. Sponsor: HQ AFCESA.

Richter, Laurie K. *Factors Affecting Exchange Relationships Among Subordinates and Supervisors: A Study of Military Officers*. AFIT/GEE/ENV/01M-16. Faculty Advisor: Major Michael Rehg, DSN: 785-3636, ext 4711. Sponsor: AFCESA/CEX.

Schroeder, Chad F. *Effects on the Red-Cockaded Woodpecker from Various Spatial and Temporal Applications of Management Practices*. AFIT/GEE/ENV/01M-18. Faculty Advisor: Dr. Michael L. Shelley, DSN: 785-3636, ext 4594. Sponsor: 20 CES/CEV.

Shoviak, Mark J. *Decision Analysis Methodology to Evaluate Integrated Solid Waste Management Alternatives for a Remote Alaskan Air Station*. AFIT/GEE/ENV/01M-20. Faculty Advisor: Lt Col Alfred E. Thal, Jr., DSN: 785-3636, ext 4591. Sponsor: 611 CES/ENV.

Welborn, Jay A. *Changing Organizations: A Meta-Analysis of Change Implementation Strategies' Effects on Organizational Outcomes*. AFIT/GEE/ENV/01M-24. Faculty Advisor: Major Michael Rehg, DSN: 785-3636, ext 4711. Sponsor: HQ AFCEACEOM.

#### **AIR FORCE COMBAT CLIMATOLOGY CENTER**

Venzke, Kenneth C. *Development of Predictors for Cloud-to-Ground Lightning Activity using Atmospheric Stability Indices*. AFIT/GM/ENP/01M-8. Faculty Advisor: Lt Col Ronald P. Lowther, DSN: 785-3636, ext 4645. Sponsor: AFCCC/DOO.

#### **AIR FORCE LOGISTICS MANAGEMENT AGENCY**

Thraikill, Roy D. *A Critical Analysis of the Air Force's International Merchant Purchase Authorization Card (IMPAC) Program*. AFIT/GAQ/ENV/01M-14. Faculty Advisor: Lt Col William K. Stockman, DSN: 785-3636, ext 4796. Sponsor: AFLMA.

#### **AIR FORCE PERSONNEL CENTER**

Franke, Albert E. *Comparative Analysis of Traditional Versus Computer-Based Survey Instrument Response*. AFIT/GIR/ENV/01M-08. Faculty Advisor: Major Mark A. Ward, DSN: 785-3636, ext 3329. Sponsor: HQ AFPC/DPSAS.

#### **AIR FORCE SAFETY CENTER**

Wells, Richard E. *Core Competency Identification: Prescriptions for Air Force Major Commands to Follow*. AFIT/GAQ/ENV/01M-17. Faculty Advisor: Lt Col David Petrillo. Sponsor: HQ AFSC/LGXR.

#### **AIR FORCE TECHNICAL APPLICATIONS CENTER**

\*Beauregard, Joseph E. *Modeling Information Assurance*. AFIT/GOR/ENS/01M-03. Faculty Advisor: Dr. Richard F. Deckro, DSN: 785-6565, ext 4325. Sponsor: DARPA & AFTAC.

Kinser, Aaron M. *Simulating Wet Deposition of Radiocesium from the Chernobyl Accident*. AFIT/GM/ENP/01M-05. Faculty Advisor: Lt Col Michael K. Walters, DSN: 785-3636, ext 4681. Sponsor: AFTAC/TMAR.

Schueneman, Richard A. *Oxidation at Surfaces of Uranium Oxide Particles*. AFIT/GNE/ENP/01M-05. Faculty Advisor: Dr. Larry W. Burggraf, DSN: 785-3636, ext 4507. Sponsor: AFTAC.

#### **AIR FORCE WEATHER AGENCY**

Green, Bradford S. *Validation and Assessment of DMSP Electron Temperatures in the Topside Ionosphere*. AFIT/GAP/ENP/01M-03. Faculty Advisor: Major Devin J. Della-Rose, DSN: 785-3636, ext 4514. Sponsor: HQAFWA/XOGS.

Keyser, Herbert L. *Validation and Characterization of Ionospheric Densities Measured by DMSP*. AFIT/GAP/ENP/01M-05. Faculty Advisor: Major Devin J. Della-Rose, DSN: 785-3636, ext 4514. Sponsor: HQAFWA/XOGS.

Willingham, Erin C. *Investigation of Gravity Waves via the Rotational Temperature of Hydroxyl Nightglow*. AFIT/GM/ENP/01M-09. Faculty Advisor: Dr. Glen P. Perram, DSN: 785-3636, ext 4504. Sponsor: AFWA./DNT.

### **3.3.8 USAF DIRECT REPORTING UNITS**

#### **AIR FORCE COMMUNICATION AGENCY**

Bonner, Robert J. *Using Direct-Sequenced Spread Spectrum in a Wired Local Area Network*. AFIT/GE/ENG/01M-02. Faculty Advisor: Major Rusty O. Baldwin, DSN: 785-3636, ext 4582. Sponsor: AFCA/ITAI.

Kilic, Necdet. *Routing of Time-Sensitive Data in Mobile AD HOC Networks*. AFIT/GCE/ENG/01M-02. Faculty Advisor: Major Rusty O. Baldwin, DSN: 785-3636, ext 45892. Sponsor: AFCA/ITAI.

#### **AIR FORCE ACADEMY**

\*Bennett, Sheila G. *A Process for Vectoring Offensive Information Warfare as a Primary Weapon Option Within the United States Air Force*. AFIT/GIR/ENS/01M-01. Faculty Advisor: Dr. Richard Deckro, DSN: 785-6565, ext 4325. Sponsor: Institute for National Security Studies, 39th Information Operations Squadron & 23rd Information Operations Squadron.

### **3.3.9 ARMY**

#### **US ARMY SAFETY CENTER**

Shelton, Sarah E. *Selecting Optimal Control Portfolios to Improve Army Aviation Safety*. AFIT/GOR/ENS/01M-14. Faculty Advisor: Dr. James W. Chrissis, DSN: 785-6565, ext 4338. Sponsor: US Army Safety Center.

### **3.3.10 DEPARTMENT OF DEFENSE**

#### **DEFENSE ADVANCED RESEARCH PROJECTS AGENCY**

Antoine, Richard M. *Integer Approximation of Real Valued Preference Curves*. AFIT/GLM/ENS/01J-01. Faculty Advisor: Lt Col Alan W. Johnson. Sponsor: DARPA/ISO.

\*Beauregard, Joseph E. *Modeling Information Assurance*. AFIT/GOR/ENS/01M-03. Faculty Advisor: Dr. Richard F. Deckro, DSN: 785-6565, ext 4325. Sponsor: DARPA & AFTAC.

Burnette, Daryl J. *Using GPS as a Reference System to Hit a Moving Target*. AFIT/GE/ENG/01M-04. Faculty Advisor: Major John F. Raquet, DSN: 785-3636, ext 4580. Sponsor: DARPA Special Projects Office.

Colvard, Michael J. *An Analysis of the Interaction Between the J3 and J4 War Planning Staffs During the Phases of Crisis Action Planning*. AFIT/GLM/ENS/01M-06. Faculty Advisor: Lt Col Stephen M. Swartz, DSN: 785-6565, ext 4285. Sponsor: DARPA/ISO.

Filcek, Paul G. *A Quantitative Decision Support Model to Aid Selection of Combat Aircraft Force Mixes for Contingency Deployment*. AFIT/GLM/ENS/01M-10. Faculty Advisor: Lt Col Stephen M. Swartz, DSN: 785-6565, ext 4285. Sponsor: DARPA/ISO.

Goddard, Matthew W. *Estimating Deployed Airlift and Equipment Requirements for F-16 Aircraft in Support of the Advanced Logistics Project*. AFIT/GLM/ENS/01M-11. Faculty Advisor: Lt Col Stephen M. Swartz, DSN: 785-6565, ext 4285. Sponsor: DARPA/ISO.

Kleen, Laura J. *Malicious Hackers: A Framework for Analysis and Case Study*. AFIT/GOR/ENS/01M-09. Faculty Advisor: Dr. Richard F. Deckro, DSN: 785-6565, ext 4325. Sponsor: DARPA/ISO/IASET.

Wakefield, David J. *Identification of Preferred Operational Plan Force Mixes Using a Multiobjective Methodology to Optimize Resource Suitability and Lift Cost*. AFIT/GLM/ENS/01M-24. Faculty Advisor: Lt Col Alan W. Johnson. Sponsor: DARPA/ISO.

## **GOVERNMENT SUPPLY AGENCY**

Phelps, Orval E. *Information Security: Securing Smart Cards with Iris Recognition*. AFIT/GIR/ENG/01M-01.  
Faculty Advisor: Dr. Henry B. Potoczny, DSN: 785-6565, ext 4282. Sponsor: GSA-ME.

## **JOINT WARFARE ANALYSIS CENTER**

Thomas, Ryan W. *Multicast Algorithms for Mobile Satellite Communication Networks*. AFIT/GCE/ENG/01M-04.  
Faculty Advisor: Major Richard A. Raines, DSN: 785-3636, ext 4715. Sponsor: Joint Warfare Analysis Center.

## **NATIONAL RECONNAISSANCE OFFICE**

Barelka, Alexander J. *An Evaluation of Information Technology (IT) Outsourcing Determinants within the Department of Defense (DoD)*. AFIT/GIR/ENV/01M-02. Faculty Advisor: Major Michael G. Morris.  
Sponsor: National Reconnaissance Office.

Disebastian, John. *RIGEX: Preliminary Design of A Rigidized Inflatable Get-Away-Special Experiment*.  
AFIT/GSE/ENV/01M-02. Faculty Advisor: Major Greg Agnes, DSN: 785-255-6565 x4317. Sponsor: NRO.

## **OFFICE OF SECRETARY OF DEFENSE**

Porter, Paul H. *Revising R & D Program Budgets When Considering Funding Curtailment With a Weibull Model*.  
AFIT/GAQ/ENS/01M-01. Faculty Advisor: Lt Col Mark A. Gallagher. Sponsor: OSD PA&E (RA).

Tapp, Charles S. *BRAC to the Future: An Analysis of Past Savings from Base Closings*. AFIT/GAQ/ENS/01M-02.  
Faculty Advisor: Lt Col Mark A. Gallagher. Sponsor: OSD PA&E (RA).

Unger, Eric J. *Relating Initial Budget to Program Growth with Rayleigh and Weibull Models*.  
AFIT/GAQ/ENS/01M-03. Faculty Advisor: Lt Col Mark A. Gallagher. Sponsor: OSD PA&E (RA).

## **UNDERSECRETARY OF DEFENSE FOR ENVIRONMENTAL SECURITY**

\*Kale, William H. *Weapon System Environmental Life Cycle Cost Methodologies and Models*.  
AFIT/GEE/ENV/01M-06. Faculty Advisor: Lt Col Heidi S. Brothers, DSN 785-3636, ext 4800. Sponsor: ASC/FBJ & DUSD(ES).

## **UNITED STATES COMMANDER IN CHIEF PACIFIC COMMAND**

Gordin, Duane L. *Analysis of Wide Area Network Management and Congestion Avoidance Schemes*.  
AFIT/GCS/ENG/01M-02. Faculty Advisor: Maj Richard A. Raines, DSN: 785-336, ext 4715. Sponsor: USCINCPAC/J2125.

## **USSTRATCOM**

\*Garcia, Fred E. *Aircrew Ionizing Doses From Nuclear Weapon Bursts*. AFIT/GNE/ENP/01M-02. Faculty Advisor: Lt Col (Sel) Vincent J. Jodoin, DSN: 785-3636, ext 4506. Sponsor: USSTRATCOM/J534 & AFOSR/CC.

## **3.3.11 DEPARTMENT OF ENERGY**

Drab, Jess W. *Turbine Blade Surface Roughness Effects on Shear Drag and Heat Transfer*. AFIT/GAE/ENV/01M-01. Faculty Advisor: Major Jeffrey P. Bons. DSN: 785-255-6565 x4327. Sponsor: DOE.

### **3.3.12 NATIONAL SECURITY AGENCY**

Jacobs, Timothy E. *Development of a Radar Object Model in the Electronic Warfare Integrated Reprogramming Domain*. AFIT/GCS/ENG/01M-04. Faculty Advisor: Major Karl S. Mathias, DSN: 785-6565, ext 4716. Sponsor: NAIC/TAER.

Jarrells, Michael F. *The Automatic Identification of Text During the Disassembly of Binary Machine Language*. AFIT/GCS/ENG/01M-05. Faculty Advisor: Dr. Henry B. Potoczny, DSN: 785-6565, ext 4282. Sponsor: NAIC/TAIF.

Marcum, Mary K. *Redundant Wavelet-Based Image Restoration Using a Prior Information*. AFIT/GE/ENG/01M-17. Faculty Advisor: Major Roger L. Claypoole, Jr., DSN: 785-3636, ext 4625. Sponsor: NAIC/GTN.

Pinkstaff, Michael S. *An Approach to Disrupting Communication Networks*. AFIT/GOR/ENS/01M-13. Faculty Advisor: Dr. Richard Deckro, DSN: 785-6565, ext 4325. Sponsor: DIRNSA.

### **3.3.13 DAYTON AREA GRADUATE STUDIES INSTITUTE**

Baltacioglu, Erhan. *The Distributer's Three-Dimensional Pallet-Packing Problem: A Human Intelligence-Based Heuristic Approach*. AFIT/GOR/ENS/01M-02. Faculty Advisor: Dr. James T. Moore, DSN: 785-6565, ext 4337. Sponsor: DAGSI.

Bartholomew, Christian A. *Photoluminescence of Single Quantum Well Structures in Gallium Arsenide*. AFIT/GEO/ENP/01M-01. Faculty Advisor: Lt Col Michael A. Marciniak, DSN: 785-3636, ext 4529. Sponsor: DAGSI.

Bulut, Gokay. *Robust Multi-Scenario Optimization of an Air Expeditionary Force Force Structure Applying Scatter Search to the Combat Forces Assessment Model*. AFIT/GOR/ENS/01M-05. Faculty Advisor: Lt Col Raymond Hill, DSN: 785-6565, ext 4323. Sponsor: DAGSI.

Mckay, Michael R. *Time-Resolved Photoluminescence of InAs/GaInSb Quantum Well Lasers*. AFIT/GAP/ENP/OIJ-02. Faculty Advisor: Lt Col M. A. Marciniak, DSN: 785-3636, ext 4529. Sponsor: DAGSI.

Malley, Michael E. *A Methodology for Simulating the Joint Strike Fighter's Prognostics and Health Management System*. AFIT/GOR/ENS/01M-11. Faculty Advisor: Lt Col J. O. Miller, DSN: 785-6565, ext 4326. Sponsor: DAGSI.

### **3.3.14 NATIONAL CONTRACT MANAGEMENT ASSOCIATION**

Shingledecker, Daniel R. *Identification of Critical Roles of Program Managers and Contracting Officers*. AFIT/GAQ/ENV/01M-12. Faculty Advisor: Major Paul W. Thurston. Sponsor: NCMA.

Tougaw, Ronald L. *A Delphi Expert Assessment of Professional Certification Programs for Contracting Personnel*. AFIT/GAQ/ENV/01M-15. Faculty Advisor: Major Paul W. Thurston. Sponsor: NCMA.

### **3.3.15 THE OHIO STATE UNIVERSITY**

\*Shipman, William C. *The Development of A Finite Element Program To Model High Cycle Fatigue In Isotropic Plates*. AFIT/GAE/ENY/01M-08. Faculty Advisor: Dr. Anthony N. Palazotto, DSN: 785-255-3636 x4599. Sponsor: Department of Aerospace Engineering & Aviation, The Ohio State University.

### **3.3.16 ROYAL AUSTRALIAN AIR FORCE**

Rogers, Anthony. *Concept Exploration of An Australian Space Launch Capability*. AFIT/GSO/ENY/01M-05.  
Faculty Advisor: Dr. Steven G. Tragesser, DSN: 785-255-6565 x4286. Sponsor: Deputy Director Long  
Range Communications.



### **3.4 FUNDED RESEARCH PROJECTS**

#### **AGNES, Maj GREGORY S., (ENY)**

“Experimental Investigation of Active Inflatable Struts,” Sponsor: SAF, Funding: \$58,413.45.

“Modeling of Highly Compliant Space Structures,” Sponsor: AFOSR/NI, Funding: \$23,800.00.

“Conformal Membrane Reflectors for Deployable Optics (Joint with Cornerstone Research Group),” Sponsor: SAF/FMBMB-AFOY, Funding: \$25,000.00.

“Experimental Investigation of Active Inflatable Struts,” Sponsor: SAF/FMBMB-AFOY, Funding: \$40,000.00.

“Smart Structures for Vibration Suppression of Optical Surfaces,” Sponsor: AFOSR/NA, Funding: \$43,795.95.

#### **BALDWIN, Maj RUSTY O., (ENG)**

“Technical Support, Air Force Communications Systems Modeling,” Sponsor: AFCA/ITAI, Funding: \$42,000.00.

#### **BAUER, KENNETH W., (ENS)**

“ATR Evaluation through the Synthesis of Multiple Performance Measures,” Sponsor: AFRL/SNA, Funding: \$28,000.00.

