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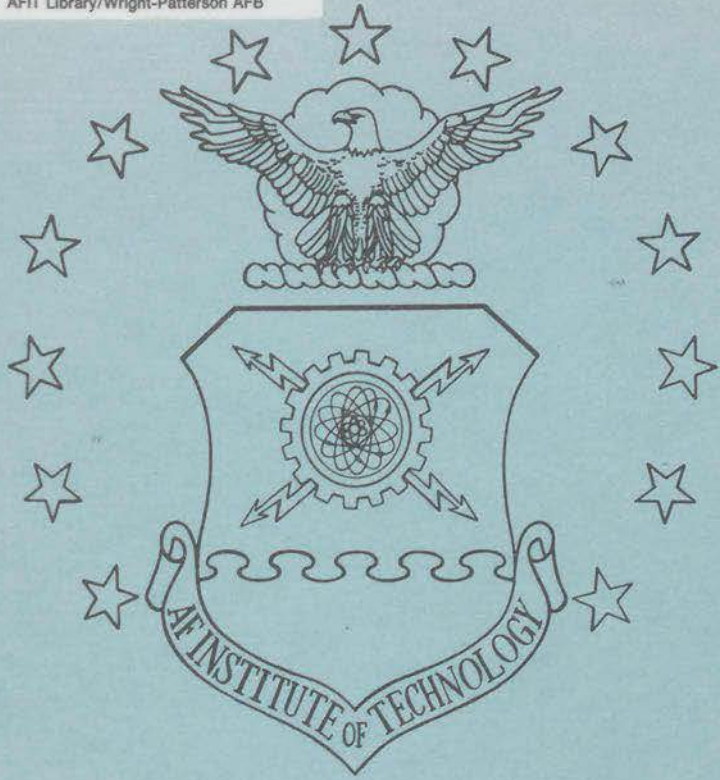
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ARCHIVES  
Series X  
1977



AIR FORCE INSTITUTE OF TECHNOLOGY  
SCHOOL OF ENGINEERING

Contributions to Air Force  
Research and Development

Calendar Year 1977

December 1978

**UNITED STATES AIR FORCE**  
**AIR UNIVERSITY**  
**AIR FORCE INSTITUTE OF TECHNOLOGY**  
Wright-Patterson Air Force Base, Ohio

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AIR FORCE INSTITUTE OF TECHNOLOGY  
SCHOOL OF ENGINEERING

Contributions to Air Force  
Research and Development

Calendar Year 1977

December 1978



AFIT  
SCHOOL OF ENGINEERING

CONTRIBUTIONS TO AIR FORCE RESEARCH AND DEVELOPMENT

CALENDAR YEAR 1977

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# I. FACULTY RESEARCH PROJECTS

## 153 Research Projects - Calendar Year 1977 - Summary

<u>SPONSORS</u>		<u>DEPARTMENT</u>	
AFFDL	34	ENY	42
AFAL	22	ENS	34
AFIT	19	ENG	27
AFWL	18	ENC	22
ASD	11	ENP	21
HQ USAF	9	ENH	7
AFML	7		
AFAPL	7	TOTAL	153
AFOSR	6		
HQ AFLC	6		
AMRL	3		
SAMSO	3		
RADC	2		

One each from AFCS, AFGL, DNA, AFWAL, DARPA, AFTAC.

CY-1977 Research Projects

- ENY 77-1 Specialized Aerodynamics Design Evaluation. Major R. Crawford (ASD)
- ENG 77-2 Advanced Seeker Guidance Techniques. Major T. Moriarty (AFATC)
- ENP 77-3 Atomic and Molecular Charge Oscillations. Dr. D. Shankland (AFWL)
- ENG 77-4 Electro-Optic Separation Commonality Study. Lt S. Robinson, Major J. A. Gobien (AFAL)
- ENP 77-5 Nuclear Cardiology. Dr. G. R. Hagee (USAF Medical Center)
- ENY 77-6 Singularity Approach to Circular Plates. Dr. A. Palazotto (AFFDL)
- ENY 77-7 Dynamic Life Estimate for Track Surfaces Under Periodic Loading. Dr. A. Palazotto (AFFDL)
- ENC 77-8 Study of Reliability Testing for the ARC-164. Dr. D. R. Barr (AFAL)
- ENC 77-9 Zeros of Functions. Dr. J. Jones, Jr., (AFFDL)
- ENC 77-10 Recursion Equation Approximations by Linear Differential Processes. Capt G. Orr (AMRL/EMT)
- ENH 77-11 Demand for Technical Writing in Industry and Government. Dr. R. Davis (AFIT)
- ENY 77-12 Elastic-Plastic Anisotropic Materials. Dr. A. Palazotto (AFML)
- ENY 77-13 Plane Strain and Stress Equations for Elastic Problems. Dr. A. Palazotto (AFFDL)
- ENC 77-14 Solutions of the Riccati Matrix Differential Equations. Dr. J. Jones, Jr., (AFAL)
- ENC 77-15 Global Bifurcation from Self-Adjoint Operators. Lt J. A. MacBain (AFFDL)
- ENC 77-16 Separable Criteria for G-Diagrams over Commutative Rings. Lt C. Roark (AFIT)
- ENG 77-17 Study of Various Weather Conditions on Propagation of 10.6 micron Laser Light. Lt S. R. Robinson (AFAL)
- ENH 77-18 Nuclear Weapons and Deterrence as Viewed by the USAF. Capt S. M. Millett (AFIT)
- ENY 77-19 Dynamic Response Approximation for Non-Circular Fluid Lines. Dr. M. E. Franke (AFFDL)
- ENY 77-20 Subsonic Axisymmetric Near-Wake Studies. Lt Merz (AFFDL)



- ENP 77-21 Collective Oscillations in Small Atoms and Molecules. Dr. D. Shankland (AFOSR)
- ENS 77-22 Cost Accounting Standards. Lt Col A. Harrell (AFLC)
- ENS 77-23 Innovation and Productivity in R&D. Capt M. Stahl (AFOSR/AFGL)
- ENS 77-24 Military Unionization. Lt Col R. Manley, Major McNichols, and Capt M. Stahl (HQ USAF)
- ENY 77-25 Application of Near-Optimal Differential Game Feedback Strategies to Aircraft Weapon Delivery Maneuvers. Major G. M. Anderson (AFFDL)
- ENY 77-26 Application of Differential Game Theory to Generation of Optimal Aircraft Combat Maneuvers. Major G. M. Anderson (AFFDL)
- ENY 77-27 Collapse Analysis of Stringer Stiffened Cylindrical Shells with Cutouts. Dr. A. Palazotto (AFFDL)
- ENY 77-28 Comparing Trigonometric and Conventional Finite Difference Approximations for Plate Buckling. Dr. A. Palazotto (AFFDL)
- ENG 77-29 Quadratic Clock Modulation for Improved Binary Communication in the Presence of Intersymbol Interferences. Lt S. R. Robinson (AFAL)
- ENG 77-30 Closed Loop Direct Detection Phase Measurement Receivers. Lt S. R. Robinson (AFAL)
- ENG 77-31 Software Error Analysis for  $C^3$  Systems. Dr. T. L. Regulinski (RADC)
- ENH 77-32 Judicial Review of Soviet-American Relations 1917-1942. Capt S.M. Millett (AFIT)
- ENY 77-33 Shock Tube Decomposition of Dilute Mixtures of Nitrosylcyanide in Argon. Dr. E. Dorko (AFAPL)
- ENY 77-34 Shock Induced Decomposition of Nitrogen Trifluoride in Argon. Dr. E. Dorko (AFAPL)
- ENY 77-35 Research on  $K_r F$  Lasers. Capt A. Hunter (AFWL-DARPA)
- ENP 77-36 Analysis of Laser Target Coupling in a Vacuum Environment. Capt P. E. Nielsen (DARPA)
- ENS 77-37 Simulation Evaluation Model of the Air Force Manpower and Personnel System. Capt J. Knight (AFOSR)
- ENS 77-38 Organizational Development at a Major Government Research Laboratory. Major C. McNichols and Lt Col R. Manley (AFWL)
- ENS 77-39 Aircraft Airframe Cost Estimation Using Components of Variance Model. Dr. K. Womer (ASD)
- ENS 77-40 Measuring Innovation and Productivity - A Peer Rating Approach. Capt M. Stahl (AFOSR)



- ENS 77-41 Orthodox Job Enrichment Program. Major G. S. Young (HQ AFLC)
- ENC 77-42 K-Sample Maximum Likelihood Ratio Test for a Change of Shape Parameter Among Weibull Populations. Dr. A. H. Moore (AFFDL)
- ENC 77-43 Bayesian Estimation of Parameters of Life Distributions and Reliability from Censored Samples. Dr. A. H. Moore (AFAL)
- ENG 77-44 Electronic Warfare Studies. Capt W. A. Davis, Major J. O. Gobien (AFAL)
- ENH 77-45 Arms Control as a Military Strategy. Capt S. M. Millett (AFIT)
- ENP 77-46 Solar Power Generation with Large Earth-Orbiting Solar Reflectors. Major H. Weichel (AFIT)
- ENP 77-47 Jet Engine Gaspath Wear Rate Monitoring. Major R. Couch (AFAPL)
- ENP 77-48 Application of Space-Angle Synthesis to Two-Dimensional Neutral-Particle Transport Problems of Weapon Physics. Dr. C. J. Bridgman (AFWL)
- ENS 77-49 The Mosen and Downs Theory: Some Evidence from a Military Organization. Lt Col A. Harrell (HQ AFLC)
- ENS 77-50 Personal Value and Operative Goals of School Psychologist. Lt Col R. Manley (AFIT)
- ENS 77-51 Philosophy of a Management Control and Information System. Major G. Young (ASD)
- ENY 77-52 Use of Galerkin's Method for Minimum Weight Panels with Dynamic Constraints. Major F. E. Eastep (AFFDL)
- ENY 77-53 Vulnerability Analysis of Optimized Structure. Major F. E. Eastep (AFFDL)
- ENY 77-54 A Focusing Technique Applied to Finite Difference Approximations. Dr. A. Palazotto (AFFDL)
- ENY 77-55 Comparisons Between Virtual Work and Equilibrium Equations for Instability of Rectangular Plates. Dr. A. Palazotto (AFFDL)
- ENY 77-56 Use of Prandtl-Reuss Equations for Indeterminately Loaded Rectangular Plates with Varying Thickness. Dr. A. Palazotto (AFFDL)
- ENY 77-57 A Numerical Method for Generating Three Impulse Minimum-Time Orbital Transfers. Major G. M. Anderson (AFIT)
- ENH 77-58 The Reality of the American Nuclear Deterrent 1945-1950. Capt S. M. Millett (HQ USAF)
- ENP 77-59 Theft and Diversion of Nuclear Materials. Dr. C. J. Bridgman (DNA)



