

DR. THOMAS C. HONE

(b)(6)

POSITION: Principal Deputy Director, Program Analysis & Evaluation

EDUCATION: Ph.D. (1973) in Political Science, University of Wisconsin, Madison
Graduate, Program Managers Course, Defense Systems Management College, Ft. Belvoir, VA (1988)

EXPERIENCE:

Professor of Defense Acquisition, Industrial College of the Armed Forces, 1999-present
Industry Specialty: Munitions, especially Precision Guided Munitions

Project Director and Senior Analyst, Center for Naval Analyses, Alexandria, VA, 1997-99
Conducted studies for the the Navy and the Marine Corps.

Deputy Chairman, Dept. of Security Studies, and Professor, Dept. of Defense Management, College of Security Studies and Defense Economics, George C. Marshall Center, Garmisch, Germany, July 1994-June 1997

Designed and conducted seminars on national security policy, democracy, and civil-military relations for East European military officers under the Partnership for Peace Program. Temporarily supervised Security Studies curriculum and electives program.

Special Assistant to the Commander, Naval Air Systems Command, U.S. Navy, September 1992-July 1994
Headed organization that conducted analyses of aviation issues. Awarded Navy **Meritorious Civilian Service Medal**.

Task Force Leader (Command, Control & Organization), SAFIOSG, October 1991-January 1993
Selected to participate in the Secretary of the Air Force's Gulf War Air Power Survey. Directed the Command, Control, and Organization Task Force. Awarded USAF **Exceptional Civilian Service Award**.

Professor of Acquisition Management, Policy and Organization Management Department, Defense Systems Management College, December 1987-September 1992
Designed and conducted courses and seminars on defense acquisition policy and program planning, consulted to the Naval Air Systems Command and Naval Sea Systems Command, and participated in a Defense Science Board study of acquisition streamlining.

Consultant, Booz, Allen & Hamilton, Inc., August 1986-December 1987
Analyzed war games and developed techniques to apply military planning processes to civilian businesses. Also taught the defense policy-making and management off-campus Naval War College seminar at Naval Weapons Support Center, Dahlgren, Virginia.

Professor of Defense Economics, Naval War College, March 1985-June 1986
Conducted seminars, wrote one case study that was later published, and revised other case studies.

Consultant, Delex Systems, Inc. (Arlington, VA), January 1981-March 1985
Designed and conducted analyses of air superiority campaigns in Korea and Vietnam, the Harpoon weapon system, strategic surprise, military aviation, net assessment of U.S. and Soviet navies, exploratory development programs, and the Naval War College.

Visiting Professor or Instructor (1969-1980) at six universities, including Indiana University (Bloomington), Southern Illinois University (Carbondale); University of Wisconsin (Madison) and Iowa State University (Ames).

PUBLICATIONS-BOOKS

American & British Aircraft Carrier Development, 1919-1941, co-author (Annapolis, MD: Naval Institute Press, 1999).

Managing Command and Control in the Persian Gulf Conflict, co-author (Westport, CT: Praeger, 1996).

Gulf War Air Power Survey, Volume 1, Part 2, Command and Control, (Washington, D.C.: Department of the Air Force, 1993), co-author. [Unclassified version published (Washington, D.C.: U.S. GPO, 1993)].

Power and Change: The Administrative History of the Office of the Chief of Naval Operations, 1946-1986, author (Washington, D.C.: U.S. GPO, 1989).

Anglo-American Liberalism: Readings in Normative Political Economy (Chicago: Nelson-Hall, 1981), co-editor.

PUBLICATIONS-ARTICLES

"The Navy's Dilemma," U.S. Naval Institute *Proceedings* (April 2001), pp. 75-78.

"A Navy Second to None," in *The Navy*, ed. By Rear Adm. W. J. Holland, Jr. (Washington, DC: Naval Historical Foundation, 2000), pp. 74-91.

"Jackie Fisher's Revenge," *Proceedings of the U.S. Naval Institute* (February 2000), pp. 83-85.

"Professionalizing Command, Education, and Doctrine," *Joint Force Quarterly*, Spring 1998 (91-98), pp. 91-98.

"The Evolution of the U.S. Fleet, 1933-1941: How the President Mattered," in *FDR and the U.S. Navy*, ed. by E. J. Marolda (New York: St. Martin's Press, 1998), pp. 65-114.

"The Problem with Linkage, Foreign and Domestic Policy," *Central European Issues*, Vol. 2, No. 1 (1996).