“Pilot Candidate Selection Method (PCSM) Study,” Sponsor: AETC/SAS, Funding: \$2,000.00.

#### **BIROS, Lt Col DAVID P., (ENV)**

“Detecting Deception in the Military Infosphere: Improving and Integrating Human Detection Capabilities with Automated Tools,” Sponsor: AFOSR/PIF, Funding: \$1,278.20.

#### **BONS, Maj JEFFREY P., (ENY)**

“Low Pressure Turbine Separation Control Using Vortex Gen Jets,” Sponsor: AFORSR/NI, Funding: \$2,283.33.

“Real Surface Effects on Turbine Heat Transfer and Aerodynamic Performance,” Sponsor: Mississippi State University, Funding: \$40,203.00.

#### **BROTHERS, Lt Col CHARLES P., (ENG)**

“VHSIC Hardware Description Language Development Support,” Sponsor: AFRL/IFTC, Funding: \$15,000.00.

#### **BURGRAFF, LARRY W., (ENP)**

“Photothermal Sensor for Multispectral IR Detection,” Sponsor: SAF, Funding: \$13,025.35.

“Photothermal Sensor for Multi-spectral Detection,” Sponsor: SAF/FMBMB-AFOY, Funding: \$42,413.00.

“Theoretical Calculations of Chemistry and Photoluminescence Spectroscopy for Adsorbates on SiC Clusters and Surfaces,” Sponsor: AFOSR, Funding: \$68,326.65.

“Critical Interfacial Issues for Emerging Electronic, Photonic and Magnetic Polymer Based Materials,” Sponsor: DAGSI, Funding: \$22,137.00.

**CANFIELD, Lt Col ROBERT A., (ENY)**

“System Design Innovation Using Multidisciplinary Optimization and Simulation,” Sponsor: AFOSR/MOA, Funding: \$30,983.00.

“Analytical Certification and Multidisciplinary Integration,” Sponsor: DAGSI, Funding: \$4,366.

**CHAMBAL, Capt STEPHEN P., (ENS)**

“Memorandum of Agreement Between the C-17 System Program Office and Department of Operational Sciences, Air Force Institute of Technology (AFIT) Strategic Brigade Airdrop Simulation Completion Study,” Sponsor: AFMC ASC/YC (AV/FS), Funding: \$10,306.22.

“Enhancement and Analysis Upgrade of COBRA Analytical Software,” Sponsor: AFOTEC, Funding: \$11,000.00.

**CHILTON, Lt Col LAWERENCE K., (ENC)**

“Finite Element Methods for Finite Elasticity and Elasto-Plasticity,” Sponsor: AFOSR/PIF, Funding: \$19,194.00.

**CUNNINGHAM, WILLIAM A., (ENS)**

“Evaluation of a New Fuel Hydrant System for PACAF,” Sponsor: AFOSR/PIF, Funding: \$6,000.00.

**DECKRO, RICHARD F., (ENS)**

“Memorandum of Agreement with the Center for Operation Research,” Sponsor: NSA, Funding: \$20,000.00.

“Modeling Surveillance,” Sponsor: SAF, Funding: \$0.00.

“Joint Warfare Analysis Center (JWAC) Memorandum of Agreement,” Sponsor: DOD JWAC, Funding: \$14,040.00.

**DELOACH, Maj SCOTT A., (ENG)**

“Agent Development Environments for Large-Scale, Multi-Agent, Distributed Mission Planning and Execution in Complex Dynamic Environment,” Sponsor: AFOSR/PIF, Funding: \$43,114.82.

“Collaborative Information Systems and Adaptive Work Processes,” Sponsor: DAGSI, Funding: \$32,289.00.

**FRANKE, MILTON E., (ENY)**

“Nozzle-Diffuser Model Study,” Sponsor: AFRL/SBL, Funding: \$15,000.00.

“Turbine Aerothermal Research,” Sponsor: DAGSI, Funding: \$20,420.00.

**GOLTZ, MARK N., (ENV)**

“Bioenhanced In-Well Vapor Stripping To Treat Trichloroethylene,” Sponsor: AETC, Funding: \$1,370.02.

“In-Situ Catalytic Groundwater Treatment Using Pd-Catalysts and Horizontal Treatment Wells,” Sponsor: DOD NFESC, Funding: \$84,197.50.

**GUNSCH, GREGG H., (ENG)**

“Computer Network Attacks: Detection and Assessment,” Sponsor: AFRL/IFGB, Funding: \$25,000.00.

“Legerdemain: Creating Sleight of Network Hand,” Sponsor: AFIWC/AF-IWB, Funding: \$6,400.00.

“Synthesizing Trust Assessments of Artifact and Human Perceptions of Strategically Manipulated Information,”  
Sponsor: AFOSR/MN, Funding: \$44,391.00.

**GUSTAFSON, STEVEN C., (ENG)**

“Novelty Recognition in Material Damage Images,” Sponsor: AFOSR/NA, Funding: \$14,690.21.

“Target-Shadow Discriminator,” Sponsor: AAC/WMGF, Funding: \$40,844.00.

“Low Voltage NLO Polymer Photonics,” Sponsor: DAGSI, Funding: \$5,332.00.

**HARITOS, Col GEORGE K., (ENY)**

“Matrix-Enabled Damage Tolerance in Oxide CFCCs,” Sponsor: AFOSR/NA, Funding: \$66,815.79.

**HENGHELD, ROBERT L., (ENP)**

“Mid-Infrared Quantum Well Optoelectronic Devices,” Sponsor: DAGSI, Funding: \$40,048.00.

“Mid-Infrared Hot Electron Luminescence to Determine Quantum Well Dispersion Relations in Semiconductor  
Laser Structures for Infrared Countermeasures,” Sponsor: AFOSR, Funding: \$34,900.00.

“AFRL Research Support,” Sponsor: AFRL/PRP, Funding: \$8,000.00.

**HILL, Lt Col RAYMOND R., (ENS)**

“Air Force Standard Analysis Toolkit (AFSAT) Support,” Sponsor: AF/XOCA, Funding: \$64,620.00.

“Agent Modeling for Defense Modeling and Simulation,” Sponsor: DMSO, Funding: \$25,000.00.

“Global Information Compression Methodology & Implementation for Enhanced C4ISR System Integration,”  
Sponsor: DAGSI, Funding: \$60,640.00.

**HUFFINES, Maj GARY R., (ENP)**

“Electromagnetic Interferences by High Power Electric Pulses,” Sponsor: DAGSI, Funding: \$12,420.00.

**JACOBS, Lt Col TIMOTHY M., (ENG)**

“Visualization of Collaborative Software Systems,” Sponsor: AFOSR/MOA, Funding: \$29,968.00.

“Multiagent Systems Engineering,” Sponsor: AFRL/IFKPC, Funding: \$24,845.00.

**JACQUES, Lt Col DAVID R. (ENY)**

“Control for Uninhabited Combat Air Vehicles,” Sponsor: AFOSR/NI, Funding: \$9,303.51.

“Cooperative Behavior and Control for Autonomous Munitions,” Sponsor: AFRL/MN, Funding: \$10,000.00.

“Unmanned Aerospace Vehicles,” Sponsor: AFRL/VACA, Funding: \$5,000.00.

“Cooperative Behavior and Control for Autonomous Munitions,” Sponsor: AFRL/MNGN, Funding: \$10,000.00.

“Unmanned Aerospace Vehicles,” Sponsor: DAGSI, Funding: \$20,168.00.

**JODOIN, Maj VINCENT J., (ENP)**

“Improvement of the Nuclear Weapon Source Model,” Sponsor: AFORSR/NI, Funding: \$3,095.17.

**KING, PAUL I., (ENY)**

“Pulse Detonation Wave Propagation Through a Tube Array,” Sponsor: AFRL/PRF, Funding: \$5,000.00.

“Propagating Potential Disturbances in Turbomachinery,” Sponsor: AFOSR, Funding: \$30,312.70.

“Application of a Triggered Isomer Heat Exchanger for Turbojet Engines,” Sponsor: AFOSR, Funding: \$21,609.43.

“High Cycle Fatigue Unsteady Aerodynamic Analysis improvements and Flow Physics,” Sponsor: DAGSI, Funding: \$28,026.00.

“Computational Nonlinear Aeroelasticity for Multidisciplinary Analysis and Design,” Sponsor: DAGSI, Funding: \$16,561.00.

“Micromechanical Opto-Mechanical Pressure Sensor / Arrays for Gas Turbine Engine Characterization,” Sponsor: DAGSI, Funding: \$16,562.00.

**LAMONT, GARY B., (ENG)**

“Radar Signal Processing Within The Signal/Image Processing (SIP) Computational Technology Area Under The High Performance Computing Modernization Office (HPCMO) CHSSI Program,” Sponsor: AFRL/IFFDC, Funding: \$75,000.00.

“Exploitation and and Transition of CAE Tools Program,” Sponsor: AFRL/SNF, Funding: \$10,415.00.

“Advanced Global Information Compression Methodology & Implementation for Enhanced C4ISR System Integration,” Sponsor: DAGSI, Funding: \$31,761.00.

**LAPUMA, Maj PETER T., (ENV)**

“Bioavailability of Chromate Containing Primers Paints,” Sponsor: AFOSR/NI, Funding: \$8,184.13.

“Bioavailability of Chromate Containing Primers Paints,” Sponsor: AFMC/CEVV, Funding: \$26,000.00.

**LOTT, Lt Col JAMES A., (ENG)**

“Vertical Microcavity Lasers,” Sponsor: AFOSR/NI, Funding: \$12,176.77.

“Tunable Microcavity Lasers for High-Bandwidth Optical Communications,” Sponsor: AFOSR/MOA, Funding: \$32,814.00.

**LOWTHER, Lt Col RONALD P., (ENP)**

“AFIT Meteorology Research Lab Upgrade,” Sponsor: AFWA/XPRB, Funding: \$13,926.00.

**MAGEE, Maj ERIC P., (ENG)**

“Adaptive Optics in Strong Turbulence and Airborne Laser Advanced Concept Studies,” Sponsor: AFRL/DEBA, Funding: \$10,000.00.

“Airborne Laser Atmospheric Compensation and Tracking Concepts,” Sponsor: AFRL/DEBA, Funding: \$25,000.00.

“Optical Phased Array Technology Development in Support of Active/Passive Optical Sensor,” Sponsor: DAGSI, Funding: \$47,164.00.

**MALL, SHANKAR, (ENY)**

“Micro and Nano Scale Systems,” Sponsor: DAGSI, Funding: \$10,255.00.

“High Cycle Fretting Fatigue,” Sponsor: AFRL/ML, Funding: \$81,147.47.

“Effects of Moisture On The Mechanical Behavior Of Fabric-Reinforced Ceramic Matrix Composites,” Sponsor: AFRL/PRTC, Funding: \$30,000.00.

“High Cycle Fretting Fatigue,” Sponsor: AFRL/ML, Funding: \$105,000.00.

“Interfacial Fracture Mechanisms in Bimaterial Systems at Elevated Temperatures using Experimental and Computational Methods,” Sponsor: AFOSR/NA, Funding: \$63,676.82.

**MILLER, Lt Col MIKEL M., (ENG)**

“MEMS Gyro and Direct Correlator Output Processing GPS Receiver,” Sponsor: AFRL/SNAR, Funding: \$12,000.00.

“Ultra-Tight Integration of Inertial Measurement Unit (IMU) and Global Positioning System (GPS) Receivers,” Sponsor: AFOSR/NM, Funding: \$12,000.00.

“GNC Laboratory Upgrades to Enhance GPS/INS Jamming Capabilities,” Sponsor: 746 Test Squadron, Funding: \$30,000.00.

**MILLER, Lt Col JOHN O., (ENS)**

“Interim Brigade Combat Team (IBCT),” Sponsor: DOD US Army, Funding: \$5,000.00.

**MOORE, JAMES T., (ENS)**

“Application of Metaheuristics to Air Force Problems,” Sponsor: AFOSR/NM, Funding: \$49,972.00.

**NANRY, LTC WILLIAM P. (ENS)**

“Adaptive Interfaces,” Sponsor: DAGSI, Funding: \$2,903.00.

**OXLEY, MARK E., (ENC)**

“Model-Based Object Recognition Using Multiple Sensor Modalities and Invariant Techniques,” Sponsor: DAGSI, Funding: \$26,813.00.

“A Reductionist Approach to Process Discovery,” Sponsor: AFOSR/PIF, Funding: \$6,091.20.

**PACHTER, MEIR N., (ENG)**

“Algorithm Development for On-Line Control of the Airborne Laser (ABL),” Sponsor: AFRL/DEBA, Funding: \$1,283.10.

“Advanced Target Tracking Research,” Sponsor: AFRL/SNF, Funding: \$30,000.00.

“Unmanned Aerospace Vehicles,” Sponsor: AFRL/VACA, Funding: \$5,000.00.

“Cooperative Behavior and Control for Autonomous Munitions,” Sponsor: AFRL/MNGN, Funding: \$10,000.00.

“Satellite Formation Flight Control,” Sponsor: AFOSR/PIF, Funding: \$23,448.97.

**PALAZOTTO, ANTHONY M., ( ENY)**

“Novel Method for Evaluating Material Behavior Under Turbine Engine Operating Conditions,” Sponsor: DAGSI, Funding: \$25,598.00.

“Numerical Investigation of the Gouging Phenomenon Within a Hypersonic Rail-Sled Assembly,” Sponsor: AFOSR, Funding: \$99,414.00.

“High Cycle Fatigue,” Sponsor: AFRL/ML, Funding: \$38,378.40.

**PERRAM, GLEN P., (ENP)**

“Rotational Energy Transfer in Silane for SiN film deposition,” Sponsor: AFOSR/NL, Funding: \$4,471.46.

“High Temperature Superconducting Wires for Power Generation: Pulsed Laser Deposition Plume Dynamics,” Sponsor: AFOSR/PIF, Funding: \$25,652.00.

“Spectral Signatures from Munitions,” Sponsor: SAF, Funding: \$21,734.88.

“High Temperature Superconducting Wires for Power Generation: Pulsed Laser Deposition Plume Dynamics,” Sponsor: AFOSR/NE, Funding: \$16,000.00.

“Saturation Laser Spectroscopy for Measuring the Spatially-Resolved Temperature in the Supersonic Nozzle of a Chemical Oxygen-Iodine Laser,” Sponsor: AFOSR/NI, Funding: \$27,575.00.

“Spectral Signatures from Conventional Munitions. II. Kinetics of Bomb Detonations,” Sponsor: SAF/FMBMB-AFOY, Funding: \$31,430.00.

**PETROSKY, LTC JAMES C., (ENP)**

“Studies On The Effects Of Nuclear Environments On Equipment And Personnel,” Sponsor: DOD DTRA, Funding: \$10,000.00.

**QUINN, DENNIS W., (ENC)**

“Bioinformatic Support of Toxicogenomics,” Sponsor: AFOSR, Funding: \$25,428.00.

**RAINES, Maj RICHARD A., (ENG)**

“PASS Resource Management Strategy,” Sponsor: USCICVPACIJZ, Funding: \$22,151.63.

“Analysis of Networks,” Sponsor: DODJWAC, Funding: \$10,960.00.

**RAQUET, Maj JOHN F., (ENG)**

“Field Test of Low-Power GPS Jammer Location System,” Sponsor: AFOSR/NM, Funding: \$11,700.79.

**RIES, HEIDI R., (ENR)**

“Visiting Scientist Program,” Sponsor: AFOSR/NI, Funding: \$35,869.21.

**ROH, WON B., (ENP)**

“Nonlinear Optical Phenomena in Optical Fibers and Their Application to High-Power Fiber Lasers,” Sponsor: AFRL/DEOF, Funding: \$3,397.14.

“High-Power Efficient, Diode-Pumped Fiber Lasers for Air Force Applications,” Sponsor: AFOSR, Funding: \$26,022.00.

**SHELLEY, MICHAEL L., (ENV)**

“Abiotic and Biochemical Contaminant Fate and Transport,” Sponsor: DAGSI, Funding: \$32,958.00.

**SPENNY, CURTIS H., (ENY)**

“Command and Control of Remotely Operated Vehicles,” Sponsor: DAGSI, Funding: \$28,358.00.

**TEMPLE, MICHAEL A., (ENG)**

“Technical Support, Radar/Target Identification Systems,” Sponsor: AFRL/SNF, Funding: \$15,000.00.

“Technical Support, AFRL/SNR,” Sponsor: AFRL/SNR, Funding: \$1,716.00.

“Technical Support - AFRL/SNRT, Radar Signal Processing,” Sponsor: AFRL/IFFDC, Funding: \$13,000.00.

**TUTTLE, RONALD F., (ENP)**

“MASINT,” Sponsor: DIA, Funding: \$100,000.00.

**WEEKS, DAVID E., (ENP)**

“Nonadiabatic Molecular Reaction Dynamics of B + H<sub>2</sub>,” Sponsor: AFOSR, Funding: \$72,625.00.

**WEISEL, WILLIAM E., (ENV)**

“Multivariable Control: Satellite Formation Flight,” Sponsor: DAGSI, Funding: \$15,375.00.