- ENP 77-60 Analytic Model of the K<sub>F</sub> Laser. Capt A. Hunter (AFWL)
- ENP 77-61 Theory of Diffraction from a Holographic Lens. Dr. D. Shankland (AFWL)
- ENS 77-62 Application of System Dynamics Methodology to Prediction of AF Succession/Continuation Rates. Capt J. Knight (AFOSR)
- ENS 77-63 Foreign Accounting Practices and Defense Contract Costs. Lt Col W. Letzkus (AFLC)
- ENS 77-64 Quality of Air Force Life: Report on the Attitudes and Perceptions of Air Force Commanders. Lt Col R. Manley, Major C. McNichols, and Capt M. Stahl (HQ USAF - AF/DPX)
- ENS 77-65 Employee Perceptions of the Civilian Interchange Program. Lt Col R. Manley, Major C. McNichols, and Capt M. Stahl (AFWAL)
- ENS 77-66 Influence Sources of Project and Functional Managers in Matrix Organizations. Major J. Dunne and Capt M. Stahl (AFLC)
- ENY 77-67 A Wind Tunnel Study of a Circulation Controlled Elliptical Airfoil. Dr. M. E. Franke (ASD)
- ENY 77-68 Dynamic Response Approximation for Noncircular Fluid Lines. Dr. M. E. Franke (AFAPL)
- ENG 77-69 A New Algorithm for Computing Eigenvectors and Generalized Eigenvectors of Matrices. Prof J. J. D'Azzo (AFFDL)
- ENG 77-70 Base Motion Sensitivity Analysis for Airborne ILIC Pointing and Tracking Systems. Capt J. E. Negro (AFWL)
- ENG 77-71 Laser Pointing and Tracking Using an Adaptive Extended Kalman Filter. Major R. M. Potter (AFWL)
- ENG 77-72 Processing of Multi-Spectral Optical Sensor Signals. Major J. O. Gobien and Lt S. R. Robinson (AFAL)
- ENG 77-73 Analysis of a Kalman Filter for a Strapdown Inertial/Radiometric Area Correlator Guidance System. Dr. P. S. Maybeck (AFAL)
- ENG 77-74 Microprocessing Realization of the Bus Interface Unit from a Distributed Avionic Computer System. Capt J. B. Peterson (AFAL)
- ENG 77-75 New Approach for Laser Gyroscopes. Major S. R. Balsamo (AFAL)
- ENP 77-76 Depth-Resolved Cathodoluminescence of Implants of Cd, C and Te in GaAs. Major B. J. Pierce and Dr. R. L. Hengehold (AFAL)
- ENP 77-77 Equilibrium Rotational Distributions for Chemical Lasers. Capt A. Hunter (AFWL)



- ENP 77-78 An Experimental Investigation of the Modes of a Rooftop Laser. Lt Col H. Weichel (AFWL)
- ENP 77-79 Laser Produced Plasmas and Thermal Coupling in a Vacuum. Capt P. E. Nielsen (AFWL)
- ENS 77-80 Shifts in the Attitudes of R&D Professions Toward Unionization. Lt Col R. Manley and Major C. McNichols (AFIT)
- ENS 77-81 Large Scale Organizational Analysis - A Computer Aided Methodology. Major C. McNichols and Lt Col R. Manley (AFML)
- ENS 77-82 Learning Curves, Production Rate, and Program Costs. Dr. K. Womer (ASD)
- ENS 77-83 The Dimensionality of Influence Source in Project Management. Capt M. Stahl and Major J. Dunne (ASD)
- ENS 77-84 Reward Contingencies and Productivity in a Government Research and Development Laboratory. Capt M. Stahl (AFGL)
- ENY 77-85 Shock-Induced Decomposition of Nitrogen Trifluoride in Argon. Dr. E. A. Dorko (AFAPL)
- ENY 77-86 Initial Shock Tube Kinetic Studies of Monomethylamine. Dr. E. A. Dorko (AFAPL)
- ENY 77-87 Feedback Control for a Pursuing Spacecraft Using Differential Dynamic Programming. Major G. M. Anderson (SAMSO)
- ENY 77-88 A Near Optimal Control Law for Pursuit-Evasion Problems Between Two Spacecraft. Major G. M. Anderson (SAMSO)
- ENC 77-89 Estimation of Mission Reliability from Multiple Independent Grouped Censored Sample. Dr. A. H. Moore (AFFDL)
- ENC 77-90 Some Useful Aspects of Operator Theory. Capt J. A. MacBain (AFIT)
- ENG 77-91 Local and Bifurcation from Normal Eigenvalues. Capt J. A. MacBain (AFIT)
- ENG 77-92 Processing of Multiband Infrared Sensor Signals. Major J. O. Gobien and Lt S. R. Robinson (AFAL)
- ENG 77-93 Quadrature Clock Modulation for Improved Performance in Inter-symbol Interference. (AFAL)
- ENG 77-94 A New Approach to the Thin Scatterer Problem Using the Hybrid Equations. Capt W. A. Davis (AFAL)
- ENG 77-95 Closed Loop Direct Detection Phase Measurement Receivers. Lt S. R. Robinson (RADC)



- ENP 77-96 Mode-Medium Instability in the CW CO<sub>2</sub> EDI. Capt A. Hunter (AFWL)
- ENS 77-97 Airframe Cost Estimation: An Application of Joint Generalized Least Squares. Dr. K. Womer (ASD)
- ENS 77-98 Predictive Multiple Linear Regression Models of Pilots and Navigators in USAF 1959-1981. Major G. Young (HQ USAF)
- ENC 77-99 Numerical Prediction of Flow Properties in Nozzles to be Used in Chemical Lasers. Capt J. A. MacBain (AFWL)
- ENC 77-100 Separable Criteria for G-Diagrams over Commutative Rings. Lt C. W. Roark (AFIT)
- ENC 77-101 Local and Global Bifurcation from Normal Eigenvalues II. Capt J. A. MacBain (AFIT)
- ENC 77-102 Workload Characterization and Performance Measurement for CDC CYBER 74 Computer System. Capt T. E. Reeves (ASD)
- ENG 77-103 Electromagnetic Scattering by Concentric Finite Cylinders. Capt W. A. Davis (AFAL)
- ENG 77-104 Data Analysis for Stochastic Processes. Capt J. E. Negro (AFWL)
- ENS 77-105 Application of Automatic Interaction Detector Algorithm in Testing Herzberg's Two Factor Theory of Job Satisfaction (AFLC)
- ENY 77-106 Applications of the Extremal Principles of Elasticity to the Determination of Stress Intensity Factors. Dr. P. Torvik (AFFDL)
- ENY 77-107 Chemical Reaction in Turbulent Jet. Lt J. Shea (AFFDL)
- ENC 77-108 Solutions of Algebraic Matrix Equations Related to Optimal Control Theory. Dr. J. Jones, Jr. (AFFDL)
- ENC 77-109 Kinematic Similarity of Systems of Differential Equations. Dr. J. Jones, Jr., (AFFDL)
- ENH 77-110 How Important is Technical Writing. Dr. R. Davis (AFIT)
- ENH 77-111 Technical Writing in Industry and Government. Dr. R. Davis (AFIT)
- ENP 77-112 Effects of Turbulence on the Propagation of Electromagnetic Waves. Dr. D. Shankland (AFWL)
- ENS 77-113 Weighted Productivity in R&D. Capt M. Stahl (AFOSR)
- ENS 77-114 Attitudes of Active Duty USAF Personnel Toward Military Unionization. Lt Col R. Manley, Major C. McNichols and Major G. Young (HQ USAF)



- ENY 77-115 Application of an Eigenfunction Expansion to the Determination of Stress Intensity Factors. Dr. P. Torvik (AFML)
- ENY 77-116 Fragmentation of Asteroids and Artificial Satellites in Orbit. Capt W. Wiesel (SAMSO)
- ENG 77-117 Adaptive Phase Compensation Receivers for Optical Communication. Capt S. R. Robinson (AFAL)
- ENG 77-118 Scale Invariant Form Recognition in Man and Machines. Dr. M. Kabrisky (AMRL)
- ENS 77-119 Managerial Behavior and Productivity of AFWL Scientists and Engineers. Capt M. Stahl (AFWL)
- ENY 77-120 Use of Trigonometric Finite Differences in Virtual Work Expressions for Plate Instability. Dr. A. Palazotto (AFFDL)
- ENY 77-121 Elastic-Plastic Anisotropic Materials. Dr. A. Palazotto (AFML)
- ENY 77-122 Comparing Finite Difference with Finite Element Methods for Plate Buckling. Dr. A. Palazotto (AFFDL)
- ENP 77-123 Experimental Study of Laser Stability Using Roof Reflectors. Lt Col H. Weichel (AFWL)
- ENP 77-124 Solar Electric Generating Systems Pressure Requirements. Lt Col H. Weichel (AFIT)
- ENP 77-125 Theoretical Analysis of Changes in Thermal Signatures. Capt P. E. Nielsen (HQ USAF)
- ENP 77-126 Application of Space-Angle Synthesis to Two-Dimensional Neutral-Particle Transport Problems of Weapons Physics. Dr. C. J. Bridgman (AFWL)
- ENS 77-127 Quality of Life in the USAF 1977 vs 1975. Lt Col R. Manley and Maj C. McNichols (HQ USAF)
- ENS 77-128 Some Problems of Statistical Cost Estimation. Dr. K. Womer (ASD)
- ENY 77-129 Numerical and Experimental Comparisons of the Notch Stresses in a Laminated Graphite/Epoxy Plate. Dr. A. Palazotto (AFFDL)
- ENY 77-130 Cut Out Reinforcement of Stiffened Cylindrical Shells. Dr. A. Palazotto (AFFDL)
- ENY 77-131 A New Approximate Approach Solution for Elastic Body Contact in Roller Bearings. Dr. A. Palazotto (AFFDL)
- ENY 77-132 Comparison of Elastic-Plastic Anisotropic Theories. Dr. A. Palazotto (AFML)