"Strategic Bombardment Constrained," in *Case Studies in Strategic Bombardment*, ed. by R. C. Hall (Washington: Office of Air Force History, 1998). Also two chapters (on Korea and Southeast Asia) in *Case Studies in the Achievement of Air Superiority*, ed. by B. F. Cooling (Washington: Center for Air Force History, 1994).

"Naval Reconstitution, Surge, and Mobilization: Once and Future," *Naval War College Review*, Vol. 47, No. 3 (Summer 1994), pp. 67-85. This essay won both the E. S. Miller Prize and the Ernest J. Eller Prize.

"Aircraft Carriers, Development and Tactics," in *The Oxford Companion to the Second World War*, General Ed. I.C.B. Dear (Oxford: Oxford Univ. Press, 1995).

"Combine Strategy and Intelligence," *Proceedings of the U.S. Naval Institute* (June 1993).

"The Difficulties of Force Planning: The Modern Navy as an Illustrative Case of a Frustrating Trend," *Defense Analysis*, Vol. 9, No. 1 (1993).

"The Political Process and Project Management," in D. Cleland, J. Gallagher, and R. Whitehead, eds., *Military Project Management Handbook* (New York: McGraw-Hill, 1993), pp. 19.1 through 19.18.

"National Security and Domestic Policy-Making: The Similarities and Critical Differences," *International Journal of Public Administration*, Vol. 15 (1992), co-author.

"Fighting on Our Own Ground: The War of Production, 1920-1942," *Naval War College Review*, Vol. 45, No. 2 (Spring 1992), pp. 93-107.

"Tora, Tora, Tora," in Bernard C. Nalty and T. Hall, eds., *War in the Pacific* (New York: Salamander Books, 1991).

"War as Experimentation," *Phalanx* (December 1990), co-author.

"The Surface Navy and the Requirements Process: Revolution or Evolution?" *Naval Forces*, Vol. 10, No. 4 (1989).

"The Program Manager as Entrepreneur: AEGIS and RADM Wayne Meyer," *Defense Analysis*, Vol. 3, No. 3 (1987), pp. 197-212.

"The War Colleges Have a Unique Task," *Armed Forces Journal International* (August 1988).

"Interwar Innovation in Three Navies: USN, RN, IJN," *Naval War College Review*, Vol. 40, No. 2 (Spring 1987), pp. 63-83, co-author.

"Navy Air Leadership: RADM W. A. Moffett as Chief of the Bureau of Aeronautics," in Wayne Thompson, ed., *Air Leadership* (Washington, D.C.: U.S. GPO, 1986).

"Defense Facts of Life," *Naval War College Review*, Vol. 39, No. 3 (May/June 1986), pp. 92-97.

"Game Theory and the Dreadnought Race," *Journal of Strategic Studies* (June 1984).

"Spending Patterns of the U. S. Navy, 1921-1941," *Armed Forces and Society* (Spring 1982).

"Innovation and Administration in the Navy Department: The Case of the NEVADA Design," *Military Affairs* (April 1981), co-author. **Moncado Prize Essay**

"The Long Lance Torpedo and the Cruise Missile: The Similarity of Past and Present Stand-Off Threats," *Proceedings of the U.S. Naval Institute* (September 1981).

"Managerial Style in the Interwar Navy: A Reappraisal," *Naval War College Review*, Vol. 32, No. 5 (September/October 1980), pp. 88-101, co-author.

"The Decline of Liberal Authority and the Resurgence of Liberal Philosophy," *Humanities in Society* (Summer 1980).

"The Effectiveness of the Washington Treaty Navy," *Naval War College Review* (November/December 1979).

"The Destruction of the Battleline at Pearl Harbor," *Proceedings of the U.S. Naval Institute* (December 1977).

"Battleship vs. Aircraft Carrier: U.S. Navy Expenditure Patterns, 1932-1941," *Military Affairs* (October 1977).

PROFESSIONAL PAPERS

Papers presented at many conferences, including (1) a conference on Navy forward deployment at the Center for Naval Analyses in June 2001, (2) a conference on "Strategic Change, Transformation and Military Innovation" at the Naval War College in March 2000; (3) "Military Education for the 21st Century," Naval Postgraduate School, January 1998; (4) Symposium, "Franklin D. Roosevelt and the US Navy," Naval Historical Center and Roosevelt Institute, 1996; (5) Fels Center Conference on Defense Investment Cycles (July 1992); (6) Naval Historical Center Colloquium on Military and Industrial Mobilization for World War II (June 1991); (7) National Science Foundation Conference on Nuclear Weapons Command and Control (September 1990); (8) American Military Institute (March 1990); (9) American Historical Association (December 1989); (10) Maritime de la Premiere Moitie du XXe Siecle, Paris, France (1988); and (11) American Political Science Association (1986).