**WHITE III, Maj EDWARD D., (ENS)**

“Modeling R&D Budgets and Expenditures,” Sponsor: DOD OSD/PAE, Funding: \$20,000.00.

**WOOD, AIHUA K., (ENC)**

“Hybrid Maxwell Solver for Wide-Band Signature Prediction for LO Targets,” Sponsor: DAGSI, Funding: \$24,994.00.

“Scattering & Propagation of Electromagnetic Waves,” Sponsor: AFOSR/PIF, Funding: \$58,896.17.

**YEO, YUNG KEE, (ENP)**

“Intrinsic and Extrinsic Energy Level Studies in GaN,” Sponsor: AFOSR/NI, Funding: \$16,002.73.

“Intrinsic and Extrinsic Energy Level Studies in GaN,” Sponsor: AFOSR/NE, Funding: \$110,000.00.

“Influence of Arsenic Doping on the Electrical and Optical Properties of GaN,” Sponsor: AFOSR/NI, Funding: \$50,672.50.

“Ion Implantation and Metallic Contact Studies for Application to AlGaIn Optoelectronic Devices,” Sponsor: AFOSR/PIF, Funding: \$8,954.83.



### 3.5 REFEREED JOURNAL PUBLICATIONS

[\*Denotes multiple faculty authors.]

#### **BAILEY, WILLIAM F., (ENP)**

Bailey, Wm. F. and Eswar Josyula. "Vibration-Dissociation Coupling Using Master Equations in Nonequilibrium Hypersonic Blunt-Body Flow," *Journal of Thermophysics and Heat Transfer*, Vol.15, No.2: 157-167, (June 01).

#### **BAUER, KENNETH W., JR., (ENS)**

\*Cordeiro, James D., Mark A. Friend, J.O. Miller, Kenneth W. Bauer, Jr., and Jack M. Kloeber, Jr. "Using Simulation to Model Time Utilization of Army Recruiters," *Military Operations Research*, Vol. 6, No. 3: 59-68 (2001).

Greene, Kelly A., Kenneth W. Bauer, Jr., Glenn F. Wilson, Christopher A. Russell, Steven K. Rogers, and Matthew Kabrisky. "Selection of Psychophysiological Features for Classifying Air Traffic Controller Workload in Neural Networks," *International Journal of Smart Engineering System Design*, Vol. 2: 315-330 (2000).

#### **BLECKMANN, CHARLES A. ,(ENV)**

\*Shelley, Michael L., W. Brent Nixon, Charles A. Bleckmann, Philip A. Colborn, and Brian D. Benter. "Dynamic Simulation of Landfill Waste Stabilization," *ASCE Journal of Environmental Engineering*, 127(12) (2001).

#### **BONS, Maj JEFFREY P., (ENY)**

Powell, Orvall A. and Jeffrey P Bons. "Heat Transfer To The Inclined Trailing Wall Of An Open Cavity," *AIAA Journal of Thermophysics and Heat Transfer*, Vol. 15, No. 3: 293-301 (July-Sept 2001).

Bons, Jeffrey P., Rolf Sondergaard, and Richard B. Rivir. "Turbine Separation Control Using Pulsed Vortex Generator Jets," *ASME Journal of Turbomachinery*, 198-206 (Apr 2001).

#### **BROTHERS, Lt Col HEIDI S., (ENV)**

Henry, Elwood and Heidi S. Brothers. "Cost Analysis between SABER and Design Bid Build Contracting Methods," *Journal of Construction Engineering and Management*, 127(5): 359-366 (September/October 2001).

#### **BURGGRAF, LARRY W., (ENP)**

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#### **CHILTON, Lt Col LAWRENCE K., (ENC)**

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**CLAYPOOLE, Maj, ROGER L., JR., (ENG)**

\*Gustafson, S.C., T. Hale, and R. Claypoole, Jr. "Competitively Evolved Probability Densities for Signal Interpolation," *Electronics Letters*, Vol. 37, No. 6: 396-398 (March 2001).

\*Klein, R.W., M.A. Temple, R.A. Raines, and R.L. Claypoole, Jr. "Interference Avoidance Communications Using Wavelet Domain Transformation Techniques," *IEEE Electronic Letters*, Vol. 37, No. 15: 987-989 (19 Jul 01).

**D'AZZO, JOHN J., (ENG)**

\*Pachter, M., J.J. D'Azzo, and A.W. Proud. "Tight Formation Flight Control," *Journal of Guidance, Control, and Dynamics*, Vol. 24, No. 2: 246-254 (March-April 2001).

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\*Parnell, Gregory S., Michael Frimpon, John Barnes, Jack M. Kloeber, Jr., Richard F. Deckro, and Jack A. Jackson. "Safety Risk Analysis of an Innovative Environmental Technology," *Risk Analysis*, Vol. 21, No.1: 143-155 (2001).

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\*Ahoujja, M., Y. K. Yeo, R. L. Hengehold, L. J. Guido, P. Mitev, D. K. Johnstone, and Y. K. Kim. "Influence of arsenic doping on the electrical properties of GaN epitaxial layers grown by MOCVD," *Proceedings of the 2000 International Semiconducting and Insulating Materials Conference (SIMC-XI)*, 27-30 (2000).

**HILL, Lt Col RAYMOND R. (ENS)**

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**MOORE, JAMES T., (ENS)**

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(NOTE: The Graduate Mobility Operations (GMO) non-thesis management program is a component of Air Mobility Command's Advanced Study of Air Mobility executive development program. Students in the GMO program write graduate research papers supporting topics of interest to AMC.)

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Budzik, Anthony C. *Analysis of Military Engagement Options in the Central Asian Republics*. Faculty Advisor: Dr. Craig M. Brandt, DSN 785-6565, ext 4. Sponsor: HQ AMC/DO.

Furst, Douglas A. *Readiness: A Commander's Responsibility*. Faculty Advisor: Lt Col Alan W. Johnson. Sponsor: None.

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Kersey, Vickie S. *Presidential Airlift Support: Is Outsourcing an Option?* Faculty Advisor: Dr. William A. Cunningham, III, DSN 785-6565, ext 4283. Sponsor: White House Airlift Operations.

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### 3.7 SUBSTANTIAL CONSULTATIONS

[\*Denotes duplicate entry, multiple faculty authors.]

#### **AGNES, Maj GREGORY S. (ENY)**

\*Terzuoli, A.J., Jr., (co-PI), G. Agnes, (co-PI), and P.J. Collins. "Comparison of Alternate Wing Control Surfaces."  
Sponsors: DARPA, ASC/EN, AFRL/SN, RATSCAT.

#### **BALDWIN, Maj RUSTY O., (ENG)**

Baldwin, R.O. Air Force Representative for Joint Staff/J6 NETWARS Technical Advisory Group and Member of Architecture and Standards Committee for NETWARS Communications Simulation Effort.

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Sponsor: Air Force Communications Agency.

#### **BIROS, Lt Col DAVID P., (ENV)**

\*Biros, David P., and Alan R. Heminger. Consulted with Air Force Special Operations Command (AFSOC) on development of Strategic Information Plan, 11-13 March 2001.

#### **CANFIELD, Lt Col ROBERT A., (ENY)**

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#### **CLAYPOOLE, Maj ROGER, JR., (ENG)**

Claypoole, R., Jr. served as Image Processing Expert on the Opacity Science Advisory Committee for the Environmental Security Technology Certification Program. This program is run by Air Force Research Labs, AFRL/MLQL, Tyndall AFB FL.

Claypoole, R., Jr. supported the Maverick Missile Program Office (AAC/WMG) to improve maverick tracker performance in the presence of shadows.

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#### **CUNNINGHAM, WILLIAM A., (ENS)**

Provided assistance to the AF Air Transportation Process Reengineering Team



**DECKRO, RICHARD F., (ENS)**

Consulted with a number of units and agencies in conjunction with thesis efforts and normal operations.

\*Raines, R. and R. Deckro. "Multicast Communications Using Low Earth Orbit Satellite Communication Networks." Sponsor: Department of Defense

**DELOACH, Maj SCOTT A., (ENG)**

\*Jacobs, T.M., S.A. DeLoach, T.C. Hartrum, and M. Cox. "Graphical Interface for Agent-Based Mixed-Initiative Collaboration", (DAGSI Funded), Sponsor: AFRL/HECA.

**FRANKE, MILTON E., (ENY)**

Franke, M. E. ASME International (Committee on Organization and Rules), 14-15 November 2000, 15-17 March 2001, 5-7 June 2001, 21-23 September 2001.

Franke, M. E. and Capt Matthew Zuber. SMC/TL, Aviation Blvd., Lawndale, CA, Flow research.

Franke, M. E and Mark Taylor. TRW Space Park, Redondo Beach, CA, Flow research.

Franke, M. E. and William Walter. HYBRICRAFT technology.

Franke, M. E. and Dr. K. Ghia. University of Cincinnati, Cincinnati, OH, Boundary layer research.

Franke, M. E. and Dr. Richard Rivir. AFRL, Wright-Patterson AFB OH, Boundary layer research.

Franke, M. E. and Dr. Patrick McDaniel. AFRL, Kirtland AFB NM, Alternate energy source for propulsion.

Franke, M. E. and Gary Laughlin. Experimental aerodynamics.

Franke, M. E. and Lt Col Cowan. AFRL, Wright-Patterson AFB OH, MEMS.

Franke, M. E. Paper review, *Journal of Sound and Vibration*.

Franke, M. E. Paper review, *ASME Journal of Heat Transfer*.

**GOLTZ, MARK N., (ENV)**

Goltz, M. N. Evaluation of fuel seep near Camp Long/Wonju Air Station, Korea, June-October 2001.

**GUNSCH, GREGG H., (ENG)**

Gunsch, G.H. participant in Digital Forensics Workshop, 6-8 August 2001.

Gunsch, G.H. Legerdemain Project, AFIWC and IW Battle Lab, February-September 2001.

**GUSTAFSON, STEVEN C., (ENG)**

Gustafson, S.C. consultant to (Eglin AFB) on Maverick missile target shadow discrimination (\$40,844), Sponsor: AAC/WMG

\*Magee, E.P., J.A. Lott, and S.C. Gustafson. "Active/Passive Optical Sensor Research," Optical phased arrays for low cost, compact IRCM, \$400K, Sponsor: DAGSI/AFRL/SN

\*Terzuoli, A.J., Jr. (PI), M.A. Temple, S. Gustafson, R. Claypoole, Jr., and R. Tuttle. "Passive Sensor Initiative," Sponsor: NATO C3 Agency, The Hague.

**HARTRUM, THOMAS C., (ENG)**

\*Jacobs, T.M., S.A. DeLoach, T.C. Hartrum, and M. Cox. "Graphical Interface for Agent-Based Mixed-Initiative Collaboration", (DAGSE Funded), Sponsor: AFRL/HECA.

**HEMINGER, ALAN R., (ENV)**

\*Heminger, Alan R., and David P. Biros. Consulted with Air Force Special Operations Command (AFSOC) on development of Strategic Information Plan, 11-13 March 2001.

Heminger, Alan R. "Air Force Institute of Technology Academic Library Information Systems Architecture, Capabilities, and Processes," unpublished report, March 2001.

Heminger, Alan R. "AFIT/RRD Registration Processes," unpublished report, September 2001.

**HILL, Lt Col RAYMOND R., (ENS)**

Invited to attend the Common Human Behavior and Interchange System Workshop sponsored by the Defense Modeling and Simulation Office, June 2001.

**JACOBS, Lt Col TIMOTHY M., (ENG)**

\*Jacobs, T.M. and K.S. Mathias. "Information Retrieval and Visualization for the Joint Battlespace Infosphere," Sponsor: AFRL/IFT.

Jacobs, T.M. "Visual Collaborative Training." Sponsor: HQ AETC/XP.

Jacobs, T.M. "Visualization of Collaborative Information Systems." Sponsor: AFOSR/NM.

Jacobs, T.M., "Multi-agent Systems Engineering and Visualization." Sponsor: AFRL/IFT.

\*Jacobs, T.M., S.A. DeLoach, T.C. Hartrum, and M. Cox. "Graphical Interface for Agent-Based Mixed-Initiative Collaboration," (DAGSI Funded), Sponsor: AFRL/HECA.

**LOTT, Lt Col JAMES A., (ENG)**

Lott, J.A., "Development of Blue and Ultra-Violet Microcavity Lasers," May/June 2001, Sponsor: Northwestern University Center for Quantum Devices.

Lott, J.A., "Development of Integrated Microcavity Lasers and Detectors for Medical Spectroscopy," October 2000/September 2001, Sponsor: Stanford University Solid State & Photonics Lab.

Lott, J.A., "Development of III-V Micro-Electro-Mechanical Systems (MEMS)," October 2000/September 2001, Sponsor: AFRL/SND.

\*Magee, E.P., J.A. Lott, and S.C. Gustafson, "Active/Passive Optical Sensor Research," Optical phased arrays for low cost, compact IRCM, \$400K, Sponsor: DAGSI/AFRL/SN.

**MAGEE, Maj ERIC P., (ENG)**

Magee, E.P. consulting with the ABL Technology Branch (AFRL/DEBS) on ABL tracking and compensation.

Magee, E.P. consulting with the Maverick Missile Program Office (AAC/WMG) to improve maverick tracker performance in the presence of shadows.

\*Magee, E.P., J.A. Lott, and S.C. Gustafson “Active/Passive Optical Sensor Research,” Optical phased arrays for low cost, compact IRCM. Sponsor: DAGSI/AFRL/SN.

**MATHIAS, Maj KARL S., (ENG)**

Mathias, K.S. advised on database system required to store and analyze UAV video. Sponsor: AFRL/IF.

Mathias, K.S. built information server software to support combat modeling and advised developers as they created client software to access server. Sponsor: AFRL/SNZW.

Mathias, K.S. advised virtual distributed laboratory contractor on proper method for collecting intelligence imagery information and began development of intelligent front-end for image analysis. Sponsor: AFRL/SNAS.

Mathias, K.S. advised on use of JAVA database systems with Master Air Attack Planning Tools and began development of tool to detect differences between Air Operation Center (AOC) databases. Sponsor: Command & Control Battlelab.

\*Jacobs, T.M. and K.S. Mathias. “Information Retrieval and Visualization for the Joint Battlespace Infosphere.” Sponsor: AFRL/IFT.

**MAYBECK, PETER S., (ENG)**

Maybeck, P. “Multiple Model Algorithms Applied to Sensor/Actuator Failure Detection and Controller Reconfiguration for Survivable Flight Controller Design.” Sponsors: ASC/HPMT and AFRL/VAC.

Maybeck, P. “Multiple Model Adaptive Estimators Applied to Detection/Compensation of Jamming/Spoofing of GPS-Aided Inertial Navigation Systems.” Sponsor: AFRL/SNAR.

Maybeck, P. “Design of Ultra-Tightly Coupled GPS-Aided Inertial Navigation Systems for the Next Generation of Miniature Munition Systems.” Sponsor: AFRL/MNGN.

**PACHTER, MEIR, (ENG)**

Pachter, M. “Adaptive and Nonlinear Control.” Sponsor: AFOSR.

Pachter, M. “Kalman Filtering.” Sponsor: AFRL/SNAT

Pachter, M. “Cooperative Control.” Sponsor: DAGSI

Pachter, M. “Adaptive Optics.” Sponsor: Sponsor: AFRL/DEBA

Pachter, M. “Cooperative Control for UAVs.” Sponsor: AFRL/VACA

Pachter, M. “Cooperative Control for Air to Ground Munitions.” Sponsor: AFRL/MN

Pachter, M., P. Maybeck, M. Miller, and J. Raquet. “GPS Navigation.” Sponsor: CIGTF

**PERRAM, GLEN P., (ENP)**

Perram, G.P. Member of OSD Joint Technology Office Chemical Lasers Technical Area Working Group which meet at Kirtland AFB, NM in June 2001. Delivered report outlining recommendations for future DoD chemical laser research and development programs.

**RAINES, Maj RICHARD A., (ENG)**

\*Raines, R. and R. Deckro. "Multicast Communications Using Low Earth Orbit Satellite Communication Networks." Sponsor: Department of Defense

\*Baldwin, R., R. Raines, and M. Temple. "Technical Support, Air Force Communication Systems Modeling." Sponsor: Air Force Communications Agency.

**RAQUET, Maj JOHN F., (ENG)**

Raquet, J. and D. Smith. "Development of a Prototype Monitoring System for Aerospace Ground Equipment." Sponsor: AFRL

Raquet, J. and C. Ormsby. "Lunar Navigation Architecture Options Analysis." Sponsor: NASA Glenn Res. Center.

**REHG, Maj MICHAEL T., (ENV)**

Rehg, Michael T. Market research, core competencies, and organizational culture, AFMC/MSG, September 2001.

Rehg, Michael T. Facilitation of Strategic Planning Off-Site for ASC/YT, September 2001.

**SWARTZ, Maj STEPHEN M., (ENS)**

Analysis of system reliability and availability for the F-16 System Program Office

**TEMPLE, MICHAEL A., (ENG)**

\*Baldwin, R., R. Raines, and M. Temple, "Technical Support, Air Force Communication Systems Modeling," \$42K, Sponsor: Air Force Communications Agency.