- ENC 77-133 Analysis of the Tests of the Chaparral IFF System. Major R. Kulp (ASD)
- ENC 77-134 Estimation of Reliability from Multiple Independent Grouped Censored Samples with Failure Times Known. Dr. A. H. Moore (AFFDL)
- ENC 77-135 A K-Sample Maximum Likelihood Ratio: Test for a Change of Shape Parameter Among Weibull Populations. Dr. A. H. Moore (AFFDL)
- ENC 77-136 Estimation of the Standard Deviation of the Logistic Distribution by Use of Selected Order Statistics. Dr. A. H. Moore (AFFDL)
- ENG 77-137 Active Sensor Technology. Capt J. Borky (AFAL)
- ENG 77-138 Designing with Microprocessors. Capt J. Borky (AFAL)
- ENS 77-139 Impact of Alcohol Abuse on Air Force Civilian Employees on Organizational Effectiveness. Lt Col R. Manley, Major C. McNichols, and Capt M. Stahl (AF/DPC)
- ENS 77-140 Weighted Individual Perceptions and the Productivity and Innovativeness of Research Groups. Capt M. Stahl (AFML)
- ENS 77-141 Study of ASD Command Level Management Information System. Major G. Young (ASD)
- ENS 77-142 Scientists, Engineers, and Unions: Revisited. Lt Col R. Manley and Major C. McNichols (AFIT)
- ENY 77-143 Lasers and Solar Heating. Dr. J. Hitchcock (AFIT)
- ENY 77-144 Incorporations of Truncated Fourier Series Into Finite Difference Approximations of Structural Stability Equations. Dr. A. Palazotto (AFFDL)
- ENY 77-145 Procedures to Expedite Column Chromatographic Separations. Dr. E. A. Dorko (AFAPL)
- ENC 77-146 Some Nonparametric Estimators for the Linear Markov Scheme. Major R. Kulp (AFFDL)
- ENG 77-147 Transmission Zeros of Linear Multivariable Continuous Time Systems. Dr. J. J. D'Azzo (AFAL)
- ENG 77-148 Pattern Deformation of Reflector Antennae Due to Icing. Capt W. A. Davis (AFCS)
- ENG 77-149 Application of an Extended Kalman Filter to an Advanced Fire Control System. Capt P. S. Maybeck (AFAL)
- ENP 77-150 Benefits and Risks of Nuclear Power. Dr. C.J. Bridgman (AFIT)



- ENS 77-151 Using the Hackman Approach for Job Diagnosis. Lt Col R. Manley (HQ USAF)
- ENY 77-152 The Determination of Material Properties for Hybrid Composites. Dr. A. Palazotto (AFML)
- ENY 77-153 An Assessment of the Use of the Initial Quality Concept in the Estimation of Economic and Safe Life. Dr. P. Torvik (AFFDL)

## II. FACULTY CONSULTATIONS

### 164 Consulting Activities - Calendar Year 1977 - Summary

<u>SPONSORS</u>		<u>DEPARTMENT</u>	
ASD	42	ENG	48
AFAL	26	ENP	48
AFWL	15	ENS	29
AFLC	10	ENC	22
AFML	8	ENY	7
AFFDL	8	ENF	6
FTD	6	ENH	4
DARPA	6		
HQ USAF	6	TOTAL	164
AMRL	5		
RADC	5		
MED CTR	3		
AFAPL	3		
AFWAL	2		
AFHRL	2		
AFCS	2		
6585th	2		
AFOSR	2		

One each from AF Security Service, AFRPL, SAMSO, AFTAC, HQ SAC, SOM, AFALD, ERDA, AFOSI, NSA, AU.



CY-1977 Consulting Activities

Jan	77-1	AFAL	<u>Prof R. S. Potter.</u> Monopulse Radar Electronic Countermeasures (ENG)
Jan	77-2	FTD/EN	<u>Dr. P. S. Maybeck.</u> Signal Filter Design (ENG)
Jan	77-3	RADC	<u>Maj J. O. Gobien.</u> Jam-Resistant UHF Voice Communication (ENG)
Jan	77-4	AFAL/ RWT	<u>Maj R. M. Potter, Capt J. E. Negro.</u> Advanced Air-to-Air Tracking Technology (ENG)
Jan	77-5	ASD/XOR	<u>Dr. M. E. Franke.</u> Consultation on Project Management (ENY)
Jan	77-6	AFFDL	<u>Capt M. Stahl.</u> Innovation and Productivity in R&D (ENS)
Jan	77-7	DARPA	<u>Dr. D. A. Lee.</u> Consult on Rare Gas/Halogen Lasers (ENC)
Jan	77-8	ASD	<u>Dr. A. H. Moore.</u> Statistical Problems in Analysis of Test Data (ENC)
Jan	77-9	ASD/SDX	<u>Dr. D. R. Barr.</u> Statistical Consultation (ENC)
Jan	77-10	AFFDL	<u>Dr. A. H. Moore.</u> Confidence Limits for Reliability Based on Sequential Tests (ENC)
Jan	77-11	ASD/ AEWA	<u>Capt W. Davis.</u> Electronic Warfare Problems (ENG)
Jan	77-12	AFFDL/ FGD	<u>Capt J. Negro.</u> Analysis and Simulation of Integrated Flight and Fire Control Systems (ENG)
Jan	77-13	AFAL/RW	<u>Lt S. Robinson.</u> Propagation Effects of Weather on 10.6 Micron Laser Light (ENG)
Jan	77-14	AFAL/ DHO	<u>Maj J. Gobien, Lt S. Robinson.</u> Electro Optics (ENG)
Jan	77-15	AFAPL	<u>Capt A. Hunter.</u> Polarization of a Diatomic Gas (ENP)
Jan	77-16	AFAL/RW	<u>Dr. T. Luke.</u> 10.6 Micron Atmospheric Propagation Characteristics (ENP)
Jan	77-17	AFAL/ DHO	<u>Dr. T. Luke, Major B. Pierce.</u> GaAs and Dye Laser Scanner Programs (ENP)
Jan	77-18	AFWL	<u>Capt P. E. Nielsen, Capt A. Hunter.</u> Charged Particle Beam Research (ENP)
Jan	77-19	AFWL/ DYT	<u>Capt A. Hunter.</u> Solving the Collisional Boltzmann Equation (ENP)
Jan	77-20	DARPA	<u>Capt A. Hunter.</u> Stability of Electrical Discharges in Rare Gas - Halide Lasers (ENP)



Jan	77-21	PRAM SPO ASD	<u>Maj R. Couch.</u> Electrostatic Methods of Diagnosing Engine Health (ENP)
Jan	77-22	HQ USAF	<u>Lt Col R. Manley, Capt M. Stahl.</u> Initiatives for Greater Institutional Commitment by AF Members (ENS)
Jan	77-23	HQ USAF	<u>Lt Col R. Manley, Capt M. Stahl.</u> Proposal Voluntary Two Year National Service Program (ENS)
Jan	77-24	A-10 SPO ASD	<u>Dr. K. Womer.</u> Contract Award for GAU-8 Ammunition (ENS)
Feb	77-25	4950th Test Wg	<u>Prof H. Larsen.</u> Safe Venting of C-141 Cargo Hull (ENF)
Feb	77-26	ERDA	<u>Prof H. Larsen.</u> Consult on Theory of Gyromill Model of McDonnell Douglas (ENF)
Feb	77-27	AF OSI/ IVT	<u>Capt F. D. Kirschner.</u> Low Noise Applications for Electronic Potentiometer (ENG)
Feb	77-28	F-16 SPO	<u>Capt P. E. Miller, Capt J. B. Peterson.</u> Generation for F-16 Digital Module (ENG)
Feb	77-29	AFOSR	<u>Lt S. Robinson.</u> Proposal Evaluation - Adaptive Optics System (ENG)
Feb	77-30	RADC	<u>Maj J. O. Gobien, Lt S. Robinson.</u> UHF Jam-Resistant Secure-Voice Communication System (ENG)
Feb	77-31	AFAL/WRP	<u>Lt S. Robinson, Maj J. O. Gobien.</u> Measurement Program to Determine IR Signatures of Targets (ENG)
Feb	77-32	RADC	<u>Dr. T. L. Regulinski.</u> Consult on C <sup>3</sup> Sensors and Software (ENG)
Feb	77-33	FTD	<u>Capt P. E. Nielsen, Maj B. J. Pierce.</u> Review of Soviet Technical Paper (ENP)
Feb	77-34	FTD	<u>Dr. C. J. Bridgman.</u> Consult on Strategic Nuclear Studies ENP
Feb	77-35	AFAL/RWI	<u>Maj B. J. Pierce.</u> Consult on Proposed CO <sub>2</sub> Propagation Measurement Range (ENP)
Feb	77-36	AFAL/DHE	<u>Dr. T. E. Luke.</u> Consult on CCD Array Technology (ENP)
Feb	77-37	AFLC/	<u>Dr. J. Cain.</u> Productivity Measures of Organizational Effectiveness (ENS)
Feb	77-38	ASD/AC	<u>Lt Col A. Harrell, Maj G. Young.</u> Consult on Management Information System (ENS)