PROFESSIONAL ACTIVITIES

Editorial referee (current), *Journal of Military History*, and Naval Institute Press manuscript reader.

Developed and wrote a case study of aircraft carrier design trade-offs for the School of Advanced International Studies, Johns Hopkins University (January 1999).

David A. Honey, PhD

Defense Sector General Manager & Senior Vice President
Information Systems Laboratories

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EDUCATION

- PhD, Solid State Science, Syracuse University, Syracuse, NY (1994)
- MS, Engineering Physics, Air Force Institute of Technology, Dayton, OH (1989)
- MS, Optical Science, University of Arizona, Tucson, AZ (1978)
- BS, Photographic Science, Rochester Institute of Technology, Roch., NY (1976)

EMPLOYMENT EXPERIENCE

Air Force Scientific Advisory Board, (2008 – Present)

Serve as a member of a federal advisory committee that provides independent technical advice to senior U.S. Air Force leadership.

Defense Division General Manager, Sr. VP, Information Systems Laboratories, Vienna VA (2007 – Present)

Lead the largest sector within ISL and oversee five divisions that generate three-quarters of ISL's revenues. Report directly to the ISL CEO and serve as a member of the five-person Executive Management Group of the corporation. Responsible for all planning, project execution, business development and financial performance of the Defense Sector. Direct each of the sector's divisions in technology development efforts that span from research and development, systems engineering and integration to specialty manufacturing (which includes ISL-value added items in production of systems derived from research and development efforts).

Director, Strategic Technology Office, Defense Advanced Research Projects Agency, Arlington VA (2006 – 2007)

Selected by the DARPA Director to merge the Advanced Technology and Special Project Offices and form the Strategic Technology Office, creating DARPA's largest office. Led the development of technologies that enable US Forces to have theatre-wide and global impact and dominate the new strategic environment. Guided systems development in a wide range of operational environments to include undersea warfare, ground forces, tactical air operations, and space systems. Directed the office's annual \$25M venture investment activity. Oversaw the management and execution of over 70 major programs and execute an annual budget of \$550M. Competitively won new R&D funding that grew the office budget by \$200M in one year.

- My team demonstrated an integrated hardware-software solution that provides orders of magnitude acceleration of data transport across the Internet

- We finished transition of a “smart building” technology development project that enables buildings to protect themselves against chem-bio attacks
- My government-contractor team successfully demonstrated in the field an automated spectrum allocation technology that enabled us to secure follow-on funding for insertion of this product into our customer’s RF networks
- We successfully established two new alternative energy programs for US Forces, one in solar cells and the other in bio-fuels for military aircraft
- My team demonstrated the world’s first synthetic aperture imaging system using a laser (rather than radar) as the illuminator, substantially improving resolution
- Led my new team in developing several new partnerships for product development and transition with the Combatant Commanders and the Services
 - My team created and transitioned several new products through formal agreements with the Commander of Special Operations Command, some of which went directly into combat operations
 - We established eighteen new co-funded Memorandums of Agreement (MOA) with service partners for tech transfer
- Directed the development and field demonstration of the Department of Defense’s (DOD) first interoperable, mobile tactical network
 - Led a team of government program managers, contractors and customers in this \$80M project
 - We delivered an affordable solution (cheaper by greater than a factor of 4) for nearly 1 million legacy systems 2 years ahead of the competition

Director, Advanced Technology Office, Defense Advanced Research Projects Agency, Arlington VA (2002 – 2006)

Led an office of 20 program managers developing leap-ahead capabilities in networks, communications, network centric warfare applications, information assurance, sensor systems, maritime technology and systems for Special Forces. Guided the development of novel ideas in physics, chemistry, biology, materials science, information technology, radio and optical based networks that will revolutionize the operational capabilities of U.S. warfighters. Built and maintained business relationships with new and existing customers for the establishment of co-funded technology transfer agreements. Developed future-year funding requirements, managed execution through detailed technical and administrative program reviews and evaluations, established technical priorities and allocated funds accordingly. Recruited, trained and supervised a diverse team of technical program managers, business operations personnel, and administrative staff. Directed the office’s annual \$15M venture investment activity. Oversaw the management and execution of 35 major programs and grew the annual budget from \$200M to \$320M.