Temple, M.A., R. Penno (UD), and L Hong (WSU). "Interferometric Radar Clutter Suppression." 2 July 2001-30 June 2003. Sponsor: Joint Air Force Research Laboratory/Dayton Area Graduate Studies Institute (DAGSI).

\*Terzuoli, A.J., Jr., M.A. Temple, P.J. Collins. "Computer Model Simulation & Measurement Studies in Support of Bistatic RCS Characterization." International Joint Venture with European Microwave Signature Lab, Sponsor: AFRL/SN

\*Terzuoli, A.J., Jr. (PI), M.A. Temple, S. Gustafson, R. Claypoole, Jr., and R. Tuttle. "Passive Sensor Initiative." Sponsor: NATO C3 Agency, The Hague.

\*Terzuoli, A.J., Jr., and M.A. Temple, (PI), P.J. Collins. "Investigation of Low-Band Direction Finding Using an Ensemble Integrated Antenna." Sponsor: AFRL/SN.

**TERZUOLI, ANDREW J., JR., (ENG)**

Terzuoli, A.J., Jr., OSU (PI), and WSU. “Foliage Penetration–Targets Under Trees Projects,” Sponsor: AFRL/SNA.

\*Terzuoli, A.J., Jr., M.A. Temple, P.J. Collins. “Computer Model Simulation & Measurement Studies in Support of Bistatic RCS Characterization.” International Joint Venture with European Microwave Signature Lab, Sponsor: AFRL/SN.

\*Terzuoli, A.J., Jr., (co-PI), G. Agnes, (co-PI), and P.J. Collins. “Comparison of Alternate Wing Control Surfaces.” Sponsors: DARPA, ASC/EN, AFRL/SN, RATSCAT.

\*Terzuoli, A.J., Jr., and P.J. Collins (PI). “Various Aspects of LO/CLO/CCLO,” Sponsor: ASC/EN.

\*Terzuoli, A.J., Jr., and M.A. Temple, (PI), P.J. Collins. “Investigation of Low-Band Direction Finding Using an Ensemble Integrated Antennas.” Sponsor: AFRL/SN.

\*Terzuoli, A.J., Jr. (PI), M.A. Temple, S. Gustafson, R. Claypoole, Jr. and R. Tuttle, “Passive Sensor Initiative.” Sponsor: NATO C3 Agency, The Hague.

**TUTTLE, RONALD F. (ENP)**

\*Terzuoli, A.J., Jr. (PI), M.A. Temple, S. Gustafson, R. Claypoole, Jr., and R. Tuttle. “Passive Sensor Initiative,” Sponsor: NATO C3 Agency, The Hague.

### 3.8 PRESENTATIONS

[\*Denotes duplicate entry, multiple faculty authors.]

#### **AGNES, Maj GREGORY S., (ENY)**

Agnes, Gregory S. "Adaptive Membrane Optics." AIAA Dayton Conference, March 2001.

Agnes, Gregoy S. "Multifunctional Structures for Space Applications." AFOSR Polymers Workshop, Dec 2000.

#### **ANDREW, Col JOHN M., (ENS)**

Andrew, John M. and Kirk A. Yost. "Junior/Senior Analyst Special Session." 69<sup>th</sup> Military Operations Research Society Symposium, United States Naval Academy, Annapolis, MD, June 2001.

#### **AROSTEGUI, Maj MARVIN A., (ENS)**

Arostegui, Marvin A. "Analysis Techniques." Short course given at USAFE Regional Supply Squadron, Sembach AB, Germany, January 2001 (four offerings).

Arostegui, Marvin A. "Supply Chain Management." Short course given at USAFE Regional Supply Squadron, Sembach AB, Germany, January 2001 (two offerings).

Arostegui, Marvin A. "Supply Chain Management." Short course given at 100<sup>th</sup> Supply Squadron, RAF Mildenhall, UK, January 2001 (three offerings).

Arostegui, Marvin A. "La Gerencia de la Logística." Talk given at The Center for Hemispheric Defense Studies Seminar, Washington DC, March 2001.

#### **BAILEY, WILLIAM F., (ENP)**

Josyula, E. and W.F. Bailey. *Vibration-Dissociation Coupling Using Master Equations in Nonequilibrium Hypersonic Blunt Body Flows*. presented at the annual AIAA Symposium in Dayton, Ohio in May 2001.

Josyula, E. and Wm. F. Bailey. *The Physics of Vibration-Dissociation Coupling Using Master Equations in Nonequilibrium Hpersonic Flows*. 32nd AIAA Plasmadynamics and Lasers Conference, 11-14 June 2001, Anaheim, CA.

#### **BALDWIN, Maj RUSTY O., (ENG)**

Baldwin, R.O. "Modeling and Simulation in the Department of Defense," DARPA Network Modeling and Simulation Principal Investigator Conference." invited presenter and military panelist, La Jolla CA, April 2001.

\*Thomas, R.W., R.A. Raines, R.O. Baldwin, and M.A. Temple. "Performance Analysis of Multicast Protocols for Mobile Satellite Communication Networks." 2001 International Symposium on Performance Evaluation of Computer and Telecommunication Systems, Orlando FL, 15-19 July 2001.

#### **BAUER, KENNETH W., JR., (ENS)**

\*Alsing, Stephen G., Kenneth W. Bauer, Jr., and J.O. Miller. "Evaluating Competing Classifiers Using a Multinomial Selection Procedure." Artificial Neural Networks in Engineering (ANNIE) International Conference, St. Louis, MO, November 2000.

\*East, Julia A., Kenneth W. Bauer, Jr., and Jeffrey W. Lanning. "Feature Selection for Predicting Pilot Mental Workload." ANNIE International Conference, St. Louis, MO, November 2000.

**BIROS, Lt Col DAVID P., (ENV)**

Burgoon, George, and David P. Biros. "Detecting Deception in the Military Infosphere: Improving and Integrating Human Detection Capabilities with Automated Tools." Air Force Office of Scientific Research, May 2001.

\*Biros, David P., and Alan R. Heminger. "The AFIT Information Resource Management and Information Systems Management Programs." briefed to Mr. John Gilligan, SES, Deputy Chief Information Officer, 11 July 2001.

**BONS, Maj JEFFREY P., (ENY)**

\*Schwabacher, Gregory, J., Bons, Jeffrey P., and Franke, Milton E. "CFD Simulation of an Aircraft Laser Turret with Fairings." Presented at the AIAA 39th Aerospace Sciences Meeting and Exhibit, (paper #AIAA 2001-0889), Reno, NV, 8-11 Jan 2001.

Bons, Jeffrey P., Taylor, Robert, and Rivir, Richard B. "Roughness Measurements on Ground Power Turbines." Presented at the ASM 2000 Materials Solutions Conference & Exhibition in St Louis, MO, 9-12 October 2000.

**BRADY, Lt Col STEPHAN P., (ENS)**

Brady, Stephan P. "Multi-Echelon Reordering with Competing Policies," Multi-Echelon Inventory Conference, University of Michigan, Ann Arbor, 2001.

Brady, Stephan P. "La Gerencia de la Logística." Talk given at The Center for Hemispheric Defense Studies Seminar, Washington DC, March 2001.

Brady, Stephan P. "Career Opportunities for Doctorates in Logistics Management." Council of Logistics Management Doctoral Student Symposium, September 2001.

**BROTHERS, Lt Col HEIDI S., (ENV)**

Kale, William H., III, and Heidi S. Brothers. *Environmental Life Cycle Cost Methodology for Incorporating Pollution Prevention in AF Weapon Systems*. Air & Waste Management Association 94<sup>th</sup> Conference, Orlando FL, 28 June 2001.

**BURGGRAF, LARRY W. (ENP)**

Burggraf, L.W. *SiC Surfaces and Clusters*. Invited Physical Chemistry Seminar. Department of Chemistry, University of Cincinnati, 2 Feb 2001

**CANFIELD, Lt Col ROBERT A., (ENY)**

Canfield, Robert A. "System Design Innovation using Multidisciplinary Optimization and Simulation." AFOSR Contractors/Grantees Workshop on Computational & Applied Mathematics, Stanford CA, 25-27 July 2001.

**CHAMBAL, Capt STEPHEN P., (ENS)**

\*Beauregard, Joseph E., Richard F. Deckro, and Stephen P. Chambal. "Modeling Information Assurance." 69<sup>th</sup> Military Operations Research Society Symposium, United States Naval Academy, Annapolis, MD, June 2001.

Chambal, Stephen P. and J. Bert Keats. "Transient Behavior of Time-Between-Failures of Complex Repairable Systems." National Meeting of the Institute for Operations Research and Management Sciences, San Antonio TX, November 2000.

Chambal, Stephen P. "Confidence Intervals and Hypothesis Testing." Short course given at AF Operational Test and Evaluation Center (AFOTEC) Detachment 2, Eglin AFB, FL, October 2000.

\*Chambal, Stephen P. and Jeffrey W. Lanning. "Probability and Statistics and Design of Experiments." Short course given at AF Test Pilot School, Edwards AFB CA, February 2001.

\*Chambal, Stephen P. and Jeffrey W. Lanning. "Confidence Intervals, Hypothesis Testing, and Design of Experiments," Short course given at HQ AFOTEC, Kirtland AFB NM, March 2001.

**CHILTON, Lt Col LAWRENCE K., (ENC)**

Chilton, L. W. "Domain Decomposition and Mortar Finite Elements." AFOSR Contractors/Grantees Meeting, Computational and Applied Mathematics, Stanford University, Palo Alto CA, July 2001.

Chilton, L. W. "Mixed Methods with Mortar Elements for Stokes Flow." Applied Mathematics Colloquium, Air Force Institute of Technology, Wright-Patterson AFB OH, May 2001.

Chilton, L. W. "Orthogonal Polynomials." Mathematics Department Colloquium, Sinclair Community College, Dayton OH, October 2000.

**CHRISSIS, JAMES W., (ENS)**

\*Calhoun, Kevin M., Richard F. Deckro, James W. Chrissis, James T. Moore, and John C. Van Hove. "A Heuristic Procedure for Scheduling and Re-Scheduling Allocated Attack Aircraft to Targets." 69<sup>th</sup> Military Operations Research Society Symposium (MORSS), United States Naval Academy, Annapolis MD, June 2001.

\*Pinkstaff, Michael S., Richard F. Deckro, and James W. Chrissis. "An Approach to Disrupting Communications Networks," 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis, MD, June 2001.

\*Shelton, Sarah E., James W. Chrissis, Richard F. Deckro, and Brian K. Sperling. "Selecting Optimal Control Portfolios to Improve Army Aviation Safety." 4<sup>th</sup> Military Applications Society Mtg., Quantico VA, May 2001.

**CLAYPOOLE, Maj ROGER L., JR., (ENG)**

Claypoole, R.L., Jr. "AFIT Warrior Brief." presented to Air University Command Board of Visitors, Maxwell AFB AL, 19 January 2001.

Claypoole, R.L., Jr. "AFIT Warrior Brief." presented to the Air Force Institute of Technology Foundation, Wright-Patterson AFB OH, 16 February 2001.

Claypoole, R.L., Jr. "AFIT Warrior Brief." presented to the Air Force Institute of Technology Board of Visitors, 26 March 2001

Claypoole, R.L., Jr. "AFIT Warrior Brief." presented to Air Force Materiel Command Single Manager Conference, 14 June 2001.

Mendenhall, M. and R.L. Claypoole, Jr. "Wavelet-Based Audio Embedding and Audio/Video Compression," SPIE's 46<sup>th</sup> Annual Meeting and the International Symposium on Optical Science and Technology, San Diego CA, August 2001.

Brown, R. and R.L. Claypoole, Jr. "Image Registration Using Redundant Wavelet Transform", SPIE's 46<sup>th</sup> Annual Meeting and the International Symposium on Optical Science and Technology, San Diego CA, August 2001.

\*Klein, R.W., M.A. Temple, R.L. Claypoole, Jr., R.A. Raines, and J.P. Stephens. "Performance Characterization of a Proposed Wavelet Domain Communication System (WDCS)", 5<sup>th</sup> World Multi-Conference on Systematics, Cybernetics, and Informatics (SCI 2001) and 7<sup>th</sup> International Conference on Information Systems Analysis and Synthesis (ISAS 2001), Orlando FL, July 2001.



**COLLINS, Maj, PETER J., (ENG)**

- \*Bradley, C.J., P.J. Collins, M.A. Temple, A.J. Terzuoli, Jr., G. Nesti, J. Fortuny, and G.D. Lewis. "A Study of Existing Bistatic Calibration Techniques." 2001 IEEE AP-S International Symposium on Electromagnetic Theory, Boston MA, May 2001.
- \*Bradley, C.J., P.J. Collins, M.A. Temple, A.J. Terzuoli, Jr., G. Nesti, J. Fortuny, and G.D. Lewis. "Issues in the Calibration of Bistatic RCS Measurements," IEEE Eleventh International Conference on Antennas and Propagation (ICAP 2001), Manchester, UK, April 2001.
- \*Freundl, K.J., G. Agnes, P.J. Collins, A.J. Terzuoli, Jr., and K.S. Wilson. "Using an FVTD to Compare Control Surface Bistatic RCS Mechanisms," Proceedings of the Electromagnetic Code Consortium Annual Symposium, U.S. Government Classified, 28 May – 1 June 2001.
- \*Freundl, K.J., G. Agnes, P.J. Collins, A.J. Terzuoli, Jr. "Comparison of Control Surface Bistatic RCS Mechanisms," Military Sensing Symposia, 47<sup>th</sup> Annual Tri-Service Radar Symposium, U.S. Government Classified, Laurel MD, 22-24 May 2001.
- \*Golla, K.J., P.J. Collins, S. Schneider, and A.J. Terzuoli, Jr. "Broadband Application of High Impedance Ground Planes," 2001 IEEE/AP-S/URSI International Symposium, Boston MA, 8-13 July 2001.
- \*Bradley, C.J., P.J. Collins, M.A. Temple, A.J. Terzuoli, Jr., K.S. Wilson, J. Fortuny, and G.D. Lewis. "A Performance Analysis of Several Bistatic Calibration Techniques," IEEE 2001 International Geoscience and Remote Sensing Symposium, Sydney Australia, 9-13 2001.

**CUNNINGHAM, WILLIAM A., (ENS)**

- Cunningham, William A. "La Gerencia de la Logística." Talk given at The Center for Hemispheric Defense Studies Seminar, Washington DC, March 2001.
- Cunningham, William A. "Civil Reserve Air Fleet and Strategic Mobility." Presentation given at Introduction to Logistics Course, Wright-Patterson AFB OH, April 2001.
- Cunningham, William A. "Strategic Defense Management Initiative: Impact on Time Definite Delivery." Presentation given at Logistics Executive Development Seminar, Wright-Patterson AFB OH, April 2001.
- Cunningham, William A. "Strategic Defense Management Initiative and Its Impact on Transportation." Keynote speech for the AF Material Command Transportation Awards Conference, June 2001.
- Cunningham, William A., "An Introduction to Activity Based Costing in DoD," Presentation given at Introduction to Logistics Course, Wright-Patterson AFB, OH, July 2001.

**DECKRO, RICHARD F., (ENS)**

- \*Beauregard, Joseph E., Richard F. Deckro, and Stephen P. Chambal. "Modeling Information Assurance." 69<sup>th</sup> Military Operations Research Society Symposium (MORSS), United States Naval Academy, Annapolis MD, June 2001.
- Bennett, Sheila G. and Richard F. Deckro. "Vectoring Offensive Information Warfare at the Tactical Level of Operations." 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis, MD, June 2001.
- \*Calhoun, Kevin M., Richard F. Deckro, James W. Chrissis, James T. Moore, and John C. Van Hove. "A Heuristic Procedure for Scheduling and Re-Scheduling Allocated Attack Aircraft to Targets." 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis MD, June 2001.