Feb	77-39	AFOSR	<u>Capt J. Knight.</u> Prototype Simulation Model of Air Force Manpower System (ENS)
Feb	77-40	HQ USAF	<u>Lt Col R. Manley, Capt M. Stahl.</u> Consult to IMPACT 77 Study Group Steering Committee (ENS)
Feb	77-41	F-4 SPO	<u>Dr. R. Klug.</u> Configuration Management and Spares Support in Foreign Sales (ENS)
Feb	77-42	ASD	<u>Maj G. Young.</u> Consult with Director of Programs and Budget on Management Information Systems (ENS)
Mar	77-43	DARPA	<u>Dr. D. A. Lee.</u> Evaluation of Clutter Leakage for a HALO-Type Signal Processor (ENC)
Mar	77-44	AFAL/RNI	<u>Dr. P. S. Maybeck.</u> Consultant on Combined Electro-Optical Sensor Outputs in Inertial Navigation Systems (ENG)
Mar	77-45	AFFDL	<u>Dr. P. S. Maybeck.</u> Evaluation Team Member for Dispersal and Reconfigurable Digital Flight Control Systems (ENG)
Mar	77-46	ASD/ ENAD	<u>Maj J. O. Gobien, Lt S. Robinson.</u> Evaluation Team Member for IR Warning Receiver (ENG)
Mar	77-47	ASD/ ENFTV	<u>Capt S. M. Millett.</u> Consult on Probable Scenarios of Theater Nuclear Warfare (ENH)
Mar	77-48	SOM, Brooks AFB	<u>Capt P. E. Nielsen.</u> Physiological Damage from Lowest-Order Mode Laser Beams (ENP)
Mar	77-49	ASD/YZ	<u>Maj R. Couch.</u> Consult on Electrostatic Methods for Jet Engine Wear Rate Monitoring (ENP)
Mar	77-50	DARPA	<u>Capt P. E. Nielsen.</u> Laser Propelled Rocket Program (ENP)
Mar	77-51	ASD	<u>Maj H. Weichel.</u> Laser Safety Goggles for Air Crew Members (ENP)
Mar	77-52	AFLC/XRS	<u>Dr. J. Cain.</u> Measuring Effectiveness of Orthodox Job Enrichment Program (ENS)
Mar	77-53	AFLC/SP	<u>Dr. R. Klug.</u> Performance and Qualification Standards for Security Personnel (ENS)
Mar	77-54	AFALD/ PTQ	<u>Dr. R. Klug.</u> Develop a Management Information System (ENS)
Mar	77-55	AF/DPX	<u>Lt Col R. Manley, Maj C. McNichols, Capt M. Stahl.</u> Survey of AF Commanders (ENS)
Mar	77-56	HQ AFLC/ XRS	<u>Maj G. Young.</u> Refining Measurement Instruments for Evaluating Job Enrichment Program (ENS)



Mar	77-57	AFFDL	<u>Dr. E. A. Dorko.</u> Calculation of Combustion System Parameters for NASA JP 273 Program (ENY)
Mar	77-58	HQ SAC	<u>Dr. P. Torvik.</u> Surface Recession Due to High Energy Lasers (ENY)
Apr	77-59	AFAL/ RWA-3	<u>Capt G. Orr.</u> Numerical Solution of Equations (ENC)
Apr	77-60	AFCS & ESD	<u>Capt W. A. Davis.</u> Position Errors Due to Ice on PAR Systems (ENG)
Apr	77-61	RADC	<u>Capt W. A. Davis.</u> Monopole Antenna Array on Aircraft (ENG)
Apr	77-62	ASD/ ENACB	<u>Capt W. A. Davis.</u> UHF Filter Design (ENG)
Apr	77-63	ASD/ ENADC	<u>Lt S. Robinson, Maj J. O. Gobien.</u> Problems on Infrared Sensors (ENG)
Apr	77-64	AFAL/RWI	<u>Maj B. J. Pierce.</u> CO <sub>2</sub> Laser Placement (ENP)
Apr	77-65	6570 AMRL/EM	<u>Dr. G. John.</u> Analysis of Radiative Samples for Blood Flow Research (ENP)
Apr	77-66	AF MED CEN	<u>Dr. G. R. Hagee.</u> Quality Control Procedures (ENP)
Apr	77-67	AFWL	<u>Maj H. Weichel.</u> Damage Mechanisms of Picosecond Laser Pulses (ENP)
Apr	77-68	ASD/DPC	<u>Lt Col R. Manley.</u> Evaluation of New ASD Civil Service Performance Appraisal Form (ENS)
May	77-69	ASD/ ENADD	<u>Prof C. Edstrom.</u> Analytical Modeling of an Air-to-Air Guided Missile (ENC)
May	77-70	AFAL/ TWI-1	<u>Dr. P. S. Maybeck, Lt S. Robinson.</u> Approaches to Perform Image Data Processing (ENG)
May	77-71	AFAL/TWT	<u>Maj J. W. Carl.</u> Map Correlation Navigation Systems (ENG)
May	77-72	DARPA	<u>Capt P. E. Nielsen.</u> Laser-Personnel Rockets (ENP)
May	77-73	SAMSO	<u>Lt Col H. Weichel.</u> Consult on Sun-Pumped Laser (ENP)
May	77-74	AFTAC	<u>Dr. R. Hengehold.</u> Laser Reflection Studies (ENP)
May	77-75	AFWL/DYP	<u>Capt A. Hunter.</u> Couple Physical Optics Calculations with Computer Programs that Solve Boltzmann Equation(ENP)



May	77-76	ASD/AC	<u>Dr. J. Cain.</u> Consult on PRICE Model (ENS)
May	77-77	AFFDL/ FES	<u>Dr. E. A. Dorko.</u> Chemical Aspects of Modeling Ignition High Speed Projectiles (ENY)
Jun	77-78	AFLC Tinker	<u>Dr. A. H. Moore.</u> Analysis of Aircraft Engine Failure (ENC)
Jun	77-79	A-10 SPO ASD	<u>Dr. A. H. Moore.</u> Confidence Limits for Mean Number of Rounds Between Failures (ENC)
Jun	77-80	F-16 SPO ASD	<u>Capt P. E. Miller.</u> Advice to Source Selection Board for Automatic Test Pattern Generator Equipment (ENG)
Jun	77-81	AFAL	<u>Maj J. O. Gobien.</u> Consult on Spread Spectrum Communication Techniques (ENG)
Jun	77-82	RADC	<u>Maj J. O. Gobien.</u> Consult on SEEK-TALK Jam-Resistant Communication System (ENG)
Jun	77-83	ASD	<u>Dr. R. Davis.</u> Seminar on Executive Briefings (ENH)
Jun	77-84	AFWL/ALO	<u>Capt A. Hunter.</u> Non Boltzmann Rotational Distributors in Chemical Laser (ENP)
Jun	77-85	AFAL/DHE	<u>Dr. T. E. Luke, Dr. R. L. Hengehold.</u> State of the Art in Focal Plane Arrays for Electro-Optic Systems (ENP)
Jun	77-86	AFAPL	<u>Capt A. Hunter.</u> VW CO <sub>2</sub> Electric Discharge Laser Instability (ENP)
Jun	77-87	AFML	<u>Dr. R. L. Hengehold, Capt B. J. Pierce.</u> Problem in GaP Detectors (ENP)
Jun	77-88	AFML	<u>Dr. R. L. Hengehold.</u> Optical Characterization of Silicon Photodetector Materials (ENP)
Jun	77-89	AFAL	<u>Dr. T. E. Luke, Dr. R. L. Hengehold.</u> Extrinsic Silicon Detectors and Detector Arrays (ENP)
Jun	77-90	ASD/CC	<u>Lt Col R. Manley, Maj C. McNichols, Capt M. Stahl.</u> Develop a Flexitime Survey Instrument (ENS)
Jul	77-91	AFWL	<u>Capt J. A. MacBain.</u> Economical Inversion of Large Sparse Matrices (ENC)
Jul	77-92	AFAL/ RWT-2	<u>Capt G. Orr.</u> Numerical Methods for Integral and Differential Systems (ENC)
Jul	77-93	AFML	<u>Dr. J. Jones, Jr.,</u> Microablation of Composite Materials (ENC)



Jul	77-94	RPV SPO ASD	<u>Prof H. Larsen.</u> Wind Tunnel Tests for AGM 34 Ground Launch Program (ENF)
Jul	77-95	AFAL/ RWT-3	<u>Maj J. Carl.</u> Contract Evaluation of Advanced Techniques for Navigating Cruise Missile (ENG)
Jul	77-96	AFAL/ALO	<u>Lt S. Robinson.</u> Estimation Problems with Beam Control Sensors.
Jul	77-97	PLSS SPO ASD	<u>Dr. M. Kabrisky, Maj J. Carl.</u> Information Processing Techniques for Precision Location and Strike Systems (ENG)
Jul	77-98	AFWL	<u>Capt J. E. Negro.</u> Data Analysis Software Verification (ENG)
Jul	77-99	ASD/ ENAMB	<u>Lt S. R. Robinson.</u> IR Background Measurement Program (ENG)
Jul	77-100	AFAL/WRW	<u>Lt S. R. Robinson.</u> Consult on Proposed Spread Spectrum Tail Warning Radar (ENG)
Jul	77-101	ASD/AERR	<u>Lt S. R. Robinson.</u> Active Electro-Optics Countermeasures (ENG)
Jul	77-102	AFWL/DYP	<u>Capt P. E. Nielsen.</u> Charged Particle Beams (ENP)
Jul	77-103	AFWL	<u>Dr. R. L. Hengehold.</u> Auto-Reflection of Optical Radiation from Reflectory Surfaces (ENP)
Jul	77-104	FTD	<u>Lt Col H. Weichel.</u> Charged Particle Beam Devices (ENP)
Jul	77-105	AFWL/ALE	<u>Capt A. Hunter.</u> Parametric Calculations on Laser Stability (ENP)
Jul	77-106	DARPA	<u>Capt P. E. Nielsen.</u> Consult on JASON Summer Study Project (ENP)
Jul	77-107	AFFDL	<u>Lt Col R. Manley, Maj C. McNichols, Capt M. Stahl.</u> Evaluation of Labs OD Program (ENS)
Jul	77-108	AFML	<u>Maj R. Kulp.</u> Design of Experiments for Fatigue Testing (ENC)
Jul	77-109	AMRL/EMT	<u>Capt G. Orr.</u> Improving Modeling of Detection and Acquisition in the POOL Model (ENC)
Aug	77-110	4950th Test Wg	<u>Prof H. Larsen.</u> Pressure Distribution of Protuberances of Aircraft Modifications (ENF)
Aug	77-111	AFWL/ALO	<u>Dr. C. Houppis.</u> Control Theory (ENG)
Aug	77-112	AFWL/ADS	<u>Dr. G. Lamont.</u> Testing of Nuclear Digital Control Systems (ENG)



