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## RESEARCH

Volume 2, Number 2

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## From the Dean

by Paul Marto  
Dean of Research

As most faculty know, beginning in FY93 the Naval Postgraduate School is changing the way reimbursable funds are accounted for. This should make labor accounting easier for everyone.

In the past, all reimbursable funds to perform work or services at NPS were accounted for under a "cost reimbursable" basis that required NPS to report actual labor hours worked on a particular research project by pay period. It also required that when faculty travel on reimbursable funds, labor must be charged to the same reimbursable account. Since faculty are involved in a mix of teaching and research activity, this requirement has created significant accounting difficulties for the school.

Under the new system, called "fixed price" reimbursable, the accounting procedures are designed to allow the work to be accomplished with fewer restrictions. All labor (faculty and staff) will be charged to O&MN and the Comptroller will make monthly "cost transfers" between O&MN and the reimbursable accounts to compensate for the

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additional labor charged to O&MN. These cost transfers will follow a labor plan approved by the principal investigator and the department/group chair. The labor plan will be prepared at the beginning of the project showing how all labor will be spent.

What is the primary advantage of this new system? It will allow reimbursable labor funds to be used with a minimum of accounting restrictions, especially during travel which can be performed without regard to where or when labor is charged. The new system will not change how non-labor (OPTAR, travel, contracts, etc.) is handled. Full control of labor and non-labor will remain with the principal investigator. The procedure for

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## Change to SPIN Micro provides additional flexibility

During the past year, NPS has been a subscriber to the Sponsored Program Information Network (SPIN). This system allows us to access a database of more than 5,000 federal, state and private sources of funding for institutions of higher education. Examples include funding opportunities for research, travel and equipment.

We have recently switched to SPIN Micro, a PC-based version of the system. The change provides us with additional flexibility. Search output files can be transferred over the campus network to faculty members for review. The SPIN Micro database will be updated monthly. If more current information is critical, we still have on-line access to SPIN via INTERNET, although there is a small charge for each search.

Additional SPIN Micro sites can be added for \$350 per year. Departments wishing to establish their own sites should contact Dean Knorr at Ext. 2098 for further details.

Faculty members who wish to use the SPIN service currently operational in the Research Office should contact Cheryl Humiston at Ext. 2271.

## Command brief contributions sought

Faculty are encouraged to submit material on their research for the Superintendent's Command Brief. New material is required on a continuing basis to keep the brief current. A single slide pictorial along with a one-paragraph, layman's description of the project and its significance is all that is required. Faculty with appropriate material should contact Danielle at Ext. 2099.

## Off-campus research policy drafted

A policy statement on off-campus research was recently drafted by the Research Office and is presently under review pending final adoption. All faculty will receive a copy of the policy statement as an update to the Faculty Handbook in the near future. Off-campus research requires the approval of the Dean of Research. The new policy will formalize the guidelines which have been applied.

In general, there should be some identifiable benefit from doing the research somewhere other than at NPS, the project

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## Dean's column

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preparing and submitting research proposals will remain the same as in the past with one exception: Faculty should address "deliverables." The cover letter attached to the proposal by the Research Office will state the "fixed price" nature of the proposal.

A "fixed price" agreement requires a product (i.e., a "deliverable") for each project. There are many forms of "deliverables" which can be decided upon by the principal investigator at the time the proposal is prepared.

The implementation process of this new accounting system

has been described in detail to all department/group chairs and selected support staff. As we enter the new fiscal year, we recognize that, even after all the discussion that has occurred about "fixed price" agreements and their implications, there may be unique situations that have not been considered. We are planning to review this new procedure during the fall quarter and a more comprehensive evaluation will be made in January, 1993. It is my sincere hope that this new procedure will assist NPS faculty in conducting reimbursable research without the anxiety of improper labor accounting.

## Research Office news

*Continued from Page 1*

sponsor should approve, and there should be no negative impact on NPS students, faculty colleagues, or the faculty member's department. Faculty who anticipate the need to do off-campus research in other than a TDY status should contact Dean Howard or Dean Knorr at Ext. 2098 for further guidance.

## Science opportunities program

The Office of Naval Research has established a new program designed to facilitate interaction between scientists in the U.S. and the new Commonwealth of Independent States (CIS). Under this program, arrangements are made for eminent CIS scientists to visit and lecture at U.S. institutions where they can interact with their counterparts.

The ONR program director, Capt. Ed Pope, plans to visit NPS in November for further discussions on NPS participation. We expect Commonwealth scientists will visit NPS in the near future. Interested faculty should contact Dean Knorr at Ext. 2098.