- Deckro, Richard F. "Value Focused Thinking: Getting the Most Out of Your Decision Analyses." Presentation to Cincinnati/Dayton Chapter of the Institute for Operations Research and Management Sciences (INFORMS), November 2000.
- Deckro, Richard F. "Information Operations Opportunities at AFIT," Phoenix Challenge 2001, AF Information Warfare Center, San Antonio TX, May 2001.
- Deckro, Richard F. "Information Operations Education at AFIT: Opportunities for Cooperation." Phoenix Challenge 2001, AF Information Warfare Center, San Antonio TX, September 2001.
- Deckro, Richard F. and Gregory S. Parnell. "Government Decision Analysis: An Environmental Example." National Meeting of the INFORMS, San Antonio TX, November 2000.
- Deckro, Richard F. and Gregory S. Parnell. "Interfacing Information Operations and Operations Research." 12<sup>th</sup> France/US Simulation and Operations Research Symposium, The Center for Defense Analysis, Paris, France, May 2001.
- Gallan, Roger D., Jr., Jack M. Kloeber, Jr., and Richard F. Deckro. "Building a Safety Portfolio to Reduce Army Aviation Losses: The UH-60 Blackhawk Project." Decision Analysis Affinity Group, Houston TX, May 2001.
- Garrett, Laura K. and Richard F. Deckro. "Malicious hackers: A Framework for Analysis and Case Study." 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis MD, June 2001.
- \*Pinkstaff, Michael S., Richard F. Deckro, and James W. Chrissis. "An Approach to Disrupting Communications Networks." 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis MD, June 2001.
- Renfro, Robert S., II and Richard F. Deckro, "A Preliminary Analysis of an Iranian Acquisition Social Network," 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis MD, June 2001 (Secret).
- \*Shelton, Sarah E., James W. Chrissis, Richard F. Deckro, and Brian K. Sperling. "Selecting Optimal Control Portfolios to Improve Army Aviation Safety." 4<sup>th</sup> Military Applications Society Mtg., Quantico VA, May 2001.
- DELLA-ROSE, Maj DEVIN J., (ENP)**
- Della-Rose, Devin J. *The Space Environment, Space Weather Storms, and Effects on Technology*. Address to Dayton Institute of Electrical and Electronics Engineers (IEEE) meeting, Dayton OH. 16 October 2001.
- DELOACH, Maj SCOTT A., (ENG)**
- DeLoach, S.A. "Engineering Multiagent Systems." invited talk at the Twelfth Annual Midwest Artificial Intelligence and Cognitive Science Conference (MAICS 2001), Miami University, Oxford OH, 1 April 2001.
- DeLoach, S.A. "Specifying Agent Behavior as Concurrent Tasks: Defining the Behavior of Social Agents." Fifth Annual Conference on Autonomous Agents, Montreal, Canada, 28 May-1 June 2001.
- DeLoach, S.A. "Analysis and Design Using MaSE and agentTool," 12<sup>th</sup> Midwest Artificial Intelligence and Cognitive Science Conference (MAICS 2001), Miami University, Oxford OH, 31 March-1 April 2001.
- O'Malley, S.A. and S.A. DeLoach. "Determining When to Use an Agent-Oriented Software Engineering Paradigm." Second International Workshop on Agent-Oriented Software Engineering (AOSE-2001), in conjunction with the Fifth International Conference on Autonomous Agents 2001, Montreal, Canada, 29 May 2001.
- Raphael, M. J. and S.A. DeLoach, "A Knowledge Base for Knowledge-Based Multiagent System Construction." National Aerospace and Electronics Conference (NAECON), Dayton OH, 10-12 October 2000.

Sparkman, C.H., S.A. DeLoach, and A.L. Self. "Automated Derivation of Complex Agent Architectures from Analysis Specifications." Second International Workshop on Agent-Oriented Software Engineering (AOSE-2001), The Fifth International Conference on Autonomous Agents 2001, Montreal Canada, 29 May 2001.

Bryson, J., K. Decker, S.A. DeLoach, M. Huhns, and M. Wooldridge (panel). "Agent Development Tools." in Intelligent Agents VII. Agent Theories Architectures and Languages, 7<sup>th</sup> International Workshop (ATAL 2000), Boston MA, 7-9 July 2000.

O'Malley, S.A., A.L. Self, and S.A. DeLoach. "Comparing Performance of Static Versus Mobile Multiagent Systems." National Aerospace and Electronics Conference (NAECON), Dayton OH, 10-12 October 2000.

#### **FRANKE, MILTON E., (ENY)**

\*Schwabacher, Gregory J., Jeffrey P. Bons, & Milton E. Franke. "CFD Simulation of an Aircraft Turret Model with Fairings." AIAA Paper No. 2001-0889, AIAA 39th Aerospace Sciences Mtg. & Ex., Reno NV, 8-11 Jan 01.

\*Hartsfield, C. R., P. I. King, and M. E. Franke. "Analysis of the Application of a Triggered Isomer Heat Exchanger as a Replacement for the Combustion Chamber in an Off-the-Shelf Turbojet," Proceedings of the 37th Heat Transfer and Fluid Mechanics Institute, California State Univ., Sacramento CA: 35-52, 31 May-1 June 2001.

Galbreath, Charles S. and M. E. Franke. "Quality Initiatives in the Air Force Development of Reusable Launch Vehicles." AIAA Paper No. 2001-4621, AIAA Space 2001 Conf. & Ex., Albuquerque NM, 28-30 August 2001.

#### **GALLAGHER, Lt Col MARK A., (ENS)**

\*Cullenbine, Christopher A., Mark A. Gallagher, and James T. Moore. *A Tabu Search Approach to the Weapons Assignment Model*. National Meeting of the Institute for Operations Research and Management Sciences, San Antonio TX, November 2000.

Porter, Paul H. and Mark A. Gallagher. "Predicting R&D Budgets During Fiscal Curtailment with the Weibull Model." Department of Defense Cost Analysis Symposium, Williamsburg VA, January 2001.

Porter, Paul H. and Mark A. Gallagher. "Revised R&D Budgets for Funding Postponements." 69<sup>th</sup> Military Operations Research Society Symposium (MORSS), U. S. Naval Academy, Annapolis MD, June 2001.

Shariff, Guenever L. and Mark A. Gallagher. "Estimating Budget Relationships with the Leontief Input-Output Model." 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis MD, June 2001.

Tapp, Charles S. and Mark A. Gallagher. "BRAC to the Future: Analysis of Cost Savings from Base Closures." 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis MD, June 2001.

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**GUNSCH, GREGG H., (ENG)**

Gunsch, G.H. "Tutorial on Information Warfare," NAECON, Dayton OH, 10 October 2000.

Gunsch, G.H. "Information System Security," IEEE/ACM, Dayton OH, 19 October 2000.

Gunsch, G.H. "Denial of Service Attacks," IEEE, Dayton OH, 21 June 2001.

**HARTRUM, THOMAS C., (ENG)**

Hartrum, T.C. and J.C. Nonnweiler. "Software System Integration Methodology Using Formal Specifications." 44<sup>th</sup> IEEE 2001 Midwest Symposium on Circuits and Systems (MWSCAS 2001), Dayton OH, 14-17 August 2001.

**HEMINGER, ALAN R., (ENV)**

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\*Heminger, Alan R., and David P. Biros. "The AFIT Information Resource Management and Information Systems Management Programs." briefed to Mr John Gilligan, SES, Deputy Chief Information Officer, 11 July 2001.

**HENGESOLD, ROBERT L., (ENP)**

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\*McKay, M.R., M.A. Marciniak, R.L. Hengesold, and G.W. Turner, "*Time resolved photoluminescence of InAs/GaN quantum well lasers*," American Physical Society-Ohio Section Spring 2001 Meeting, Kent State University, 21 Apr 01.

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**HILL, Lt Col RAYMOND R., (ENS)**

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- \*Harder, Robert W., Gary W. Kinney, Jr., Raymond R. Hill, Jr., and James T. Moore. "A Quick-Running Routing Algorithm for UAV Reconnaissance Operations," National Meeting of the Institute for Operations Research and Management Sciences, San Antonio TX, November 2000.
- \*Gregory A. McIntyre, J. O. Miller, and Raymond R. Hill, Jr. "Applications of Discrete Event Modeling to Military Problems," 2000 Winter Simulation Conference Orlando, FL, December 2000.
- \*Hill, Raymond R., Jr. and James T. Moore. "Tutorial on Tabu Search for Military Applications," 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis MD, June 2001.
- Hill, Raymond R., Jr. and Gregory A. McIntyre. "Genetic Algorithms for Model Optimization," Simulation Technology and Training Conference 2001, Canberra Australia, May 2001.

**HUFFINES, Maj GARY R., (ENP)**

- Orville R.E. and G.R. Huffines. "Eleven years of cloud-to-ground lightning in the continental United States, 1989-1999: Large scale & small scale results," Int. Lightning Detection Conference, Tucson Arizona, 7-8 Nov 2000.
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**JACOBS, Lt Col TIMOTHY M., (ENG)**

- Jacobs, T.M. and S. Butler. "Collaborative Visualization for Military Planning," SPIE's International Symposia on the Convergence of Information Technologies and Communications (ITCom), Denver CO, August 2001.

**JODOIN, Lt Col VINCENT J., (ENP)**

- Jodoin, V.J. "Improvement of the Nuclear Weapon Source Model for the Hazard Prediction & Assessment Capability Code," Invited paper presented at 1st Annual DTRA/AF S&T Symp., Ft Belvoir VA, 17-18 Oct 00.

**JOHNSON, Lt Col ALAN W., (ENS)**

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**KHAROUFEH, JEFFREY P., (ENS)**

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**LAMONT, GARY B., (ENG)**

Lamont, G.B. and B.A. Kadrovach. "Design and Analysis of Swarm Based Sensor Systems," 2001 Midwest Symposium of Circuits and Systems (MWSCAS'01), Dayton OH, August 2001.

Lamont, G.B. and J.B. Zydallis. "Solving of Discrete Multiobjective Problems Using an Evolutionary Algorithm with a Repair Mechanism," 2001 Midwest Symp. of Circuits & Systems (MWSCAS'01), Dayton OH, Aug 01.

Lamont, G.B. and D.M. Strong. "A Parallel Implementation and Analysis of the Genetic Rule and Classifier Construction Environment," 2001 Parallel and Distributed Processing Techniques and Applications Conference (PDPTA '01), Las Vegas NV, 25-28 June 2001.

Lamont, G.B. and B. Secrest. "Communication in Particle Swarm Optimization Illustrated by the Traveling Salesman Problem," 2001 Particle Swarm Optimization Workshop, Indianapolis IN, 6-7 April 2001.

Lamont, G.B., C. Kinzig, T. Hirunaragan, and R. Marmelstein. "Summarizing Data Sets for Classification," 2001 International Conference on Artificial Intelligence (IC-IA 2001), Las Vegas NV, 25-28 June 2001.

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Lamont, G.B., J.B. Zydallis, and D.A. Van Veldhuizen. "A Statistical Comparison of Multiobjective Evolutionary Algorithms Including the MOMGA-II," 2001 Evolutionary Multiobjective Optimization (EMO'01) Conference, Zurich, Switzerland, 7-9 March 2001.

Lamont, G.B., S.R. Michaud, J.B. Zydallis, and R. Pachter. "Scaling a Genetic Algorithm to Medium-Sized Peptides by Detecting Secondary Structures with an Analysis of Building Blocks," "First International Conference on Computational Nanoscience (ICCN'01), Hilton Head SC, 19-21 March 2001.

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\*Strong, D.M., E.P. Magee, and G.B. Lamont. "Implementation and Test of Wave Optics Code Using Parallel FFT Algorithms", in *Optics in Atmospheric Propagation and Adaptive Systems VI*, 2000.

**LANNING, Maj JEFFREY W., (ENS)**

\*Chambal, Stephen P. and Jeffrey W. Lanning. "Probability and Statistics and Design of Experiments," Short course given at AF Test Pilot School, Edwards AFB CA, February 2001.

\*Chambal, Stephen P. and Jeffrey W. Lanning. "Confidence Intervals, Hypothesis Testing, and Design of Experiments," Short course given at HQ AFOTEC, Kirtland AFB NM, March 2001.

\*East, Julia A., Kenneth W. Bauer, Jr., and Jeffrey W. Lanning. "Feature Selection for Predicting Pilot Mental Workload," Artificial Neural Networks in Engineering International Conference, St. Louis, MO, November 2000.

**LAPUMA, Maj PETER T., (ENV)**

LaPuma, Peter T. "Recirculation Model for Industrial Air," *Air & Waste Management Association 94<sup>th</sup> Conference*, Orlando FL, June 2001.

**LIEBST, BRADLEY S., (ENY)**

\*Hughson, M. C., and Liebster, B. S.. "A Vision for Graduate Aerospace Education in the 21st Century Air (and Space) Force," presented at the 39th Aerospace Sciences Meeting, Reno NV, 8-11 January 2001.

\*Spenny, C.H., B.S. Liebster, T. Chelette, C. Folecsu, and J Sigda. "Development of a Sustainable-G Dynamic Flight Simulator," Presented at the AIAA Modeling and Simulation Technologies Conference, Denver CO, Aug 2000.

Liebster, Bradley S. "History of Flight and Aerospace Engineering." Address to the Honors Seminar of Metropolitan Dayton. Air Force Institute of Technology, Wright-Patterson AFB OH, 7 December 2000.

**LOTT, Lt Col JAMES A., (ENG)**

Lott, J.A. "Microcavity Lasers Based on Quantum Dots," invited talk for the Advanced Research Workshop on Semiconductor Nanostructures, Queenstown, South Island, New Zealand, 5-9 February 2001.

Lott, J.A. "Physics of Quantum Dot VCSELs," invited talk at the University of Canterbury, Christchurch, New Zealand, 9 February 2001.

Lott, J.A. "Fabrication and Assembly Studies of III-V Semiconductor Microlaser Disks and Actuators: Toward Optical Nanoelectromechanical Systems," Advanced Research Workshop, Future Trends in Microelectronics: The Nano-Mellennium, Ile de Bendor, France, 25-29 June 2001.

Lott, J.A. "Quantum Dot Vertical Cavity Lasers," invited talk for the IEEE Summer Topicals: VCSELs, Copper Mountain CO, 30 July-1 August 2001.

Lott, J.A., N.N. Ledentsov, V.M. Ustinov, Zh.I. Alferov, and D. Bimberg. "Tunable 1.3  $\mu\text{m}$  Quantum Dot VCSELs on GaAs Substrates," invited talk for SPIE ITCOM 602, Denver CO, 20-24 August 2001.

Lott, J.A., W.J. Siskaninets, and M.J. Noble. "Tunable Red Vertical Cavity Surface Emitting Lasers Using Electrostatic Actuation," Conference on Optoelectronics and Microelectronic Materials and Devices, Bundoora (Melbourne), Victoria, Australia 6-8 December 2000.

Lott, J.A., N.N. Ledentsov, V.M. Ustinov, D. Bimberg, and Zh.I. Alferov. "Continuous Wave 1.3  $\mu\text{m}$  InAs-InGaAs Quantum Dot VCSELs on GaAs Substrates," invited talk for CLEO 01, Baltimore MD, 7-11 May 2001.

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#### **LOWTHER, Lt Col RONALD P., (ENP)**

Lowther, Ronald P. "Weather Factors Involved in Operation Eagle Claw" [Analysis of the 1980 Iranian Hostage Rescue Attempt and Lessons Learned], Address to Air Force Institute of Technology students and faculty. Air Force Institute of Technology, Wright-Patterson AFB OH, 28 January 2001.

#### **MAGEE, Maj ERIC P., (ENG)**

Magee, E.P. Optical Propagation Short Course at the Directed Energy Symposium, Kirtland AFB NM, 30 Oct 2000.

Hall, H.J., E.P. Magee, and W.D. Cowan. "Control of Line-Addressable Micromirror Phase Arrays Using Electromechanical Bistability", *High-Resolution Wavefront Control: Methods, Devices, and Applications III*, San Diego CA, 2001.

\*Strong, D.M., E.P. Magee, and G.B. Lamont. "Implementation and Test of Wave Optics Code Using Parallel FFT Algorithms", *Optics in Atmospheric Propagation and Adaptive Systems VI*, Barcelona, Spain, 2000.

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#### **MALL, SHANKAR, (ENY)**

Avram, J. B. and S. Mall. "Fatigue response of Thin Stiffened Aluminum Cracked Panels Repaired with Bonded Composite Patches" presented at DOD Composite Repair Workshop, Nov. 16-17, 2000.

Steel, S. G., L. P. Zawada, and S. Mall. "Fatigue Behavior of Nextel 720/Alumina Composite at Room and Elevated Temperature", presented at the 25th Annual Conference on Composites, Materials and Structures, Cocoa Beach, 20-24 Jan. 2001.

Mall, S. "Response of Graphite/Epoxy Laminates Embedded with Piezoelectric Sensor under Fatigue Loading," presented at 25th Annual Conference on Composites, Materials and Structures, Cocoa Beach, 20-24 Jan. 2001.

Mall, S., V. Jain, S. A. Namjoshi, and C. D. Lykins. "Fretting Fatigue Crack Initiation Behavior of Ti-6Al-4V," Third International Symposium on Fretting Fatigue, Nagaoka, Japan, May 15-18, 2001.

Sanders, J. F., S. K. Sharma, A. K. Rai, R. Weiju, and S. Mall. "Evaluation of Coatings for High Cycle Fatigue Mitigation", presented at The 2001 Annual Meeting of The Society of Tribologists and Lubrication Engineers (STLE), Orlando, FL, May 2001.



Neslen, C. and S. Mall. "Fretting Fatigue damage characterization and Crack Detection Analysis", presented at AEROMAT 2001, Long Beach CA, June 11-14, 2001.

Mall, S. "Fretting Fatigue Research at AFRL/ML" presented at AFOSR Metallic and Ceramics Materials Program Review, in Snowbird, Utah, August 20-21, 2001

**MATHIAS, Maj KARL S., (ENG)**

Mathias, K.S. taught a JAVA Short Course to AFIT/ENG and AFRL/IF, 26 Mar 01-1 Jun 01.

**MARCINIAK, Lt Col MICHAEL A., (ENP)**

\*McKay, M.R., M.A. Marciniak, R.L. Hengehold, and G.W. Turner. "Time resolved photoluminescence of InAs/GaInSb quantum well lasers," American Physical Society-Ohio Section Spring 2001 Meeting, Kent State University, 21 Apr 01.