Aug	77-113	FTD	<u>Dr. R. Davis.</u> Course in Technical Writing (ENH)
Aug	77-114	ASD/AEL	<u>Dr. T. E. Luke, Dr. R. L. Hengehold.</u> Consult on PAVE System (ENP)
Aug	77-115	AFML	<u>Dr. T. E. Luke, Dr. R. L. Hengehold.</u> Consult on AIM 9L Missile (ENP)
Aug	77-116	ASD/ AGM 65	<u>Dr. T. E. Luke, Dr. R. L. Hengehold.</u> Consult on Maverick Missile (ENP)
Aug	77-117	AFWL	<u>Capt P. E. Nielsen.</u> Consult on Plasma Physics (ENP)
Aug	77-118	ASD/AER	<u>Dr. T. E. Luke, Dr. R. L. Hengehold.</u> Consult on PAVE SPIKE and PAVE TACK FLIR (ENP)
Aug	77-119	AFLC	<u>Dr. K. Womer.</u> Expert Witness at Legal Proceedings (ENS)
Aug	77-120	AFHRL	<u>Capt J. Knight.</u> Consult on AF Personnel Demand System (ENS)
Aug	77-121	AFWAL	<u>Lt Col R. Manley, Capt M. Stahl.</u> Flexitime Survey (ENS)
Aug	77-122	ASD	<u>Lt Col R. Manley, Maj C. McNichols, Capt M. Stahl.</u> Consult to ASD Management Consulting Office (ENS)
Aug	77-123	AFAL	<u>Dr. E. A. Dorko.</u> Consult on Laser Dye Project at Batelle (ENY)
Aug	77-124	AFML	<u>Dr. P. Torvik.</u> Applications of Extremal Principles to Stress Factors (ENY)
Aug	77-125	ASD	<u>Dr. D. W. Breuer.</u> Turbine Blade (ENY)
Sep	77-126	AF Sec. Serv.	<u>Dr. A. H. Moore.</u> Consult on Statistical Decision Theory (ENC)
Sep	77-127	AFRPL	<u>Prof C. W. Richard.</u> Consult on MIMIC Simulation Language (ENC)
Sep	77-128	AFWL	<u>Maj K. Melendez, Capt J. MacBain.</u> Consult on 2-D Viscous Implicit Coupling Code for Laser Nozzle Problems (ENC)
Sep	77-129	ASD/ ENACC	<u>Capt S. R. Robinson.</u> Consult on ECM/ECCM Techniques for IFF Systems (ENG)
Sep	77-130	AFAL/DH AFAL/RW	<u>Capt S. R. Robinson.</u> E-O Research Program (ENG)
Sep	77-131	AMRL/CC	<u>Dr. M. Kabrisky.</u> Man-Machine Interface Activities (ENG)



Sep 77-132 AFAL/RWI Capt S. R. Robinson. Proposed 3-D Laser Sensor (ENG)

Sep 77-133 ASD/EN Maj J. W. Carl. Man-Machine Interface and Display Design (ENG)

Sep 77-134 HQ USAF Maj J. W. Carl, Capt G. L. Vaughn. Voice Communication System Instrumentation Problems (ENG)

Sep 77-135 AMRL/HE Maj J. W. Carl. Display Design Criteria (ENG)

Sep 77-136 6585th Maj R. Potter. Rocket Shed Instrumentation (ENG)  
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Sep 77-137 AFAL Dr. R. L. Hengehold. Countermeasure Concepts for Current Electro-Optic Systems (ENP)

Sep 77-138 HQ USAF Capt P. E. Nielsen. Thermal Signatures (ENP)

Sep 77-139 AFLC/JA Dr. K. Womer. Consult on Contract Dispute (ENS)

Sep 77-140 AGM-65 Dr. K. Womer. Single Rail Type Rail Launch Study (ENS)  
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Oct 77-141 NSA Dr. D. A. Lee, Lt C. W. Roark. Security (ENC)

Oct 77-142 ASD Prof H. Larsen. Installation of Integrated Multi-frequency Radar on C-141 (ENF)

Oct 77-143 ASD/  
ENASC Capt J.E. Negro. Gimbal Specifications for F-16 Pad Mounted Laser Target System (ENG)

Oct 77-144 AFAL Dr. P. S. Maybeck. Kalman Filter on Mobile Evaluation Laboratory (ENG)

Oct 77-145 6585th Capt J. E. Negro. Random Data Analyses (ENG)  
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Oct 77-146 ASD Lt Col H. Weichel. Consult on PAVE SPIKE (ENP)

Oct 77-147 AFML/LLM Dr. G. John. Materials Available for Mossbauer Studies of Amosphous Metals (ENP)

Nov 77-148 AFLC Dr. A. H. Moore. Analysis of Engine Failure Data (ENC)

Nov 77-149 AFAL/  
AA-3 Dr. A. H. Moore. Statistical Problems in Combining Sensor Outputs (ENC)

Nov 77-150 AFML Dr. D. A. Lee. Fast Fourier Transforms (ENC)

Nov 77-151 4950th Prof H. E. Larsen. Aircraft Performance Data (ENF)  
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Nov 77-152 AU Lt S. Laubenthal. Plans for Historical Research (ENH)

Nov 77-153 AFAPL Capt A. Hunter. Electric Laser Discharge Stability (ENH)

Nov 77-154 FTD/PDBI Dr. C. J. Bridgman. Nuclear Weapons (ENP)

Nov 77-155 MEDCEN/  
SGPB Dr. G. John. Assaying Plutonium (ENP)

Nov 77-156 MEDCEN Dr. G. John. Radiological Hazards Committee Member (ENP)

Nov 77-157 ASD Capt P. E. Nielsen. Thermal Signatures (ENP)

Nov 77-158 AFLC Dr. K. Womer. Consult on Contract Litigations (ENS)

Nov 77-159 AFWAL Capt M. Stahl. Study Results of Interchange Program (ENS)

Nov 77-160 AFHRL Capt J. Knight. Consult on Proposal Evaluation (ENS)

Dec 77-161 AFCS Capt W. A. Davis. Antenna Deformation Due to Icing (ENG)

Dec 77-162 MEDCEN Maj J. W. Carl. Radiological Imaging Equipment (ENG)

Dec 77-163 AFLC Dr. K. Womer. Logistic Management Center (ENS)



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\_\_\_\_\_. "Laser Fundamentals and Applications," Executive Overview of Current Technology, WPAFB OH, 12-13 September 1977.

\_\_\_\_\_. "Laser/Optics Short Course," AFWL, Kirtland AFB NM, 26-30 September 1977.

\_\_\_\_\_, and J. P. Mills. "An Experimental Study of Laser Stability Using Roof Reflectors," Ohio Section/American Physical Society, Miami University, Oxford OH, 22 October 1977.

\_\_\_\_\_, and R. C. Enger. "Solar Electric Generating System Resource Requirements," Ohio Section/American Physical Society, Miami University, Oxford OH, 22 October 1977.



AFIT/EN 1977 Presentations

- \_\_\_\_\_. "Executive Overview of Current Technology Short Course," AFIT Subcommittee of the Air University Board of Visitors, WPAFB OH, 21 November 1977.
- Whaley, Capt P. W. "Angular Vibration Frequency Response of Mass-Loaded, Simply Supported Beam," ASD-AIAA Mini-Symposium on Affordable Systems, WPAFB OH, 24 March 1977.
- \_\_\_\_\_. "Measurement of Angular Vibration Using Conventional Accelerometers," 9th Transducer Workshop, Ft Walton Beach FL, April 1977.
- \_\_\_\_\_. "Calculation of Natural Frequencies and Mode Shapes of Mass Loaded Aircraft Structures," 48th Shock and Vibration Symposium, Huntsville AL, October 1977.
- Womer, N. K. "Aircraft Airframe Cost Estimation Utilizing a Components of Variance Model," Dayton Chapter of the American Statistical Association, Dayton OH, February 1977.
- \_\_\_\_\_. "Learning Curves, Production Rate, and Program Costs," ORSA/TIMS National Meeting, San Francisco CA, May 1977.
- \_\_\_\_\_. "Airframe Cost Estimation: An Application of Joint Generalized Least Squares," 39th Military Operations Research Symposium, Annapolis MD, June 1977.
- \_\_\_\_\_. "Some Problems of Statistical Cost Estimation," 12th Annual Department of Defense Cost Analysis Symposium, Colorado Springs CO, October 1977.
- Wright, H. E. (See Elrod, W. C., et al)
- \_\_\_\_\_. (See Elrod, W. C., et al)
- Young, Maj G. C., Jr., and J. M. Berry. "Predictive Multiple Linear Progression Models of Pilots and Navigators in the U. S. Air Force for the Period 1959 through 1981," Thirty-Ninth Military Operations Research Symposium, U. S. Naval Academy, Annapolis MD, 29-30 June 1977.
- \_\_\_\_\_. "Military Unionization: Empirical Research Findings," American Psychological Association Annual Convention, San Francisco CA, 27 August 1977.
- \_\_\_\_\_. (See Stahl, Capt M. J.)