- Rallied my new office to develop and adopt better methods for creating and selling research programs, which led us to the number one position for new start projects
- Led a team of program managers to create and implement DARPA’s “Heterogeneous Networking” R&D strategy, which has now been adopted by senior DOD leadership
 - Expanded the narrowly focused physical layer program to encompass the development of new network management products and user applications

- Successfully conducted far reaching field demonstrations of leap-ahead tactical network capabilities that won customer buy-in and tech transfer
- Guided the development of a new set of DOD-focused information assurance products, giving US forces a decisive edge in Network Centric Warfare
- My team finalized the transition to the US Army of DOD's most ambitious and technologically advanced distributed collaboration software tool for tactical forces, a tool which was successfully combat tested and has now been adopted by the Services
- We refocused DARPA's maritime thrust to develop new products in support of littoral operations and convinced the Navy to then invest \$50M in our new program
- We collaborated with the Commander of Joint Forces Command (JFCOM) and his staff to initiate the Integrated Battle Command research program and transitioned products to the field.

Deputy Director, Microsystems Technology Office, Defense Advanced Research Projects Agency, Arlington VA (2000-2002)

Deputy Director of the DARPA component and sub-systems office in charge of developing novel approaches and applications for heterogeneous chip-scale integration. Directed the office's annual \$10M venture investment activity. Coordinated cross-office research projects and assisted the office director in execution of the \$300M annual office budget.

- Led the photonics technical area on behalf of the Office Director and assisted in identifying high payoff DOD investments in micro-electronics, photonics, and micro-electromechanical systems (MEMS).
- Created DARPA's "All Optical Internet" R&D strategy.
- Organized and led a team of program managers that built a systems driven investment strategy that was successfully used to identify and create new products for our customers.

Member of the Technical Staff (On loan to DARPA), Lincoln Laboratory, Massachusetts Institute of Technology, Arlington VA (1999-2000)

Served as a Program Manager in DARPA's Microsystems Technical Office. Responsible for development of photonics technologies for military systems. Manager of Steered Agile Beams, RF Lightwave Integrated Circuits, University Opto Centers programs. Started the Chip Scale WDM program. Initiated DOD's largest integrated optics chip-scale development program to enable replacement of bulky electronics modules with smaller, lighter, and more energy efficient photonic components. Managed \$145M in R&D programs.

- Led a \$60M co-funded government-contractor consortium that developed a commercially successful high-speed fiberoptic transceiver
 - Focused the four teams on developing components that allowed the goals of both commercial and military customers to be satisfied
 - Final product achieved strong demand in two unrelated markets – local area networks and military avionics 2 years ahead of the competition

Program Manager, Microsystems Technology Office, (Lt Col, United States Air Force (USAF)), Defense Advanced Research Projects Agency, Arlington VA (1997-2000)
Responsible for development of photonics technologies for military systems. Created the Steered Agile Beams program. Program Manager of the Optical Micro Networks Program. Created a new R&D program to develop very compact components for rapidly and precisely steering laser beams across distances of at least 50km. Led a DOD-industry co-funded optical transceiver program which brought to market the first high speed vertical cavity laser module. Directed development of in-flight test pod for fiberoptic link components. Managed \$100M in programs.

Chief, Intelligence, Surveillance & Reconnaissance Branch, (Lt Col, USAF). Electronic Systems Center (USAF), Hanscom Air Force Base, Lexington MA (1994-1997)
Responsible for technology development planning for Intelligence, Surveillance and Reconnaissance systems, and for coordinating R&D activities with other mission areas. Produced USAF's first-ever ISR Development Plan linking S&T with high priority operational user needs. Led a team of 15 military and civilian employees with an annual budget of \$3M.

Chief, Photonics Development, (Major, USAF), USAF Photonics Center, Rome Air Force Base, Rome NY (1992-1994)
Responsible for photonics technology development planning for electro-optical systems development. Established optical interconnects research program. Trained research staff in nanofabrication techniques. Built from scratch a new laboratory experimental program to use optical interconnects to replace electrical connections in order to solve an anticipated data transport bottleneck in high performance computers in military weapons systems. Within two years the effort grew to include five fulltime in-house researchers and three outsourced R&D projects, with an annual budget of \$700K.

Photonics Technology Program Manager, (Capt, USAF), USAF Photonics Center, Rome Air Force Base, Rome NY (1990-1992)
Responsible for photonics technology program and project execution. Designed, fabricated, and evaluated novel lasers, detectors, waveguides and components for high speed optical data transport. Managed an annual budget of \$200K.