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**MAYBECK, PETER S., (ENG)**

Brehm, T.E. and P.S. Maybeck. "Generalized LQG Design by Filter and Controller Model Selection," 2000 IEEE Conference on Decision and Control, Sydney, Australia, December 2000.

**MILLER, Lt Col J.O., (ENS)**

\*Alsing, Stephen G., Kenneth W. Bauer, Jr., and J.O. Miller. "Evaluating Competing Classifiers Using a Multinomial Selection Procedure," Artificial Neural Networks in Enrg. International. Conference, St. Louis, MO, Nov 00.

\*Gregory A. McIntyre, J. O. Miller, and Raymond R. Hill, Jr. "Applications of Discrete Event Modeling to Military Problems," 2000 Winter Simulation Conference, Orlando, FL, December 2000.

**MILLER, Lt Col, MIKEL, (ENG)**

Tredway B., M. Miller, and J. Raquet. "Using GPS to Collect Trajectory Data for Ejection Seat Design, Validation, and Testing," ION GPS-2001, Salt Lake City UT, Sept 2001.

Miller, M. and J. Raquet. "Introduction to GPS," 6-week short course presented at AFRL, Jul-Aug 2001.

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**MOORE, JAMES T., (ENS)**

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\*Calhoun, Kevin M., Richard F. Deckro, James W. Chrissis, James T. Moore, and John C. Van Hove. "A Heuristic Procedure for Scheduling and Re-Scheduling Allocated Attack Aircraft to Targets," 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis, MD, June 2001.

\*Cullenbine, Christopher A., Mark A. Gallagher, and James T. Moore. "A Tabu Search Approach to the Weapons Assignment Model," National Meeting of the Institute for Operations Research and Management Sciences (INFORMS), San Antonio, TX, November 2000.

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**OXLEY, MARK E., (ENC)**

Oxley, M. E. and M. A Carter. "Capability Measures of Artificial Neural Network Architectures based on Soft Shattering," *SPIE AeroSense, Applications & Science of Computational Intelligence IV*, Orlando FL, April 2001

Oxley, M. E. "Measuring the Capability of Classifiers", AFRL/IFTA, Rome, NY. June 2001.

**PACHTER, MEIR, (ENG)**

Pachter, M. "IR Interceptor Missiles: Guidance and Control," AFIT Seminar, 8 November 2000.

Pachter, M. "Stochastic Modeling Based DGPS Estimation Algorithm," IEEE Conference on Decision and Control, Sydney, Australia, 12-15 December 2000.

Pachter, M. and J. Hebert. "Cooperative Aircraft Trajectories – Minimum Radar Exposure," Workshop for Cooperative Control and Optimization, Gainesville FL, 3-5 December 2000.

Pachter, M. and J. Hebert. "Minimizing Radar Exposure in Air Vehicle Path Planning," 41<sup>st</sup> Israel Annual Conference on Aerospace Sciences, Tel Aviv, Israel, 21-22 February 2001.

Pachter, M. and J. Hebert. "Optimal Aircraft Trajectories for Radar Exposure Minimization," American Control Conference, Arlington VA, 25-27 June 2001.

Pachter, M. and P.R. Chandler. "UAV Cooperative Control," American Control Conf., Arlington VA, 25-27 Jun 01.

Chandler, P.R. and M. Pachter. "UAV Cooperative Classification," Workshop for Cooperative Control and Optimization, Gainesville FL, 3-5 December 2000.

Chandler, P.R. and M. Pachter. "Dynamic Network for Flow Optimization Models for Air Vehicle Resource Allocation," American Control Conference, Arlington VA, 25-27 June 2001.

Hall, J. and M. Pachter. "Three Dimensional Formation Maneuvers," IEEE Conference on Decision and Control, Sydney, Australia, 12-15 December 2000.

Oppenheimer, M. and M. Pachter. "Adaptive Optics Controller for the Airborne Laser," AeroSense Conference, Orlando FL, 16-21 April 2001.

Chandler, P.R. and M. Pachter. "Cooperative Control of UAV Rendezvous," American Control Conference, Arlington VA, 25-27 June 2001.

Schindeler, N. and M. Pachter. "Phugoid Damping Control," 2001 AIAA Guidance, Navigation and Control Conference, Montreal, Canada, 6-9 August 2001.

Chandler, P.R. and M. Pachter. "Hierarchical Control of Autonomous Teams," 2001 AIAA Guidance, Navigation and Control Conference, Montreal, Canada, 6-9 August 2001.

Wagner, G., D. Jacques, and M. Pachter. "An Analytical Study of Drag Reduction in Tight Formation Flight," 2001 AIAA Guidance, Navigation and Control Conference, Montreal, Canada, 6-9 August 2001.

Passino, K., M. Polycarpou, P.R. Chandler, and M. Pachter. "Distributed Cooperation and Control for Autonomous Air Vehicles," Workshop for Cooperative Control and Optimization, Gainesville FL, 3-5 December 2000.

Hebert, J., M. Novy, D. Jacques, and M. Pachter. "Cooperative Control of UAVs," 2001 AIAA Guidance, Navigation and Control Conference, Montreal, Canada, 6-9 August 2001.

**PALAZOTTO, ANTHONY, N., (ENY)**

Palazotto, A. and S. Naboulsi. "Elastic Plastic Damage Model For Composites Under High Intensity Loads", 15<sup>th</sup> Technical Conference for the American Society of Composites , Texas A&M Univ., 24-27 Sep 2001.

Palazotto, A. and A. Forral. " Nonlinear Dynamic Analysis of Plates and Shells Considering Chaotic Behavior", Presented at the ASME symposium on Nonlinear Shell Dynamics, Orlando FL, 6-10 Nov 2000.

Laird, D. and A. Palazotto. "High Speed Test Track Slipper/Rail Gouging Phenomena Simulation", ASME Pressure Vessel and Piping Conference, Atlanta, GA., July 22-26, 2001.

Palazotto, A. and Boatwright, J., Finite Element Analysis and Progressive Failure of a Composite Shell", presented at the Sixth U.S. National Congress of Computational Mechanics, Aug. 1-3, 2001, Dearborn, MI.

**PERRAM, GLEN P., (ENP)**

Bagby, W.F., J.A. Orson, and G.P. Perram. "Spectral and Temporal Characterization of the Infrared Emissions from Conventional Munitions Detonations", AIAA Space Conf. & Exposition, Albuquerque NM, 27-30 Aug 2001.

Boss, N.C., R.R. Biggers, J.G. Jones, I. Maartense, G.P. Perram, R. Rogow, G. Koslowski, and T.L. Peterson. "Process Control for Pulsed-Laser Deposition of YBCO Superconductors," International Conference on Metallurgical Coatings and Thin Films, 30 April – 4 May 2001.

**POTOCZNY, HENRY, (ENG)**

Presented a program on cryptography to the Dayton Honor Seminars, 27 October 2000.

**RAINES, Maj RICHARD A., (ENG)**

Raines, R.A. "AFIT Warrior Brief," presented to the Commandant, Naval Post Graduate School, Wright-Patterson AFB OH, September 2001.

Raines, R.A. "AFIT Warrior Brief," presented to Air Force Materiel Command Single Manager Conference, Centerville OH, June 2001.

Raines, R.A. "AFIT Warrior Brief," presented to Air Force Institute of Technology Board of Visitors, Wright-Patterson AFB OH, March 2001.

Raines, R.A. "AFIT Warrior Brief," presented to Air Force Institute of Technology Foundation, Wright-Patterson AFB OH, February 2001.

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\*Thomas, R.W., R.A. Raines, R.O. Baldwin, and M.A. Temple. "Performance Analysis of Multicast Protocols for Mobile Satellite Communication Networks," 2001 International Symposium on Performance Evaluation of Computer and Telecommunication Systems, Orlando FL, 15-19 July 2001.

\*Roberts, M.L., M.A. Temple, R.A. Raines, and E.P. Magee. "Initial Acquisition Performance of a Transform Domain Communication System: Modeling and Simulation Results," MILCOM '00, Los Angeles CA, 2000.

\*Roberts, M.L., M.A. Temple, R.A. Raines, and J.P. Stephens, Sr., "Transform Domain Communications: Interference Avoidance and Acquisition Capabilities," IEEE National Aerospace and Electronics Conference, First Place Da Vinci Predictive Paper, Dayton OH, 10-12 October 2000.

\*Klein, R.W., M.A. Temple, R.L. Claypoole, Jr., R.A. Raines, and J.P. Stephens, "Performance Characterization of a Proposed Wavelet Domain Communication System (WDCS)," 5<sup>th</sup> World Multi-Conference on Systematics, Cybernetics, and Informatics (SCI 2001) and 7<sup>th</sup> International Conference on Information Systems Analysis and Synthesis (ISAS 2001), Orlando FL, July 2001.

**RAQUET, Maj JOHN F., (ENG)**

\*Tredway B., M. Miller, and J. Raquet. "Using GPS to Collect Trajectory Data for Ejection Seat Design, Validation, and Testing," ION GPS-2001, Salt Lake City UT, Sept 2001.

\*Miller, M. and J. Raquet. "Introduction to GPS," 6-week short course presented at AFRL, Jul-Aug 2001.

**REED, Maj TIMOTHY S., (ENV)**

Reed, Timothy S. "Coming to America: An exploratory study of foreign firms conducting initial public offerings (IPOs) in the United States," Entrepreneurship Division, *Academy of Management Annual Meeting*, Washington, D.C., August 2001.

**REHG, Maj MICHAEL T., (ENV)**

Miceli, M. P., J. P. Near, J. van Scotter, and M. Rehg. "Individual differences and whistle-blowing," Annual Meeting of the Academy of Management, Washington D.C., August 2001.

**ROH, WON B., (ENP)**

Russell, T. H., W. B. Roh, and J. R. Marciante. "Incoherent Laser Beam Combining via Stimulated Brillouin Scattering in Multi-mode Fibers," IEEE/LEOS Annual Mtg. Rio Grande, Puerto Rico, 13-16 Nov 00.

Marciante, J.R. and W. B. Roh, "Analysis of the self-pumped phase-conjugation geometry in photo-refractive and Kerr materials," Annual Meeting of the Optical Society of America, Providence RI, 22-26 October 2000.

Russell, T. H. and W. B. Roh, "SBS Fiber Beam Combiner: the threshold of the second Stokes excitation," 2001 Solid State and Diode Laser Technical Review, SSDLTR-2001, Albuquerque NM, 21-24 May 01.

**SHELLEY, MICHAEL L., (ENV)**

\*Shelley, Michael L., W. Brent Nixon, and Charles A. Bleckmann. "The Challenge of Pursuing a System Dynamics Approach in Analyzing Complex Natural Systems," The 19<sup>th</sup> International Conference of the System Dynamics Society, Atlanta GA, 23-27 July 2001.

\*Slusser, Thomas J., Michael L. Shelley, James P. Amon, Mark N. Goltz, and Abinash Agrawal. "Dechlorination potential of wetland soils for treatment of contaminated groundwater," Sixth International Conference on In Situ and On-Site Bioremediation, San Diego CA, 4-7 June 2001.

\*Shelley, Michael L., James P. Amon, Abinash Agrawal, and Mark N. Goltz. "Abiotic & Biochemical Fate & Transport of Contaminants," Joint AFRL/DAGSI Research Prog. Symp. 2001, AFIT, WPAFB OH, Feb 2001.

**SMITH, Lt Col E. PRICE, (ENY)**

Smith, E., and A. Rogers. "Project Kookaburra: Teaching Systems Engineering Using the Design of Unmanned Aerial Vehicles," International Council on Sys. Engrg., Annual International Symp, Melbourne, Australia, Jul 01.

**SWARTZ, Lt Col STEPHEN M., (ENS)**

\*Filcek, Paul G., Stephen M. Swartz, and Alan W. Johnson. "Mission Resources Value Assessment Technique—Value Focused Thinking," 69<sup>th</sup> Military Operations Research Society Symposium (MORSS), United States Naval Academy, Annapolis MD, June 2001.

Swartz, Stephen M., "Mission Resources Value Assessment Technique and the Advanced Logistic Project," 4<sup>th</sup> Annual Defense Advanced Research Projects Agency Symposium on the Advanced Logistics Project, Washington DC, December 2000.

\*Wakefield, David J., Alan W. Johnson, and Stephen M. Swartz. "Mission Resources Value Assessment Technique—Genetic Annealing," 69<sup>th</sup> MORSS, United States Naval Academy, Annapolis, MD, June 2001.

**TEMPLE, Maj MICHAEL A., (ENG)**

Klein, R.W., M.A. Temple, R.L. Claypoole, Jr., R.A. Raines, and J.P. Stephens. "Performance Characterization of a Proposed Wavelet Domain Communication System (WDCS)," 5<sup>th</sup> World Multi-Conference on Systematics, Cybernetics, and Informatics (SCI 2001) and 7<sup>th</sup> International Conference on Information Systems Analysis and Synthesis (ISAS 2001), Orlando FL, July 2001.

Roberts, M.L., M.A. Temple, R.A. Raines, and E.P. Magee. "Initial Acquisition Performance of a Transform Domain Communication System: Modeling and Simulation Results," *MILCOM '00*, Los Angeles CA, 2000.

Roberts, M.L., M.A. Temple, R.A. Raines, and J.P. Stephens, Sr. "Transform Domain Communications: Interference Avoidance and Acquisition Capabilities," IEEE National Aerospace and Electronics Conference, First Place Da Vinci Predictive Paper, Dayton OH, 10-12 October 2000.

\*Bradley, C.J., P.J. Collins, M.A. Temple, A.J. Terzuoli, Jr., G. Nesti, J. Fortuny, and G.D. Lewis. "A Study of Existing Bistatic Calibration Techniques," 2001 IEEE AP-S International Symposium on Electromagnetic Theory, Boston MA, May 2001.

\*Bradley, C.J., P.J. Collins, M.A. Temple, A.J. Terzuoli, Jr., G. Nesti, J. Fortuny, and G.D. Lewis. "Issues in the Calibration of Bistatic RCS Measurements," IEEE Eleventh International Conference on Antennas and Propagation (ICAP 2001), Manchester, UK, April 2001.

\*Bradley, C.J., P.J. Collins, M.A. Temple, A.J. Terzuoli, Jr., K.S. Wilson, J. Fortuny, and G.D. Lewis. "A Performance Analysis of Several Bistatic Calibration Techniques," IEEE 2001 International Geoscience and Remote Sensing Symposium, Sydney, Australia, 13 Sep 2001.

\*Thomas, R.W., R.A. Raines, R.O. Baldwin, and M.A. Temple. "Performance Analysis of Multicast Protocols for Mobile Satellite Communication Networks," 2001 International Symposium on Performance Evaluation of Computer and Telecommunication Systems, Orlando FL, 15-19 July 2001.

**TERZUOLI, ANDREW J., JR., (ENG)**

\*Bradley, C.J., P.J. Collins, M.A. Temple, A.J. Terzuoli, Jr., G. Nesti, J. Fortuny, and G.D. Lewis. "A Study of Existing Bistatic Calibration Techniques," 2001 IEEE AP-S International Symposium on Electromagnetic Theory, Boston MA, May 2001.

\*Bradley, C.J., P.J. Collins, M.A. Temple, A.J. Terzuoli, Jr., G. Nesti, J. Fortuny, and G.D. Lewis. "Issues in the Calibration of Bistatic RCS Measurements," IEEE Eleventh International Conference on Antennas and Propagation (ICAP 2001), Manchester, UK, April 2001.

\*Freundl, K.J., G. Agnes, P.J. Collins, A.J. Terzuoli, Jr., and K.S. Wilson. "Using an FVTD to Compare Control Surface Bistatic RCS Mechanisms," Electromagnetic Code Consortium Annual Symposium, U.S. Government Classified, Kauai, Hawaii, 28 May – 1 June 2001.

\*Freundl, K.J., G. Agnes, P.J. Collins, A.J. Terzuoli, Jr. "Comparison of Control Surface Bistatic RCS Mechanisms," Military Sensing Symposia, 47<sup>th</sup> Annual Tri-Service Radar Symposium, U.S. Government Classified, Laurel MD, 22-24 May 2001.

\*Golla, K.J., P.J. Collins, S. Schneider, and A.J. Terzuoli, Jr., "Broadband Application of High Impedance Ground Planes," 2001 IEEE/AP-S/URSI International Symposium, Boston MA, 8-13 July 2001.

\*Bradley, C.J., P.J. Collins, M.A. Temple, A.J. Terzuoli, Jr., K.S. Wilson, J. Fortuny, and G.D. Lewis. "A Performance Analysis of Several Bistatic Calibration Techniques," IEEE 2001 International Geoscience and Remote Sensing Symposium, Sydney, Australia, 13 Sep 2001.

#### **TRAGESSER, STEVEN G., (ENY)**

Tragesser, S.G., "Formation Flying with Tethered Spacecraft" Presentation at a Tether Workshop. Air Force Research Lab, Space Vehicles Directorate, Kirtland AFB NM, October 2000.