V. MASTER AND DOCTORAL TITLES

Calendar Year 1977 - Summary

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ASD	20	ENS	32
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AFWL	10	ENC	<u>12</u>
AFML	7		
RADC	6	TOTAL	163
AFAPL	5		
AFLC	5		
SAMSO	4		
AMRL	4		
AFCS	4		
HQ USAF	4		
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		TOTAL	5



GA/EE/77-1	NAVIGATIONAL ACCURACY REQUIREMENTS OF AEROMANEUVERING SPACE VEHICLES	CAPT R. J. CHAMBERLAIN JR. SPONSOR: SAMSO
GA/EE/77-2	PARAMETER OPTIMIZATION GUIDANCE	CAPT D. J. MITCHELL SPONSOR: AEROSPACE CORP
GA/AA/77D-1	OPTIMAL CONTROL OF AN ORBITING SATELLITE CONTAINING FLEXIBLE APPENDAGES	CAPT V. T. CILMI SPONSOR: SAMSO
GA/AA/77D-2	NONLINEAR COLLAPSE ANALYSIS ON CYLINDRICAL SHELLS	2d LT N. L. COMPTON SPONSOR: AFFDL
GA/AA/77D-3	STATION KEEPING AT THE L4 LIBRATION POINT: A THREE-DIMENSIONAL STUDY	CAPT G. DeFILIPPI, JR. SPONSOR: SAMSO
GA/AA/77D-4	NUMERICALLY DETERMINED OPTIMUM DRAG SHAPES FOR HYPERSONIC AXISYMMETRIC FOREBODIES	2d LT JOHN P. DUKE SPONSOR: AFFDL
GA/AA/77D-6	APPLICATION OF TRIGONOMETRIC AND CONVENTIONAL FINITE DIFFERENCE APPROXIMATIONS TO BEAM BUCKLING	CAPT S. R. HANNAH SPONSOR: AFFDL
GA/AA/77D-8	MAGNUS EFFECT ON A BALLISTIC TRAJECTORY	MAJ J. D. SCHNEIDER SPONSOR: AFATC
GA/AA/77D-9	A NUMERICAL ANALYSIS OF FRACTURE IN A LAMINATED FIBROUS COMPOSITE PLATE	CAPT W. P. WITT SPONSOR: AFML
GA/AA/77D-10	INVESTIGATION OF THE THERMAL PERFORMANCE OF A LOW COST LIQUID-HEATING FLAT PLATE SOLAR COLLECTOR	CAPT C. E. GROVES SPONSOR: AFIT
GA/EE/77-3	OPTIMAL TERRAIN FOLLOWING CONTROLLER FOR AN OPTIMIZED SPLINE REFERENCE PATH	CAPT R. T. KELLEY SPONSOR: ASD
GA/EE/77-4	PSEUDO-RANGE MEASUREMENTS USED TO INCREASE THE SAMPLING RATE OF THE AIDED TRACK ALGORITHM	CAPT J. M. PETEK SPONSOR: AFWL
GA/EE/77-5	OPTIMAL MISSILE EVASION	CAPT R. L. SMITH SPONSOR: ASD
GA/EE/77-6	IMPROVING AIDED TRACK PERFORMANCE DURING PERIODS OF TRACKER SENSOR FAILURE BY UTILIZING A TARGET BODY FIXED COORDINATE SYSTEM	CAPT J. G. TERRY SPONSOR: AFWL
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GAE/AA/77D-4	AN ANALYSIS OF THE TRI-SERVICE THERMAL RADIATION TEST FACILITY	CAPT F. S. FAZEKAS SPONSOR: AFML
GAE/AA/77D-5	FLOW CHARACTERISTICS IN A TWO-DIMENSIONAL MULTIPLE-NOZZLE MULTIPLE-DIFFUSER ASSEMBLY	CAPT J. L. KINER SPONSOR: AFWL
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GAE/AA/77D-8	BUCKLING OF AXIALLY COMPRESSED STRINGER STIFFENED CYLINDERS WITH AND WITHOUT CUTOUT	CAPT D. A. NELSON SPONSOR: AFFDL
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GCS/EE/77-3	A GENERAL COMPUTER NETWORK SIMULATION	CAPT H. M. WARREN, JR. SPONSOR: AFSDC



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GCS/EE/77-11	PRELIMINARY DESIGN FOR MULTIMODE MATRIX PERCEPTION EXPERIMENT SOFTWARE	CAPT S. B. WENSKA SPONSOR: AFFDL
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GE/EE/-7-21	AIRCREW INFLIGHT PHYSIOLOGICAL DATA ACQUISITION SYSTEM II	CAPT J. B. JOLDA CAPT S. J. WANZEK SPONSOR: SAM
GE/EE/77-24	BUS INTERFACE UNIT DESIGN FOR THE DISTRIBUTED PROCESSOR/MEMORY SYSTEM	CAPT L. T. KONNO SPONSOR: AFAL
GE/EE/77-25	TARGET CLASSIFICATION BY TIME DOMAIN ANALYSIS OF RADAR SIGNATURES	MAJ D. B. KULCHAK SPONSOR: AFAL
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GE/EE/77-28	QUANTITATIVE PROCESSING OF SIGNAL SPACE DATA TO PROVIDE TRANSMISSION LINE ANALYSIS	CAPT R. A. MINTONYE SPONSOR: RADC
GE/EE/77-30	MODULATION TECHNIQUES FOR DEFEATING PASSIVE RETICLE-BASED INFRARED SYSTEMS	CAPT C. F. MOORE SPONSOR: AFAL
GE/EE/77-31	EMULATION OF THE PROCESSOR FOR DISTRIBUTED PROCESSOR/MEMORY SYSTEM USING AM 2900 MICROPROCESSOR SHIP SET	FLT LT M. EJAZ, PAF SPONSOR: AFAL
GE/EE/77-32	EVALUATION OF COHERENT FSK PERFORMANCE IN ATMOSPHERIC RADIO NOISE	CAPT A. L. NEJEZCHLEB SPONSOR: RADC
GE/EE/77-33	PERFORMANCE ANALYSIS OF CONTINUOUS-PHASE FREQUENCY SHIFT KEYING MODULATION IN ATMOSPHERIC NOISE	CAPT K. R. OLSON SPONSOR: RADC



GE/EE/77-34	CONTRAST SENSITIVITY OF THE HUMAN VISUAL SYSTEM AT ONE LUMINANCE LEVEL WHILE ADAPTED TO A STIMULUS AT ANOTHER LUMINANCE LEVEL	CAPT C. P. SCHEIDEGG SPONSOR: AMRL
GE/EE/77-37	QUADRATURE CLOCK MODULATION VERSUS BINARY AND QUADRATURE PHASE SHIFT KEYING IN THE PRESENCE OF INTERSYMBOL INTERFERENCE	CAPT G. A. WHITE SPONSOR: DCEC
GE/EE/77-38	ELECTRICAL PROFILING OF MAGNESIUM IMPLANTED GALLIUM PHOSPHIDE	CAPT D. J. LANK SPONSOR: AFAL
GE/EE/77-39	THE TERRAIN FOLLOWING TASK FOR THE ADVANCED TACTICAL FIGHTER USING DISCRETE OPTIMAL CONTROL	MAJ R. L. SIMMONS SPONSOR: ASD
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GE/EE/77-42	STATE NOISE COVARIANCE COMPUTATION IN THE KALMAN FILTER	CAPT D. A. ARPIN SPONSOR: AFAL
GE/EE/77-43	THE DESIGN AND SIMULATION OF A TAKEOFF STABILIZATION SYSTEM FOR AN AIRCRAFT WITH AN AIR CUSHION LANDING SYSTEM	CAPT E. A. KENNEY SPONSOR: AFFDL
GE/MA/77D-1	A DISCRETE-EVENT DIGITAL SIMULATION MODEL OF THE F-16 FIRE CONTROL COMPUTER OPERATIONAL FLIGHT PROGRAM USING SIMSCRIPT II.5	CAPT L. R. HANSON SPONSOR: AFAL
GE/MA/77D-2	DOCUMENTATION OF ALGORITHM FOR RADAR SIGNATURE ANALYSIS	LT COL J. J. GRESS SPONSOR: AFAL
GEO/PH/77-1	A MATRIX APPROACH TO A PROPAGATION CODE	2d LT P. L. MISUINAS SPONSOR: ASD
GEO/PH/77-2	DESIGN AND EVALUATION OF COUPLERS FOR A MULTIMODE SINGLE FIBER OPTICAL DATA BUS	2d LT M. C. OGAN SPONSOR: AFAL
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GEO/EE/77-3	FIELD PROPERTIES OF MULTIPLE, COHERENTLY COMBINED LASERS	CAPT H. E. HAGEMEIERS SPONSOR: AFAL
GEO/EE/77-4	A SPECKLE NOISE MODEL FOR HETERODYNE LINE-SCAN IMAGERY	CAPT B. W. LYONS SPONSOR: AFAL
GEO/EE/77-5	SPATIAL AND TEMPORAL CODING OF GaAs LASER FOR A LASER LINE SCAN SENSOR	CAPT R. S. SHINKLE SPONSOR: AFAL
GEO/EE/77-6	SPATIAL FILTERING DESIGN CONSIDERATIONS FOR A LASER LINE SCANNING SENSOR	CAPT W. D. STRAUTMAN SPONSOR: AFAL
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GEP/PH/77-2	A STUDY OF FLASH BLINDNESS RECOVERY	CAPT A. M. DICKSON SPONSOR: AMRL
GEP/PH/77-3	SOLAR ELECTRIC GENERATING SYSTEM RESOURCE REQUIREMENTS AND THE FEASIBILITY OF ORBITING SOLAR REFLECTORS	CAPT R. C. ENGER SPONSOR: AFWL
GEP/PH/77-4	EFFECT OF RADIAL VELOCITY DISTRIBUTION ON COLLECTIVE ION ACCELERATION IN A CONVERGING WAVEGUIDE	2d LT R. P. HENDERSON SPONSOR: AFWL
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GEP/PH/77-12	A THEORETICAL ANALYSIS OF CHANGES IN THERMAL SIGNATURES CAUSED BY PHYSICAL AND CLIMATOLOGICAL FACTORS	CAPT J. T. SMALL, SPONSOR: HQ USAF