## Lab tour directory input

NPS visitors are frequently given a tour of campus laboratories. This provides faculty and their students with an opportunity to deliver short presentations on the research work being pursued in the host laboratories. The Research Office is currently compiling a directory of participating laboratories. We would like to have a variety of research work represented so that we can select labs based on the interest of the visitors. Faculty who would like to host tours of their labs should call Danielle at Ext. 2099.

## TRW establishes Cryptology Chair

TRW has recently made a commitment to support a Chair in Cryptology in the Department of Electrical and Computer Engineering. Funding will be provided through the Naval Postgraduate School Foundation. Beginning with this fall quarter, the EC Department will initiate a guest lecture series with the objective of bringing potential Chair candidates to the NPS campus. Later in the year a workshop is planned.

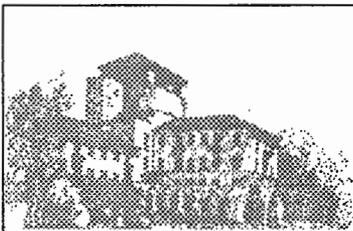
It is expected the chair will help perpetuate some of the research activities formerly guided by Adj. Prof. Steve Jauregui, who retired this past year. Jauregui worked closely with the Naval Security Group during his 20-year second career at NPS. Faculty interested in the Fall seminar series should contact Prof. Don Wadsworth at Ext. 2115.

## Updates on research funding

• The level of direct funded faculty research in FY92 was 47 work years, as planned. This is a significant drop from the 78 work years of DFR executed in FY91 but is higher than the 38 faculty work years planned for FY93. It is expected that the level of support available for succeeding years will stabilize after FY93.

Overall, the level of the total research program has been maintained at approximately 125 work years by increasing the portion of reimbursably funded research. Priority will continue to be given to research initiation programs (RIP) by new tenure track faculty, cost sharing, and innovative proposals. In future years, faculty can expect that DFR resources will be focused in areas of particular importance to NPS and the Navy.

• Reimbursable research support grew during FY92 as funding available for the DFR program dropped. As of Aug. 31, \$18 million had been received compared to approximately \$13 million for all of FY91. Funds not expended or carried over will be returned to the sponsor.



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## Technology transfer creates new opportunities

Recent legislation has created new opportunities for Naval Postgraduate School researchers. Since 1980, Congress has enacted legislation designed to stimulate the transfer of technology from federal laboratories to the private sector, thereby improving the competitive position of the U.S. in the world marketplace. The legislation permits federal laboratories to enter into research agreements with public and private partners. This legislation makes it possible for NPS to accept money from private industry to support faculty research.

The enabling document for cooperative ventures is the Cooperative Research and Development Agreement (CRDA). The CRDA is a legal document which describes the joint venture and the contributions to be made by the various partners. It also addresses necessary legal issues such as patents, licenses, etc. The legislation permits federal partners to contribute facilities, equipment and personnel. Private partners may contribute facilities, equipment, personnel and funds. The CRDA should create an arrangement which benefits all partners.

For example, a CRDA might involve a faculty member who has obtained a patent on an invention and wishes to work with a company which has an interest in practicing the invention. The company is licensed to practice the invention and NPS is to receive royalties from product sales. The company provides funds

for the faculty member to work with them to transfer the expertise and further develop the technology for commercialization. Royalties eventually received by NPS are shared with the inventor. Navy inventors are awarded 15 percent of the royalty income up to \$100,000 per year. This income is received in addition to the faculty member's normal salary. Remaining royalty income received by NPS may be used to support the school's research program.

Cooperative Research and Development Agreements are prepared by the NPS Research Office. After review by all parties, CRDAs are forwarded to the Office of Naval Research for final review and approval. Thereafter they are signed by the parties and work may begin.

During the past year, the Research Office has prepared CRDAs for work with General Electric (Prof. Garrett), Martin Marietta (Profs. McNelley and Crooks), Pacific Bell (Prof. Abdel-Hamid) and Motorola (Prof. Fouts). Work is under way on a CRDA with the Naval Postgraduate School Foundation. The first two CRDAs have been signed and work has started.

It appears that NPS will become more involved in cooperative research ventures in the future. Faculty are encouraged to consider opportunities for undertaking joint research or transitioning research results when appropriate. For more information, contact Dean Knorr or Dean Howard at the Research Office, Ext. 2098.



*Prof. Garrett discusses his research with Secretary of Defense Dick Cheney during Cheney's recent visit to NPS.*

## Researcher utilizes new agreement

For Naval Postgraduate School Prof. Steve Garrett, cooperation is the key word in the new transfer of technology from federal laboratories to the private sector.