#### **WALTERS, Lt Col MICHAEL K., (ENP)**

Early, Stephen A. and M.K. Walters. "Investigation of the Correlation Between Mechanical Turbulence and Optical Turbulence in the Atmosphere," 11<sup>th</sup> AMS Symposium on Meteorological Observations and Instrumentation, Albuquerque NM, January 2001.

#### **WEEKS, DAVID E., (ENP)**

\*R.L. Hengehold, D.E. Weeks, M.A. Marciniak, C.A. Bartholomew, and M.R. McKay. "Mid-Infrared Quantum-Well, Opto-Electronic Devices," Solid State and Diode Laser Technology Review Technical Digest, Albuquerque NM, May 21-24, 2001.

D.E. Weeks, S.H. Yang, and T.A. Niday, "Scattering Matrix Elements and Cross Sections for the Reaction  $B(2P_{1/2}) + H_2(j) \leftrightarrow B(2P_{3/2}) + H_2(j')$ ," Proceedings of the High Energy Density Matter ( HEDM ) Contractors' Conference, Park City UT, 24-26 October 2000.

X. Duan, D.E. Weeks, L.W. Burggraf. "Theoretical Calculations of SiC Clusters and SiC Surfaces," AFOSR Molecular Dynamics Contractor's Review, Irvine CA, 21-23 May 2001.

D.E. Weeks and S.H. Yang. "Inelastic Scattering Matrix Elements and Cross Sections for the Reaction  $B(2P_{1/2}) + H_2(j=0) \leftrightarrow B(2P_{3/2}) + H_2(j')$ ," AFOSR Molecular Dynamics Contractor's Review, Irvine CA, 21-23 May 2001.

S.H. Yang, D.E. Weeks, and T.A. Niday. "Inelastic Scattering Matrix Elements, Cross Sections and Reaction Rates for Non-adiabatic  $B + H_2$  Molecular Reaction Dynamics," APS March meeting, Seattle WA, March 12-16, 2001

#### **WIESEL, WILLIAM E., (ENY)**

Wiesel, William E. "The Dynamics of Relative Satellite Motion", AAS 01-163, AAS/AIAA Space Flight Mechanics Meeting, Santa Barbara CA, Feb. 11-15, 2001.

Wiesel, William E. "Trajectory Estimation for Satellite Clusters", AAS 01-342, AAS/AIAA Astrodynamics Conference, Quebec City, Quebec, Canada, 29 July-3 Aug 2001.

**WOOD, AIHUA W., (ENC)**

Wood, A. W. "A Hybrid Finite Element/Boundary Integral Method for Electromagnetic Scattering from 3D Cavities," AFOSR Electromagnetics Workshop, San Antonio, TX. January 2001.

Wood, A. W. "Hybrid Maxwell Solver for Radar Signature Prediction of LO Targets," Second Annual Joint AFRL/DAGSI Symposium, Air Force Institute of Technology, Wright-Patterson AFB, OH. February 2001.

**YEO, YUNG KEE, (ENP)**

Johnstone, D., M. Ahoujja, Y. K. Yeo, and L. Guido. "GaN Deep Level Capture Barriers," presented an invited talk to the SPIE Meeting, San Jose CA, 20-26 January 2001.

\*Ahoujja, M., Y. K. Yeo, R. L. Hengehold, and J. E. Van Nostrand. "Temperature-dependent Hall-effect Measurements of Si-doped  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  Grown by MBE," March 2001 Meeting of the American Physical Society, Seattle, WA, 12-16 March 2001.

\*Ahoujja, M., Y. K. Yeo, R. L. Hengehold, and J. E. Van Nostrand, "Electrical Properties of MBE grown Si-doped  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  as a Function of Nominal Al Mole Fraction up to 0.5," Spring Meeting of the Materials Research Society, San Francisco CA, 16-20 April 2001.

\*Fellows, J. A., Y. K. Yeo, R. L. Hengehold, and L. Krasnobaev, "*Optical Characterization of Mg- and Si-Implanted GaN*," presented at the Spring Meeting of the Materials Research Society held on 16-20 April 2001 in San Francisco.

### **3.9 OTHER SIGNIFICANT PROFESSIONAL ACTIVITIES**

#### **AGNES, Maj GREGORY S., (ENY)**

CoChair SPIE Damping and Isolation Conference, Program Committee SPIE Smart Structures Conference

AIAA Adaptive Structures TC Member

AIAA Gossamer Structures Working Group

ASME Adaptive Materials and Structures TC Member

Reviewed 8 journal papers, 2 Army proposals

Consulted for NASA Working Group on Solar Sail Technology, New Millenium Working Group,

#### **ANDREW, Col JOHN M., (ENS)**

Member, Air Force Analytic Community Steering Group

Member, Data and Model Management Steering Group

Member, AF Scientist and Engineer Career Program Executive Panel

Member, Developing Aerospace Leaders Advanced Degree Education Process Team

#### **AROSTEGUI, Maj MARVIN A., (ENS)**

Referee, Decision Sciences Institute (DSI) National Meeting, November 2000

Referee, 6<sup>th</sup> International Conference, DSI, 2001

Track Chair, 6<sup>th</sup> International Conference, DSI, 2001

#### **BAUER, KENNETH W., JR., (ENS)**

Referee, *International Journal of Smart Engineering System Design*

Referee, *Military Operations Research*

Referee, Artificial Neural Networks in Engineering International Conference, St. Louis, MO, November 2000

#### **BONS, Maj JEFFREY P., (ENY)**

Session Chair, ASME International Gas Turbine Conference in New Orleans, June 2001.

#### **BRADY, Lt Col STEPHAN P., (ENS)**

Member, Collaborative Planning, Forecasting and Replenishment Committee, Voluntary Inter-Industry Commerce Standards Association



**CANFIELD, Lt Col ROBERT A., (ENY)**

Executive Council Secretary, American Institute of Aeronautics and Astronautics (AIAA) Dayton-Cincinnati Section.

Awards Chairman, AIAA Multidisciplinary Design Optimization Technical Committee.

**CHAMBAL, Capt STEPHEN P., (ENS)**

Referee, *Journal of Quality Technology*

**CHRISSIS, JAMES W. (ENS)**

Member, Policies and Procedures Committee, Institute for Operations Research and Management Sciences

Member, Organizing Committee, and Working Group Co-Chair, Military Operations Research Society Workshop, *Operations Research Methods for Information Operations: A Battlespace of the 21st Century*, to be held in the spring of 2002

Organized session for the National Meeting of the Institute for Operations Research and Management Sciences, Miami, FL, November 2001

**CLAYPOOLE, Maj ROGER L., JR., (ENG)**

Chairman of the IEEE Signal Processing Society (Dayton Section)

Secretary of the Dayton Section of the IEEE.

**CUNNINGHAM, WILLIAM A., (ENS)**

Editorial Review Board, *Journal of Transportation Management*

Editorial Board, *Journal of Marketing Theory and Practice*

Executive Member, Board of Directors, Tri Rivers Waterway Development Association

**D'AZZO, JOHN J., (ENG)**

D'Azzo, J. J., was appointed as External Examiner for the University of Hong Kong. He evaluated the doctoral dissertation entitled, "Evolutionary Design of Fuzzy-Logic Controllers for Overhead Cranes," for the PhD candidate Cheung Tai Yam.

**DECKRO, RICHARD F. (ENS)**

Editor, *Military Operations Research* (as of 15 June 2001)

Associate Editor, *Military Operations Research* (through 14 June 2001)

Guest Editor, Special Issue, *Military Operations Research*, "Operations Research Methods for Information Operations: A Battlespace of the 21st Century," Vol. 6, No. 2 (2001)

Area Editor, Service Systems, *Computers & Industrial Engineering*

Editorial Advisory Board, *Computers & Operations Research*

Editorial Advisory Board, *IEEE Transactions on Engineering Management*

Chair, Working Group 8 (Information Operations/Information Warfare), 69<sup>th</sup> Military Operations Research Society Symposium, Annapolis, MD, June 2001

Chair, Bylaws, Policies, and Procedures Committee, Institute for Operations Research and Management Sciences (INFORMS)

Secretary/Treasurer, Military Applications Society, INFORMS

Invited to organize and chair MORS Symposium/Workshop, "Operations Research Methods for Information Operations: A Battlespace of the 21st Century," to be held in the spring of 2002

Member, Military Operations Research Society Publication Committee

Delegate, 12<sup>th</sup> France/US Simulation and Operations Research Symposium

Referee for numerous journals

**FRANKE, MILTON E., (ENY)**

Chair, Committee on Organization and Rules (COR). COR is a committee of the Board of Governors

American Society of Mechanical Engineers (ASME International).

ASME International representative to American Association for the Advancement of Science.

Member of the AIAA Technical Committee on Weapon Systems Effectiveness

**GALLAGHER, Lt Col MARK A., (ENS)**

Director, Military Operations Research Society

Chair, Prize Committee, Military Operations Research Society

Associate Editor, *Military Operations Research*

**GOLTZ, MARK N., (ENV)**

Member, Science Advisory Committee, U.S. EPA's Great Lakes/Mid-Atlantic Hazardous Substance Research Center.

City of Beavercreek Environmental Advisory Committee.

Consulting Associate Professor at Stanford University.

**HEMINGER, ALAN R., (ENV)**

Track Chair, IASTED Collaborative Technologies Symposium (CTS 2000), October 2000.

Subject matter expert for Defense Leadership and Management Program (DLAMP); evaluated DLAMP class at George Mason University, 5-6 April 2001.

Member, Management Information Systems Program Advisory Board, University of Dayton (since 1996)

**HENGHOLD, ROBERT L. (ENP)**

Member of the Executive Committee and Honors and Awards Chair of the Ohio Section of the American Physical Society.

**HILL, Lt Col RAYMOND R., (ENS)**

Associate Editor, *Military Operations Research*

Technical reviewer for the textbook, *Applied Management Science: Modeling, Spreadsheet Analysis, and Communication for Decision making*, 2<sup>nd</sup> Edition, for John Wiley and Sons

**HUFFINES, Maj GARY R., (ENP)**

Vice President, Wright Memorial Chapter, American Meteorology Society.

**HUGHSON, Lt Col MONTGOMERY C., (ENY)**

Session Chair, CFD (Computational Fluid Dynamics) Techniques I, Dayton-Cincinnati Aerospace Science Symposium, Dayton OH, March 2001

**JACQUES, Lt Col DAVID R., (ENY)**

Member, Guidance Navigation and Control Technical Committee, American Institute of Aeronautics and Astronautics.

Summer Research Professor, AFRL/VACA.

**JOHNSON, Lt Col ALAN W., (ENS)**

Referee, *Naval Research Logistics*

Technical reviewer for management science textbook for John Wiley and Sons

**LANNING, Maj JEFFREY W., (ENS)**

Referee, *Journal of Quality Technology*

**LIEBST, BRADLEY S., (ENY)**

Member, Dayton-Cincinnati AIAA Executive Council.

Member, 2001 AIAA Cincinnati-Dayton Aerospace Symposium Committee.

President, Honors Seminars of Metropolitan Dayton.

**MAGEE, Maj ERIC P., (ENG)**

AFIT Signal Processing Representative for the WSU PhD Oversight Committee.

ENG representative on the Outreach Committee.

DAGSI academic advisor.

**MAYBECK, PETER S., (ENG)**

Chaired the IEEE Dayton Section Student Branch Cross-Fertilization Meeting, enhancing the communication among area colleges and the Dayton Section.

Dayton Section IEEE Student Activities Chairman and member of the Section's Executive Committee.

**MILLER, Lt Col J.O., (ENS)**

Technical reviewer for the reference book, *Space Systems Modeling and Simulation*

**MILLER, Lt Col MIKEL M., (ENG)**

Elected the National Space Representative for the Institute of Navigation (ION) and served as the 2000-2001 Chairman of the Dayton Section of the ION.

**MOORE, JAMES T., (ENS)**

Associate Editor, *Military Operations Research*

Associate Editor, *Naval Research Logistics*

AFIT lead for research consortium (University of Texas at Austin, Air Mobility Command, and AFIT)

Co-Chair, Working Group 18 (Mobility and Transport of Forces), 69<sup>th</sup> Military Operations Research Society Symposium, Annapolis, MD, June 2001

**OXLEY, MARK E., (ENC)**

Member, Alumni Board for Department of Mathematics, Physics and Geography, Cumberland College, Williamsburg, KY.

**PACHTER, MEIR, (ENG)**

Member of AFOSR Review Panel

Member of AFRL/VACA AFOSR *Star Team*

**PERRAM, GLEN P., (ENP)**

Director, AFIT Center for Directed Energy

Panel Member, OSD High Energy Laser Joint Technology Office, Chemical Laser Working Group

Reviewer, Cooperative Grants Program of the U.S. Civilian Research and Development Foundation

Reviewer, Ballistic Missile Defense Organization, Small Business Innovative Research Proposals

**RAINES, Maj RICHARD A., (ENG)**

Text Book Reviewer, *Satellite Communications 2e*, J. Wiley Publishers

Technical Paper Referee, *IEEE Communications Letters*

**ROH, WON B., (ENP)**

Member, Review Panel for “the SRS/Fiber optic wavelength shifter” program, a Joint Technology Office (JTO) sponsored R&D program to Boeing Company, managed through NRL

**SPENNY, CURTIS H., (ENY)**

AFIT representative: Ohio Board of Registration for Professional Engineers and Surveyors.

AFIT representative, Ohio Space Grant Consortium.

Member, WSU PhD Program Coordinating Committee (Human Interaction with Complex Systems).

Scholarship Selection Committee, Honors Seminars of Metropolitan Dayton.

**SWARTZ, Lt Col STEPHEN M., (ENS)**

Referee, *Production and Operations Management*

Session/track chair and discussant for Production and Operations Management Society and Decision Sciences  
Institute conferences

**TERZUOLI, ANDREW J., JR., (ENG)**

Local Chapter Chair for Joint IEEE Societies APS, MTT, GRS.

### **3.10 SPECIAL AWARDS OR SPECIAL RECOGNITION**

#### **3.10.1 FACULTY**

##### **BAUER, KENNETH W., (ENS)**

Received the 2000 Gage H. Crocker Outstanding Professor Award as the individual who made the most significant contribution to the AFIT mission

##### **BIROS, Lt Col DAVID P., (ENV)**

Air Force Association, Wright Memorial Chapter, 2001 Senior Military Officer of the Year

##### **BONS, Maj JEFFREY P., (ENY)**

Co-recipient of the 2001 AFRL Scientific/Technical Achievement Team Award.

Co-recipient of AFRL/PR's Annual S.D. Heron Award for Basic Research, 2000.

##### **BRADY, Lt Col (sel) STEPHAN P., (ENS)**

Received the 2000 Professor Ezra Kotcher Award for significant, substantive contribution to curriculum or instruction development within AFIT

##### **CANFIELD, Lt. Col ROBERT, (ENY)**

Associate Fellow, American Institute of Aeronautics and Astronautics, Jan 2000.

##### **CLAYPOOLE, Maj ROGER L., (ENG)**

Air University Company Grade Officer of the Year, 2000.

\*Paper titled "Performance Characterization of a Proposed Wavelet Domain Communication System (WDCS)" selected as the best paper presented in the session Transmission System III of the 5<sup>th</sup> World Multi-Conference on Systematics, Cybernetics, and Informatics (SCI 2001), and 7<sup>th</sup> International Conference on Information Systems Analysis and Synthesis (SAS 2001).

##### **D'AZZO, JOHN J., (ENG)**

Associate Fellow of the American Institute of Aeronautics and Astronautics.

##### **DECKRO, RICHARD F., (ENS)**

Selected as Editor, *Military Operations Research*

Best Presentation, "A Preliminary Analysis of an Iranian Acquisition Social Network" (S), Information Operations/Information Warfare Working Group, 69<sup>th</sup> Military Operations Research Society Symposium, Annapolis, MD, June 2001

##### **GALLAGHER, Lt Col MARK A., (ENS)**

Promoted to Associate Professor of Operations Research

**GOLTZ, MARK N., (ENV)**

Awarded Institute of Environmental Science and Research International Fellowship

**GRIFFIS, Maj STANLEY E., (ENS)**

Awarded the 2001 University of Arkansas Supply Chain Management Research Center Doctoral Dissertation Proposal Award

**GUSTAFSON, STEVEN C., (ENG)**

Gustafson, S.C., received the Air Force Aeronautical Systems Center Scientific Achievement Award (IDEA 2001 – 0079), 5 October 2000.

**HILL, Lt Col RAYMOND R., (ENS)**

Promoted to Associate Professor of Operations Research

Received the 2000 General Bernard A. Schriever Award for outstanding contributions to the advancement of aerospace power, technology, and doctrine

**JACQUES, Lt Col DAVID R., (ENY)**

Member of AFRL/VACA Star Team receiving award for basic research from AFOSR.

**JOHNSON, Lt Col ALAN W., (ENS)**

Promoted to Associate Professor of Logistics Management

**LOTT, Lt Col JAMES A., (ENG)**

Lott, J.A., “Microcavity Surface Emitting Lasers,” United States Patent No. 6,266,357, 24 July 2001.