GEP/PH/77-13	CATHODOLUMINESCENT PROFILING OF ION IMPLANTED SEMICONDUCTORS USING ION ETCHING	MAJ G. E. VICE SPONSOR: AFAL
GEP/PH/77-14	LONG PATH, VISIBLE AND INFRARED TRANSMISSOMETER: CALIBRATION AND USE	L. O. VROOMBOUT SPONSOR: AFAL
GEP/PH/77-15	DEPTH RESOLVED CATHODOLUMINESCENCE OF CARBON IMPLANTED GALLIUM-ARSENIDE	2d LT M. J. WALTER SPONSOR: AFML
GEP/PH/77-16	LIFETIME MEASUREMENTS USING FLUORESCENCE EMISSION	CAPT J. J. WHARTON, JR. SPONSOR: AFAL
GEP/PH/77-17	ATMOSPHERIC ATTENUATION OF HeNe LASER RADIATION	CAPT G. G. WILLIFORD SPONSOR: AFAL
GEP/AA/77D-1	FURTHER SHOCK TUBE KINETIC STUDIES OF MONOMETHYLAMINE	CAPT J. C. WERT III SPONSOR: AFAPL
GEP/AA/77D-2	KINETICS AND WAVE LENGTH DEPENDENCE OF THE PHOTOLYTIC DEGRADATION OF KITON RED-S LASER DYE	2d LT K. O'BRIEN SPONSOR: AFAPL
GGC/EE/77-1	INTERAC - AN INTERACTIVE SOFTWARE PACKAGE FOR DIGITAL CONTROL DESIGN	CAPT J. A. COLGATE SPONSOR: AFFDL
GGC/EE/77-2	PERFORMANCE IN A JAMMING ENVIRONMENT OF A LOW-COST GPS USER RECEIVER ALGORITHM FOR AIDING A TACTICAL INS	1st LT S. E. CROSS SPONSOR: AFAL
GGC/EE/77-3	APPLICATION OF A MAXIMUM LIKELIHOOD PARAMETER ESTIMATOR TO AN ADVANCED MISSILE GUIDANCE AND CONTROL SYSTEM	MAJ R. DAYAN SPONSOR: AFAL
GGC/EE/77-4	DIRECT DIGITAL DESIGN OF THE FLIGHT CONTROLLER FOR THE PITCH AXIS OF THE A-7D AIRCRAFT	2d LT S. E. ENKE SPONSOR: AFFDL
GGC/EE/77-5	AN INVESTIGATION OF THE TRACKING PERFORMANCE OF THE FIRE FLY MANUAL DIRECTOR GUNSIGHT FOR AIR-TO-AIR GUNNERY	D. L. FROSTMAN SPONSOR: AFFDL
GGC/EE/77-6	A GENERALIZED MONTE CARLO ANALYSIS PROGRAM FOR KALMAN FILTER DESIGN WITH APPLICATION TO AN AIRCRAFT-TO-SATELLITE TRACKING FILTER	CAPT K. L. JACKSON, JR. SPONSOR: AFAL
GGC/EE/77-7	PITCH RATE FLIGHT CONTROL FOR THE F-16 AIRCRAFT TO IMPROVE AIR-TO-AIR COMBAT	CAPT M. A. MARCHAND SPONSOR: AFFDL
GGC/EE/77-8	INVESTIGATION OF A DISCRETE C-STAR TRANSIENT RESPONSE CONTROLLER FOR THE YF-16 AT A SELECTED FLIGHT CONDITION	CAPT P. D. MONICO SPONSOR: AFFDL



GGC/EE/77-9	MONTE CARLO ANALYSIS OF THE KALMAN FILTER IN THE FIREFLY II SIMULATION	CAPT W. B. SMITH SPONSOR: AFAL
GGC/EE/77-10	A KALMAN FILTER DESIGN FOR THE SPACE SHUTTLE ORBITER INERTIAL MEASURING UNIT DURING DEORBIT/REENTRY USING GLOBAL POSITIONING SYSTEM SATELLITE INFORMATION	CAPT D. A. VAN LIEKE SPONSOR: AFAL
GOR/MA/77D-1	A COMPARISON OF FIXED SAMPLE AND SEQUENTIAL TESTS OF THE RELIABILITY OF A SYSTEM WHOSE UNDERLYING DISTRIBUTION IS A TWO PARAMETER WEIBULL	CAPT M. I. ACKERSON SPONSOR: AFLC
GOR/MA/77D-2	ADAPTIVE ESTIMATION BASED ON A FAMILY OF GENERALIZED EXPONENTIAL POWER DISTRIBUTIONS	CAPT G. E. CROWDER, JR. SPONSOR: AFIT
GOR/MA/77D-3	ADAPTIVE ROBUST ESTIMATION OF LOCATION AND SCALE PARAMETERS	CAPT THOMAS F. CURRY SPONSOR: AFIT
GOR/SM/77D-3	A PRELIMINARY SYSTEM DYNAMICS INVESTIGATION OF ALTERNATIVE MILITARY RETIREMENT PROGRAMS	CAPT M. F. CARPENTER CAPT M. R. LACEY SPONSOR: OSD
GOR/SM/77D-4	IMPROVING READINESS: A COST-EFFECTIVE APPROACH	CAPT D. D. DAWSON SPONSOR: PRAM SPO
GOR/SM/77D-5	A CRITIQUE OF THE COMBAT RESCUE MISSION ANALYSIS MODEL DEVELOPMENT EFFORT	CAPT T. J. DOHERTY SPONSOR: HQ AIR R SERVICE
GSM/SM/77S-1	THE RELATIONSHIPS AMONG JOB SATISFACTION, JOB CHALLENGE, AUTONOMY AND ROTTER'S INTERNAL-EXTERNAL CONTROL MEASURE	CAPT L. D. CARDINAL SPONSOR: AFIT
GSM/SM/77S-2	PRODUCTIVITY AND JOB SATISFACTION IN RESEARCH AND DEVELOPMENT: ASSOCIATED SUPERVISORY AND INDIVIDUAL VARIABLES	CAPT L. J. CORBIN SPONSOR: AFFDL
GSM/SM/77S-3	AN ANALYSIS OF FACTORS ASSOCIATED WITH THE JOB SATISFACTION OF UNITED STATES AIR FORCE COMMANDERS	CAPT V. L. ESHBAUGH SPONSOR: HQ USAF
GSM/SM/77S-4	UNIONIZATION OF UNIFORMED PERSONNEL IN THE UNITED STATES AIR FORCE: THE QUANDARY OF THE SEVENTIES	CAPT T. W. GRIESSER SPONSOR: AFLC
GSM/SM/77S-5	A STUDY OF JOB CHARACTERISTICS AND JOB ATTITUDES IN A TACTICAL AIR COMMAND FIGHTER AIRCRAFT MAINTENANCE COMPLEX	CAPT W. J. GUTHRIE SPONSOR: TAC
GSM/SM/77S-6	AN ANALYSIS OF THE RELATIONSHIP BETWEEN JOB SATISFACTION AND LABOR PRODUCTIVITY AS MEASURED ACROSS LINE ITEMS WITHIN AN ORGANIZATION	CAPT D. R. JONES SPONSOR: AGMC



GSM/SM/77S-7	SUCCESS PREDICTORS FOR STUDENTS TO ATTEND AFIT DEPARTMENT OF SYSTEMS MANAGEMENT MASTER'S DEGREE PROGRAM	MAJ R. W. KEITH SPONSOR: AFIT
GSM/SM/77S-8	AN ANALYSIS OF INITIAL EFFORTS TO IMPLEMENT ZERO-BASE BUDGETING IN THE DEPARTMENT OF THE AIR FORCE	CAPT E. KLEINER SPONSOR: AFIT
GSM/SM/77S-9	A CASE STUDY OF JOB SATISFACTION AT A STRATEGIC AIR COMMAND BOMB WING	CAPT A. E. KREBS, JR. SPONSOR: SAC
GSM/SM/77S-10	THE DIMENSIONALITY AND EFFECTIVENESS OF INFLUENCE METHODS USED IN A MATRIX ORGANIZATIONAL ENVIRONMENT	CAPT R. E. LECLAIRE SPONSOR: F-16 SPO
GSM/SM/77S-11	THE INFLUENCE OF ROLES ON THE DECISION-MAKING BEHAVIOR OF AIR FORCE COMMUNICATIONS SERVICE MIDDLE MANAGERS	CAPT J. P. MILLER SPONSOR: HQ AFCS
GSM/SM/77S-12	A METHODOLOGY FOR AN EFFECTIVENESS ANALYSIS OF RPB'S IN A CHAFF DISPENSING ROLE	CAPT R. W. NEUMANN SPONSOR: ASD
GSM/SM/77S-13	AN EXPERIMENTAL TEST FOR GOAL CONGRUENCE IN AN AIR FORCE MAJOR COMMAND	LT COL C. G. O'BERRY SPONSOR: AFCS
GSM/SM/77S-14	A COMPARISON OF MOTIVATION TO THE MANAGERIAL ROLE AND MACHIAVELLIANISM USING THE MINER SENTENCE COMPLETION SCALE AND THE MACH V SCALE	MAJ M. J. OLES SPONSOR: AFIT
GSM/SM/77S-15	A PRELIMINARY CALIBRATION OF THE RCA PRICES SOFTWARE COST ESTIMATION MODEL	CAPT J. SCHNEIDER IV SPONSOR: ASD
GSM/SM/77D-16	ACO PERCEPTIONS REGARDING THE UNIFORMITY AND CONSISTENCY IN DEFENSE CONTRACTOR COST ACCOUNTING PRACTICES ACHIEVED BY COST ACCOUNTING STANDARDS 401-408	CAPT J. M. BANKS SPONSOR: ASD
GSM/SM/77D-17	A STUDY OF THE LEADER ATTITUDES OF U.S. AIR FORCE COMMANDERS	CAPT S. E. BOVICH SPONSOR: HQ USAF
GSM/SM/77D-18	WHAT IS THE VALUE OF THE COMMISSARY PRIVILEGE? A CASE STUDY AT WRIGHT-PATTERSON AIR FORCE BASE	CAPT G. E. BOYD SPONSOR: AFIT
GSM/SM/77D-19	A STUDY OF THE F-4 PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER (PMRT) FROM THE AIR FORCE SYSTEMS COMMAND TO THE LOGISTICS COMMAND	MAJ W. K. DARRELL SPONSOR: AFLC
GSM/SM/77D-20	A JUDGMENT ANALYSIS APPROACH TO EXAMINING A "WHOLE PERSON" CONCEPT OF AIR FORCE PROMOTIONS	CAPT P. E. GLENN SPONSOR: AFIT