"The Cooperative Research and Development Agreement was the perfect method to fund the research to build a new Space Thermoacoustic Refrigerator," said Garrett. "The agreement provides funds for labor and materials to do the job. Overall, it has many attractive features for providing external research support."

Garrett's CRDA with the General Electric Co. was the first completed agreement involving an NPS researcher under the Technology Transfer Act. The agreement, which took effect in July, is for the development of another Space Thermoacoustic Refrigerator. The STAR utilizes sound instead of chlorofluorocarbon gases to produce refrigeration and was flown on the space shuttle *Discovery* earlier this year.

CRDAs also offer the advantage of reducing fiscal headaches for researchers. "Because CRDA funds are non-expiring, you're not stuck in a horrible fiscal-year cycle," said Garrett. "CRDAs are also exempt from federal acquisition and federal bidding regulations."

The Office of Naval Research attempts to adhere to a 30-day turnaround once it receives the completed CRDA paperwork. "You can tell your CRDA partner that once the paperwork is in place, you will get a response in a reasonable amount of time," said Garrett. The CRDA must be approved by the Chief of Naval Research before research partner signs it.

Overall, Garrett said he would recommend CRDAs to fellow researchers seeking industrial support for commercializing their ideas.

## Faculty News

### AA

• **Adj. Prof. M.S. Chandrasekhara** received the NASA Technical Briefs Award for "Flow Visualization Studies of the Mach Number Effects on the Dynamic Stall of an Oscillating Airfoil." The paper was presented at the AIAA 27th Aerospace Sciences Meeting and published in the *Journal of Aircraft*.

• **Asst. Prof. Mike Ross** chaired the AIAA Mechanics & Control of Flight Award Committee for 1992.

• **Prof. Ray Shreeve** was vice-chairman of a session on Boundary Layer Transition (in turbomachines) at the International Gas Turbine and Aeroengine Congress & Exposition in Cologne, Germany. He also co-authored "A Viscous Axisymmetric Throughflow Prediction Method for Multistage Compressors," presented at the conference.

• **Prof. Max Platzer** presented "An Inviscid-Viscous Interaction Approach to the Calculation of Dynamic Stall Initiation on Airfoils" at the International Gas Turbine and Aeroengine Congress & Exposition and chaired a session on unsteady aerodynamics. Platzer presented "Dynamic Airfoil Stall Investigations" at the Fifth Symposium on Numerical and Physical Aspects of Aerodynamic Flows at California State University at Long Beach. Platzer was also elected Fellow of the American Society of Mechanical Engineers.

### AS

• **Prof. Carl Jones** and **Adj. Prof. Sterling Sessions** received a research grant from Defense Information Systems Agency to develop teaching cases on interoperability during Desert Storm on behalf of National Defense University's Information Resources Management College for its Advanced Management Program.

• **Prof. David Whipple** and **Prof. Reuben Harris** received funding from the Navy Deputy Surgeon General for research on net needs assessment.

• **Prof. Norm Schneidewind** received two research grants: From the Naval Surface Warfare Center for Software Reliability Model Enhancement and Incorporation of Metrics into Reliability Models; and from the Army Operations and Test Command for Software Metrics Validation and Metrics Process Development. Both projects involve the development of

an NPS Software Metrics Research Center. Schneidewind's Software Reliability Model was used by IBM-Houston to provide an estimate of the probability of failure on the next shuttle flight.

• **Asst. Prof. Hemant Bhargava** is developing intelligent automated forces for the NPSNET combat simulation system. The work is funded by DARPA/ASTO under the NPS Computer Science Department's "NPSNET: A 3-D Visual Simulator for Virtual World Exploration and Experimentation" research project with **Assoc. Prof. Michael Zyda** as principal investigator.

• **Prof. Larry Jones** was appointed to the Executive Coordinating Board for the reorganization of DoD Financial Management Education and Training. Jones made a presentation to the board at the Professional Military Comptroller's School, Maxwell AFB.

• **Assoc. Prof. Mark Eitelberg** and **Prof. Steve Mehay** organized a major conference on military manpower and recruiting called "Marching Toward the 21st Century" in Arlington, Va. Sponsored by the Army Recruiting Command and Deputy Chief of Staff (Personnel), the conference was attended by high-level DoD officials and experts in related areas.

### EC

• **Asst. Prof. Shridhar Shukla**, **Asst. Prof. Amr Zaky**, and **Lt. Brian Little**, a 1991 graduate of NPS, received the 1992 Outstanding Paper Award at the International Conference on Parallel Processing. "A Compile-Time Technique for Controlling Real-Time Execution of Task-Level Data-Flow Graphs" was one of 500 papers submitted for the conference.