**MALL, SHANKAR, (ENY)**

Neslen, C. and Mall, S., “Fretting Fatigue Damage Characterization and Crack Detection Analysis”, presented at AEROMAT 2001, June 11-14, 2001, Long Beach, CA, USA. Selected Best Paper of the AEROMAT 2001.

**MATHEWS, KIRK A., (ENP)**

Promoted to Professor of Nuclear Engineering

**MOORE, JAMES T., (ENS)**

Granted tenure

Inducted as an Eminent Engineer into Tau Beta Pi, the national engineering honor society

**NANRY, COL WILLIAM P., (ENS)**

Selected by the AFIT Student Association as the Fall 2000 “Instructor of the Quarter” for the Graduate School of Engineering and Management.

**PACHTER, MEIR, (ENG)**

Received the 2000 Special Act/Service Award for his contributions in the field of flight control while working in the flight control while working in the Control Theory and Optimization Branch of the Air Vehicles Directorate. AFRL/VACA.

Received the 2000 Affiliate Societies Council's Outstanding Engineers and Scientists Award for research in aircraft formation flight control, adaptive and reconfigurable flight control, differential games, and signal processing for GPS navigation and electronic warfare.

Elected an *Associate Fellow of AIAA*.

Nominated for the AFRL/VA 2000 *Foulois Award*.

**PALAZOTTO, ANTHONY N., (ENY)**

Associate Editor AIAA journal

**RAINES, Maj RICHARD A., (ENG)**

Received the Air Force Commendation Medal for outstanding achievement in the development and presentation of the AFIT Warrior Brief to senior leaders of the Air Force, January 2001.

\*Paper titled "Performance Characterization of a Proposed Wavelet Domain Communication System (WDCS)" selected as the best paper presented in the session Transmission System III of the 5<sup>th</sup> World Multi-Conference on Systematics, Cybernetics, and Informatics (SCI 2001), and 7<sup>th</sup> International Conference on Information Systems Analysis and Synthesis (SAS 2001).

**REHG, Maj MICHAEL T., (ENV)**

Best Paper Award in the Social Issues in Management Division for Miceli, M. P., J. P. Near, J. van Scotter, and M. Rehg. "Individual differences and whistle-blowing," presentation at the *Annual Meeting of the Academy of Management*, Washington, D.C. (August 2001).

**SWARTZ, Lt Col STEPHEN M., (ENS)**

Recognized as the Outstanding Operations Research Educator by the AFIT Student Chapter of the Institute for Operations Research and the Management Sciences

**TEMPLE, MICHAEL A., (ENG)**

Brendle, J.F., J.P. Stephens, M.A. Temple, and R.S. Parks, "Length Selectable, Hardware Efficient Pseudorandom Code Genrator," United States Patent No. 6,292,506, 18 September 2001.

Paper titled "Performance Characterization of a Proposed Wavelet Domain Communication System (WDCS)" selected as the best paper presented in the session Transmission System III of the 5<sup>th</sup> World Multi-Conference on Systematics, Cybernetics, and Informatics (SCI 2001), and 7<sup>th</sup> International Conference on Information Systems Analysis and Synthesis (SAS 2001).

**TERZUOLI, ANDREW J., JR., (ENG)**

IEEE Certificate of Appreciation

**WALTERS, Lt Col MICHAEL K., (ENP)**

Promoted to Associate Professor of Atmospheric Physics



### **3.10.2 STUDENTS**

#### **BALTACIOGLU, 1Lt ERHAN, TURKISH AF (ENS)**

Received the Military Operations Research Society (MORS) Graduate Research Award for research that led to demonstration of, or potential for, increased operating effectiveness of currently available or near term assets.

#### **BENNETT, Capt SHEILA G., (ENV)**

Master's thesis, *A Process for Vectoring Offensive Information Warfare as a Primary Weapon Option within the United States Air Force* (Faculty Advisor: Dr. Richard Deckro, AFIT/ENS), won the 2001 Armed Forces Communications and Electronics Association Information Resources Management Award.

#### **BOONE, Capt CHRISTOPHER, (ENS)**

Received the Dr. Anthony D'Angelo Student Leadership Award given to a member in each graduating class in recognition of the student whose leadership and mentorship contributions to his/her fellow students are judged superior.

#### **DRAB, Capt JESS W., (ENY)**

Drab, Jess W., "Turbine Glade Surface Roughness Effects on Shear Drag and Heat Transfer". Selected as best M.S. Thesis from ENY department for 2001 academic year.

#### **FILCEK, Capt PAUL G., (ENS)**

Received the Louis F. Polk Award for advanced contributions in his professional field and reflecting the highest standards of academic and professional accomplishment.

#### **GALBREATH, Capt CHARLES S., (ENY)**

Galbreath, Charles S. and M. E. Franke, "Quality Initiatives in the Air Force Development of Reusable Launch Vehicles," AIAA Paper No. 2001-4621, AIAA Space 2001 Conference and Exposition, Albuquerque, NM, 28-30 August 2001.

#### **HARTSFIELD, Capt CARL R., (ENY)**

Hartsfield, C. R., P. I. King, and M. E. Franke, "Analysis of the Application of a Triggered Isomer Heat Exchanger as a Replacement for the Combustion Chamber in an Off-the-Shelf Turbojet," Proceedings of the 37th Heat Transfer and Fluid Mechanics Institute, California State University, Sacramento CA, pp. 35-52, 31 May-1 June 2001.

#### **MARTINEZ, Capt STEVEN L., (ENS)**

Received the Lt Edwin E. Aldrin, Sr., Award given in recognition of the student who has displayed exceptional leadership characteristics.

Received the International Society of Logistics Jerome G. Peppers, Jr., C.P.L., Outstanding Student Award given to a member in each graduating class whose academic record and contributions to the field of logistics are judged superior.

#### **NOEL, Capt JEREMY B., (ENS)**

Received the Dean's Award given in recognition of the ENS master's thesis that reflects the most exceptional research contribution to scientific, management, and engineering knowledge.

**RENFRO, Capt ROBERT S., II, (ENS)**

Best Presentation, “A Preliminary Analysis of an Iranian Acquisition Social Network” (S), Information Operations/Information Warfare Working Group, 69<sup>th</sup> Military Operations Research Society Symposium, Annapolis, MD, June 2001

**SCHWABACHER, Capt GREGORY J., (ENY)**

Schwabacher, Gregory J., Jeffrey P. Bons, and Milton E. Franke, “CFD Simulation of an Aircraft Turret Model with Fairings,” AIAA Paper No. 2001-0889, AIAA 39th Aerospace Sciences Meeting and Exhibit, Reno, NV, 8-11 January 2001, 14 pages.

**ZALEWSKI, Maj DANIEL E., (ENP)**

Zalewski, Daniel E. *Assessment of the Effects of Entrainment and Wind Shear on Nuclear Cloud Rise Modeling*. Dean’s Research Award Recipient. AFIT/GNE/ENP/01M-06. Faculty Advisor: Lt Col Vincent J. Jodoin, DSN: 785-3636, ext 4506. Sponsor: DTRA/TDOC & AFOSR/CC.

## APPENDICES

### APPENDIX A FACULTY CREDENTIALS

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## APPENDIX B DEPARTMENT SYMBOLS AND LOCATIONS

<u>Symbol</u>	<u>School Office/Department</u>	<u>Room</u>	<u>Telephone, (DSN)</u>
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ENR	Office of Research and Consulting Dr. Heidi R. Ries, Associate Dean for Research	103	(937) 255-3633 (DSN: 785-3633)
ENC	Department of Mathematics and Statistics Dr. Alan V. Lair	114	(937) 255-3098 (DSN: 785-3098)
ENG	Department of Electrical and Computer Engineering Col Donald R. Kitchen	218	(937) 255-2024 (DSN: 785-2024)
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ENS	Department of Operational Sciences Col John M. Andrew	177	(937) 255-2549 (DSN: 785-2549)
ENV	Department of Systems and Engineering Management Lt Col Alfred E. Thal, Jr.	204	(937) 255-2998 (DSN: 785-2998)
ENY	Department of Aeronautics and Astronautics Dr. Bradley S. Liebst	201	(937) 255-3069 (DSN: 785-3069)

## APPENDIX C ABBREVIATIONS FOR ORGANIZATIONS

There are a number of abbreviations for organizations that are used in this report. This alphabetical listing will only include selected organizations. The Defense Technical Information Center has an acronym listing at <http://www.dtic.mil/dtic/dtic-acronyms.html> . The department symbols for the Graduate School of Engineering are found in Appendix B.

ACC	Air Combat Command
AETC	Air Education and Training Command
AFCEE	Air Force Center For Environmental Excellence
AFCESA	Air Force Civil Engineer Support Agency
AFIT	Air Force Institute of Technology
AFMC	Air Force Materiel Command
AFOSR	Air Force Office of Scientific Research
AFOTEC	Air Force Operational Test and Evaluation Center
AFRL	Air Force Research Laboratory
AFSPC	Air Force Space Command
AFTAC	Air Force Technical Applications Center
AIA	Air Intelligence Agency
AMC	Air Mobility Command
ASC	Aeronautical Systems Center
AU	Air University
DAGSI	Dayton Area Graduate Studies Institute
DISA	Defense Information Systems Agency
DoD	Department of Defense
DOE	Department of Energy
HQ AU	Headquarters, Air University
PACAF	Pacific Air Forces
SAF	Secretary of the Air Force
USAF	United States Air Force

## **APPENDIX D AFIT HISTORY**

### **The Institute**

AFIT traces its roots to the early days of powered flight when it was apparent that the progress of military aviation depended upon special education in this new science. In 1919, the Air School of Application was established at McCook Field in Dayton, Ohio, the home of Orville and Wilbur Wright.

When Congress authorized creation of the Air Corps in 1926, the school was renamed the Air Corps Engineering School and moved to Wright Field in 1927. Shortly after Pearl Harbor, the school suspended classes, but it reopened as the Army Air Forces Engineering School in 1944 to conduct a series of accelerated courses to meet emergency requirements.

In 1946, the Army Air Force Institute of Technology was established as part of the Air Materiel Command. The Institute was composed of two colleges: Engineering and Maintenance, and Logistics and Procurement. These colleges were later redesignated the College of Engineering Sciences and the College of Industrial Administration.

When the Air Force became a separate service in 1947, the Institute was renamed the Air Force Institute of Technology. That same year, the School of Civil Engineering Special Staff Officer's Course began. In 1948, civilian institution programs were transferred to AFIT.

In 1950, command jurisdiction of AFIT shifted from Air Materiel Command to Air University (AU) with headquarters at Maxwell AFB, Alabama. The Institute, however, remained at what was now known as Wright-Patterson AFB. In 1951, the two AFIT colleges were combined into the Resident College.

The Institute established a logistics education program at WPAFB in 1955, and The Ohio State University conducted the first courses on a contract basis. In 1958, AFIT began a series of short courses in logistics as part of the Air Force Logistics Command (AFLC) Education Center. Later that year, the School of Logistics became a permanent part of AFIT.

In 1954, the 83d Congress authorized the Commander, Air University, to confer degrees upon persons in the AFIT Resident College. The college was later divided into the School of Engineering, the School of Logistics, and the School of Business. The first undergraduate engineering degrees were granted in 1956, and the first graduate degrees in business in 1958. The School of Business programs were transferred to civilian universities in 1960. In 1963, the School of Logistics was redesignated the School of Systems and Logistics. The Civil Engineering Center was also redesignated as the Civil Engineering School.

In 1967, AFIT became a member of the Dayton Miami Valley Consortium (DMVC), which later changed its name to Southwestern Ohio Council for Higher Education (SOCHE). The council is an association of colleges, universities, and industrial organizations in the Dayton area which are united to promote educational advancement. AFIT has traditionally been active in both the council and in other community and interinstitutional programs.

AFIT's flexibility is such that it adjusts quickly to changing Air Force requirements. The faculty, comprised of highly qualified military and civilian personnel, stay abreast of projected Air Force



operations, and the programs are continually updated to offer its students the latest available material. For example, an Air Force Software Review in 1989 led to AFIT programs in software engineering and software systems management barely a year later. When environmental concerns culminated in the Pollution Prevention Act of 1990, AFIT designed and implemented both graduate and professional continuing education programs in environmental engineering management. In 1994, Air Force Weather requested a meteorology program designed specifically for the warfighter, and in less than one year AFIT delivered a graduate education program in military meteorology with an initial enrollment of fourteen officers.

In 1995, AFIT's Graduate School of Engineering became a member of the Dayton Area Graduate Studies Institute (DAGSI) along with the graduate engineering schools of Wright State University and the University of Dayton. The purpose of the partnership was to provide, through the combined engineering and research resources of the three schools, educational and research opportunities at the MS and PhD level. The University of Cincinnati and the Ohio State University became affiliate members of DAGSI in 1997. DAGSI provides a continuing source of advanced technological expertise for the region covered by the five schools. The DAGSI program covers a broad spectrum of over 30 major research areas and benefits from the support of business and industry, government, and civic sectors of the Dayton Region.

Early in Fiscal Year 97, the Secretary of the Air Force made a decision to close AFIT resident graduate schools. In anticipation of closure, AFIT developed and began a transition and closure plan. Resident PhD students scheduled for FY97 were diverted to the Civilian Institution Program and a transition plan for actual closure was developed, identifying manpower positions for elimination in FYs 97 through 00.

In April 1998, after a visit to AFIT, the Acting Secretary of the Air Force, F. Whitten Peters, announced a reversal of the Air Force decision to terminate the AFIT resident graduate programs. AFIT will continue a restructuring initiative begun in FY96 that will size the resident graduate programs to meet the Air Force education requirements of the FY03 force structure. As part of this restructuring, the two resident graduate schools were merged into the Graduate School of Engineering and Management on Oct 1, 1999.

## **Research**

Creative, relevant research programs are essential to both graduate education and the continuous modernization of military capability. Consequently, research has been an important element of the educational enterprise throughout AFIT's history, often in collaboration with scientists of the Air Force Research Laboratories co-located at Wright-Patterson Air Force Base. The implementation of the PhD program at AFIT in 1965 resulted in significant growth of the research activities on the AFIT campus. The expanded role of sponsored research at AFIT was recognized by creating the Office of Research for the School of Engineering in 1989 and the Office of Research and Consulting for the School of Logistics and Acquisition Management in 1990 (now the Office of Research and Consulting in the Graduate School of Engineering and Management).

Several key projects are illustrative of AFIT's research impact on the Air Force, the Department of Defense, and the nation. For more than twenty years, the Department of Engineering Physics has conducted strong research in high-energy laser technology and delivered mission ready graduates to AF laboratories. Two PhD graduates served as directors of the Air Force laser program, and four PhD graduates led the team demonstrating a 40 kW laser for anti-satellite missions. The AFIT laser weapons research group is now supporting the development of the Airborne Laser, based on the Chemical Oxygen Iodine Laser co-invented by an AFIT graduate. Other work of the laser weapons research group includes the development of lasers for remote sensing and counter-proliferation applications, new optical diagnostic methods, and studies of ionization mechanisms in the thermosphere for satellite survivability.

In support of the Air Force's and DoD's environmental restoration programs, AFIT established a remediation research program in the early 1990s involving faculty from four departments. Since that time, over 50 student theses on the subject have been published and graduates have gone on to manage remediation programs at bases and major commands throughout the Air Force. Research contributions include a field demonstration of a bioremediation technology that destroys trichloroethylene, the most common groundwater contaminant at DoD installations, and some of the first studies of the biodegradability of tolyltriazole, an aircraft deicing fluid additive recently recognized as an important groundwater contaminant at airfields throughout the nation.

AFIT researchers in the Department of Operational Science, responding to the needs of the C-17 Systems Program Office (SPO), developed an object-oriented simulation model to quantify the rate of paratrooper/vortex interaction for various airdrop formations, enhanced through high-resolution computer visualization of model results. The research results were briefed to the C-17 SPO Director, the Director of Test and Evaluation for the Office of the Secretary of Defense, the Undersecretary of the Army for Operations Research, and the Commander of the XVIII Airborne Corps. Utilizing their C-17 airdrop simulation model, the AFIT researchers also led a preflight study of the multinational CENTRAZBAT '97 Exercise; their analysis was praised by the XVIII Airborne Corps Commander as "dead-on!"

The Department of Aeronautics and Astronautics has an ongoing research program studying high cycle fatigue, the cause of the most dominant issue relevant to gas turbine engine damage. Currently, there exists only a cursory understanding of damage, crack initiation, and crack propagation under high cycle fatigue conditions. It has been recognized that a significant number of failures of engine components are attributable to fretting damage, such as dove-tailed blades, including press-fit or interlocking connections which are subjected to surface wear and fretting fatigue. The study in collaboration with the Materials and Manufacturing Directorate of the Air Force Research Laboratory uses an integrated experimental/analytical numerical modeling approach to investigate the high cycle fretting fatigue behavior of titanium alloys.

In December 1998, AFIT broke ground for a \$8.9 million engineering laboratory. The facility will be used for experimental research in aeronautical engineering, electrical engineering, applied physics and environmental science. The lab officially opened in March, 2001 and will enable AFIT to continue its tradition of high quality research programs in support of the Air Force Mission.

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