GSM/SM/77D-21	AN EVALUATION OF A BAYESIAN APPROACH TO COMPUTE ESTIMATES-AT-COMPLETION FOR WEAPON SYSTEM PROGRAMS	CAPT R. A. HAYES SPONSOR: ASD
GSM/SM/77D-22	WEAPON SYSTEM ACTIVATION: THE IMPACT OF PARALLEL SITE ACTIVATIONS	CAPT M. D. HITE SPONSOR: AFLC
GSM/SM/77D-23	POLICY CAPTURING APPLIED TO MASLOW NEED HIERARCHY	CAPT R. L. LAMONTAGNE SPONSOR: AFIT
GSM/SM/77D-24	MODELING JOB MOTIVATION WITH THE MASLOW HIERARCHY OF NEEDS WITHIN THE 3800 AIR BASE WING AT MAXWELL AIR FORCE BASE AL	CAPT J. J. NORTON SPONSOR: AFIT
GSM/SM/77D-25	CAREER INTENT AND JOB SATISFACTION OF FIRST AIR FORCE PERSONNEL	CAPT J. W. PATTERSON SPONSOR: HQ USAF
GSM/SM/77D-27	FEASIBILITY AND COST OF RELYING ON CIVILIAN HEALTH CARE TO SOLVE THE PROBLEMS OF THE PHYSICIAN SHORTAGE IN THE AIR FORCE	CAPT L. J. POHLE SPONSOR: AMD
GSM/SM/77D-28	A STUDY OF CRITICAL FACTORS IN THE DEVELOPMENT OF AIR FORCE COMPUTERIZED MANAGEMENT INFORMATION SYSTEMS	CAPT J. W. RETZER SPONSOR: ASD
GSM/SM/77D-29	A COMPARATIVE ANALYSIS OF SELECTION AND PROBATION PROCEDURES FOR DEPARTMENT OF THE AIR FORCE CIVILIAN POLICE OFFICERS	CAPT R. E. VOIGT SPONSOR: AFIT
GSM/SM/77D-30	SPARE MEMORY AND TIMING PARAMETERS IN AVIONICS COMPUTER SYSTEM REQUIREMENTS	CAPT G. WIGLE SPONSOR: ASD
DS/PH/77-2	A THEORETICAL ANALYSIS OF RESONATOR MODELS IN THE PRESENCE OF HOMOGENEOUS MEDIA	MAJ G. R. DOUGHTY SPONSOR: AFWL
DS/PH/77-3	INVESTIGATION OF DIATOMIC CESIUM AS A LASER MEDIUM BY ABSORPTION AND FLUORESCENCE SPECTROSCOPY	MAJ R. P. BENEDICT, JR. SPONSOR: AFWL
DS/PH/77-4	A STUDY OF THE ANOMALOUSLY HIGH INFRARED ABSORPTION IN ZINC ZELENIIDE THIN FILMS	MAJ D. F. O'BRIEN SPONSOR: AFML
DS/EE/77-1	OBSERVABILITY AND IDENTIFIABILITY OF NON-LINEAR DYNAMICAL SYSTEMS WITH AN APPLICATION TO THE OPTIMAL CONTROL MODEL FOR THE HUMAN OPERATOR	LT COL R. E. SIFERD SPONSOR: FTD
DS/AA/77-1	THE SMALL-SIGNAL RESPONSE OF FLUID TRANSMISSION LINES INCLUDING DEVELOPED MEAN FLOW EFFECTS	LT COL E. F. MOORE SPONSOR: AFFDL



## VI. RESEARCH ASSESSMENT QUESTIONNAIRE SUMMARY

### 1. Introduction

The AFIT research assessment form shown on the next page was sent to sponsors of master thesis projects. Twelve percent of the survey forms were returned.

### 2. Summary of Results

a. 100% of those surveys returned said this thesis research contributed to a current Air Force project.

b. 92% said they would have done this research either in-house or on contract if AFIT had not researched it.

c. 37% said the thesis work was highly significant.

57% said work was significant.

5% said it was slightly significant.

d. The average thesis was estimated to be worth 0.906 manyears of effort or \$32,500 per thesis. In addition the GSE design study was judged highly significant and estimated to be worth 3.6 manyears of effort and saved \$230,000.

### 3. Estimation of the Total Net Worth

Because of such a small sample, a total estimate is pretty unreliable but given the estimate of \$32,500 of the worth of an average thesis and with 160 thesis completed represents a net worth of \$5,200,000, and adding the design study gives a total net worth of \$5,430,000. Recall 92% of this work would have been done if AFIT students had not carried out this research. This represents a contribution of \$4,995,600 to Air Force Research and Development Activities.



AFIT RESEARCH ASSESSMENT

The purpose of this questionnaire is to ascertain the value of research accomplished by students or faculty of the AFIT School of Engineering (AU). It would be greatly appreciated if you would complete the following questionnaire and return it to:

AFIT/  
WPAFB OH 45433

Thesis Title and Designator: \_\_\_\_\_

Author(s): \_\_\_\_\_

Research Assessment Questions:

1. Did this research contribute to a current Air Force project?

- a. Yes                      b. No

2. Do you believe this research topic is significant enough that it would have been researched (or contracted) by your organization or another agency if AFIT had not researched it?

- a. Yes                      b. No

3. The benefits of AFIT research can often be expressed by the equivalent value that your agency received by virtue of AFIT performing the research. Can you estimate what this research would have cost if it had been accomplished under contract or if it had been done in-house in terms of manpower and/or dollars?

- a. Man-years \_\_\_\_\_                      b. \$ \_\_\_\_\_

4. Often it is not possible to attach equivalent dollar values to research, although the results of the research may, in fact, be important. Whether or not you were able to establish an equivalent value for this research (3 above), what is your estimate of its significance?

- a. Highly Significant                      b. Significant                      c. Slightly Significant                      d. Of No Significance

5. AFIT welcomes any further comments you may have on the above questions, or any additional details concerning the current application, future potential, or other value of this research. Please use the back of this questionnaire for your statement(s). Thank you.

\_\_\_\_\_  
Name, Grade, Position

\_\_\_\_\_  
Organization                                      Location



VII. LIST OF ACTIVE AFOSR/AFIT RESEARCH SUPPORT FUND PROJECTS (11 Projects)

1. Project 71-1, Nuclear Decay and Level Scheme Studies, Drs. G. R. Hagee and G. John, \$28,980. Related to work at the USAF Medical Center and AFTAC.
2. Project 71-4, Decay Characteristics of the Cathodoluminescence Spectra of Ion Implanted II-VI Compounds, Dr. R. L. Hengehold, \$21,585. Related to work at ARL (now at AFAL).
3. Project 74-1, Applications of Mossbauer Spectrometry to Problems in Materials Technology, Dr. G. John, \$5,500. Related to work at AFML.
4. Project 76-1, The Conversion of a Turbocharger to an Expendable Turbojet Engine, Drs. H. E. Wright and W. C. Elrod, \$6,992. Related to work at AFAPL and FTD.
5. Project 76-3, Instrumentation for AFIT/AFFDL Cooperative Digital Flight Control Laboratory and AFIT/AFAL Digital Signal Processing Research, Dr. G. B. Lamont, \$45,923. Related to work at AFFDL and AFAL.
6. Project 76-4, Computer Interface for an Experimental Video Synthesizer, Dr. M. Kabrisky, \$33,893. Related to work at AMRL, AFAL, and ASD.
7. Project 77-1, Shock Tube Investigation of the Rates and Mechanisms of NO<sub>x</sub> Formation from Organo-Nitrogen Compounds. Dr. Ernest A. Dorko, \$5,000.  
Related to work at AFAPL.
8. Project 77-2, Investigation of Interface Between Air Force Manpower and Personnel System and the National Skills Markets, Captain Jon M. Knight, \$7,500. Related to work at AFHRL.
9. Project 78-1, Physiological Workload Metric and Stress Management Research, Dr. L. E. Wolaver, \$5,790. Related to work at AFFDL and School of Aerospace Medicine, Brooks AFB TX.
10. Project 78-2, Study of Ion Implantation in GaAs Using Cathodoluminescence, Dr. R. L. Hengehold, \$4,800. Related to work at AFAL.
11. Project 78-3, A Critical Evaluation of a Laser Photon Correlation Velocimeter System, Drs. H. E. Wright and W. C. Elrod and Lt R. A. Merz, \$35,700. Related to work at AFFDL/FX.



AFOSR/AFIT RESEARCH SUPPORT FUNDING HISTORY

<u>Fiscal Year</u>	<u>Number of Projects</u>	<u>Total Funds</u>
67	6	\$ 32,860
68	7	49,611
69	6	44,978
70	8	44,372
71	7	49,848
72	5	49,515
73	4	26,500
74	3	37,290*
75	2	22,186**
76	5	49,586
77	4	42,300
78	3	46,290
	60	\$ 495,336

\* Includes \$23,500 forward funding from FY-73.

\*\* Fund was closed out early because of disestablishment of ARL, the fund monitor.

The largest project was for \$39,935, the smallest was for \$600 and the average project size was \$8,250.

These 60 projects have resulted in the following publications:

- 68 Journal Articles
- 24 Technical Reports
- 149 PhD or Masters Theses
- 30 Other Publications (Proceedings, etc.)

This total includes 130 faculty publications. The total funds spent through FY-77 was \$449,006. This represents less than \$3500 per publication.



VIII. SUMMARY BY DEPARTMENTS - CALENDAR YEAR 1977

<u>DEPARTMENT</u>	<u>NUMBER OF FACULTY</u>	<u>PUBLICATIONS</u>	<u>PRESENTATIONS</u>	<u>RESEARCH PROJECTS</u>	<u>CONSULTING ACTIVITIES</u>	<u>AFOSR/AFIT PROJECTS</u>	<u>MASTERS THESES</u>	<u>DOCTORAL DISSERTATIONS</u>
ENY ENF	18	20	34	42	13	3	33	1
ENC	13	10	8	22	22	0	12	0
ENG	23	26	23	27	48	2	65	1
ENH	2	4	12	7	4	0	0	0
ENP	14	10	37	21	48	4	21	3
ENS	11	22	22	34	29	1	32	0
TOTAL	81	92	136	153	164	11*	163	5

\*1-EN



IX. PRINCIPAL SPONSOR SUMMARY - CALENDAR YEAR 1977

<u>LABORATORY OR ORGANIZATION</u>	<u>RESEARCH PROJECTS</u>	<u>CONSULTING ACTIVITIES</u>	<u>MASTERS THESES</u>	<u>DOCTORAL DISSERTATIONS</u>
AFFDL	34	8	26	1
ASD	11	42	20	
AFAL	22	26	38	
AFWL	18	15	10	2
HQ USAF	9	6	4	
AFML	7	8	7	1
AFAPL	7	3	5	
AFOSR	6	2		
AFLC	6	10	5	
AMRL	3	5	4	
SAMSO	3	1	4	
FTD		6		1
DARPA	1	6		
RADC	2	5	6	
MED CTR		3		
AFWAL	1	2		
AFHRL		2		
AFCS	1	2	4	
6585th		2		
AFGL	1			
DNA	1			
AFTAC	1	1	1	
HQ SAC		1	2	
SAM		1	2	
AFALD		1		
AU		1		
NSA		1		
AFOSI		1		
ERDA		1		
AFATL			2	