• "Digital Implementations of Spectral Correlation Analyzers," by **Prof. Herschel Loomis** (with Brown), has been accepted for publication in *IEEE Transactions on Signal Processing*.

### MA

• **Asst. Prof. Carlos Borges** published "Optimal Spectral Sampling for Color Imaging" in *Color Hard Copy and Graphic Arts*.

• **Prof. Donald A. Danielson** published *Vectors and Tensors in Engineering and Physics* (Addison Wesley).

• **Prof. Richard Franke** published "Knot Selection for Least Squares Thin Plate Splines" (with McMahon) in the

*Journal of Scientific and Statistical Computing*.

• **Prof. Harold Fredricksen** published "Gray Codes and Thue-Morse-Hedlund Sequences" in the *Journal of Combinatorial Mathematics and Combinatorial Computing*.

• **Prof. William Gragg** presented "Parallel Divide and Conquer Algorithms for the Symmetric Tridiagonal Eigenproblem and Bidiagonal Singular Value Problem" (with Thornton and Warner) at the Pittsburgh Conference on Modeling and Simulation. He also published "On Computing Accurate Singular Values and Eigenvalues on Acyclic Matrices" (with Demmel) in *Linear Algebra Applications*.

• **Assoc. Prof. Beny Neta** published "Analysis of Finite Element and Finite Differences for Shallow Water Equations: A Review" in *Mathematics and Computers in Simulation*.

• **Prof. Maurice Weir** published *Student's Study Guide, Parts I and II* (Addison Wesley) for *Thomas/Finney Calculus*.

### ME

• **Dist. Prof. T. Sarpkaya** presented two papers at the AIAA-Aerospace Sciences Meeting in Reno.

• **Prof. Anthony Healey** was appointed to the ASME National Nominating Committee as first alternate for the Systems and Design Group and as Systems and Design Group executive committee member at Large. He was also appointed registration chairman for the 1993 American Control Conference.

### MR

Three papers from the Meteorology Department were presented at the Second International Conference for East Asia and Western Pacific Meteorology and Climate in Hong Kong in September:

• **Prof. Chih-Pei Chang** and **Adj. Prof. Jeng-Ming Chen**, "Winter Monsoon Cold Surges and the Equatorial Divergence over the South China Sea";

• **Adj. Instr. Tien-Chiang Yeh** and **Prof. Russ Elsberry**, "Physical Processes Involved in Typhoon Track Deflections Caused by the Taiwan Orography";

• **Adj. Prof. Melinda Peng** and **Prof. Roger Williams**, "Flows Over Mountains: Coriolis Force, Transient Trough and Three Dimensionality."

**Prof. Chang** represented the U.S. University Corporation for Atmospheric Research in planning the Hong Kong conference. **Prof. Chang** also has been appointed secretary for the Scientific Committee on Meteorology and Atmospheric Sciences, Pacific Science Association.

### NS

• **Prof. James Tritten** chaired the panel discussing future force planning and was a deputy program chair for the Military Operations Research Society's 60th symposium. The conference was held in June at NPS.

• **Prof. Edward Olsen** is helping plan the November meeting of the Council of U.S.-Korean Security Studies in Seoul.

• **Prof. Jan Breemer** returned to NPS after six months at the Naval War College as a Senior Secretary of the Navy Research Fellow. Breemer was attached to the college's Security Decision Making Department.

• **Prof. Robert Looney** was appointed to the board of editors of the *Journal of Third World Studies*.

• **Asst. Prof. Glenn Robinson** spent 25 days in Israel and the West Bank conducting research to update his work on the Palestinian uprising. He also presented a paper on "Class and Ideology in Palestinian Politics" at a Hebrew University conference.

• **Adj. Prof. David Winterford** visited facilities in Indonesia, Malaysia, Singapore and Hong Kong as part of a Navy Direct-Funded project investigating new naval rivalries in Southeast Asia.

• **Prof. Russel Stolfi's** book, *Hitler's Panzers East: World War II Reinterpreted* (Norman & London), was picked as a selection for the History Book Club for September and acquired for publication by Alan Sutton Publishing of the United Kingdom.

### PH

• **Prof. Emeritus Herman Medwin** has been elected President of the Acoustical Society of America. His research on the noise generated in the ocean by micro bubbles has recently received national and international attention.

• **Asst. Prof. David Cleary** had another successful rocket launch of his ultraviolet spectrometer 300 kilometers into the ionosphere and gathered a wealth of new data.