US Air Force, Graduate Student (Air Force Institute of Technology (1988-1989)), FB-111A Pilot & Instructor Pilot (1984-1988), B-52D/H Pilot (1980-1984), Pilot Training (1979-1980), Officer Training School (1978-1979)

Technical Society Memberships:

Optical Society of America, IEEE and SPIE

ROBERT R. HOOD

(b)(6)

SUMMARY:

To apply 15 years of senior government experience with the Executive and Legislative branches, including the Speaker of the U.S. House of Representatives, a Governor, and two Under Secretaries, to an organization that requires an individual with a broad range of skill sets. Have a specialty in several key fields, including: national security, energy, environmental and science policy, as well as unique insights into the government process. These capabilities provide a solid foundation to address political, policy and regulatory concerns that challenge today's corporations.

EDUCATION:

University of West Georgia - Carrollton, GA

- Bachelor of Science degree in Political Science
*Minor in history, concentration in military doctrine

Harvard University's JFK School of Government-Cambridge, MA

- Senior Executive Program on National and International Security

PROFESSIONAL EXPERIENCE:

U.S. Department of Defense, 2006 - Present

Office of the Under Secretary of Defense (Comptroller)

Deputy Under Secretary of Defense (Budget and Appropriations Affairs)

- Senior Executive Service (SES) political appointment by the President of the United States, the equivalent to a three star general
- Develop and execute the Department's legislative strategy for the President's annual Defense budget request (over \$500 billion annually)
- Responsible for managing the day-to-day communications with the U.S. Congress regarding the budget and the Department's financial management of those funds, including working with Members of Congress and their staff
- Oversee external relations, including press inquiries, regarding the Defense budget
- Manage and direct the daily activities of 19 staff members (civilian & military)
- (b)(6)

U.S. Department of Energy, 2001- 2006

National Nuclear Security Administration (NNSA)

Director, Congressional Affairs

- SES political appointment by the President of the United States
- Advised the Administrator, Ambassador Linton Brooks, on all matters related to NNSA's relationship with the U.S. Congress
- Served as the key link for NNSA to Members of Congress and their staff
- Responsible for the development and execution of a legislative strategy for NNSA, a \$9 billion a year federal agency charged with maintaining the U.S. stockpile of nuclear weapons and the U.S. government's nonproliferation efforts around the world

Curriculum Vitae

JOHN H. HOPPS, JR.

**Provost and Senior Vice President for Academic Affairs
Professor of Physics**

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EDUCATION

**B.S.
Chemistry/Math
Cum Laude**

MOREHOUSE COLLEGE, Atlanta, GA

- *Senior Thesis*: "Chemical and Thermodynamic Studies of Bituminous Coals"
- *Advisor*: Prof. Henry C. McBay
- Morehouse Glee Club and Quartet
- Varsity Football; Varsity Track and Field

**M.S.
Chemistry**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA

- *Thesis*: "Optical and Magnetic Studies of the 9-Heteropoly Molybdates of Mn(IV) and Ni(IV)"
- *Advisor*: Prof. David P. Shoemaker
- Research Assistant, X-Ray Crystallography

**Ph.D.
Physics**

BRANDEIS UNIVERSITY, Waltham, MA

- *Dissertation*: "Variational Methods and Transport Theory"
- *Advisor*: Prof. Eugene P. Gross
- Instructor in Mathematics

Certificate

**HARVARD UNIVERSITY, Cambridge, MA
Institute for Educational Management**

HONORS AND AWARDS

- Phi Beta Kappa, Sigma Xi, Beta Kappa Chi, and Golden Key Honor Society
- Ford Foundation Early Admissions Scholar; Morehouse College
- Jessie Smith Noyes Foundation Fellow; Massachusetts Institute of Technology
- Sanders Associates Corporate Doctoral Fellow; Brandeis University
- U.S. Presidential Citation "For Outstanding Accomplishments in the Technology Reinvestment Project"

PROFESSIONAL SOCIETIES AND ACTIVITIES

- AAAS; American Chemical Society; and American Physical Society;
- American Institute of Aeronautics and Astronautics; Committee on Plasmadynamics and Lasers
- American Nuclear Society;
 - Reactor Operations Division; Past Chair, National Meetings Program Committee
 - Nuclear Engineering Education for Disadvantaged (NEED) Committee; Past Chair, Motivational Projects
- ASM International; Member, Government and Public Affairs Committee (GPAC)
- Biosphere 2 Center (Columbia University); Oracle, AR; Member, Academic Programs Advisory Board
- Carver Fund; Boston, MA; High Technology Venture Capital Fund; Member; Advisory Board
- Center for Economics and Ecology; Columbia University; Member; Advisory Board
- Center for Electronics Manufacturing; Ohio State University; Member; Advisory Board
- Fuji Bank, Ltd.; Tokyo, Japan; Technology Investment Consultant
- Initiative to Diversify the Professoriate; Member, National Advisory Board; M.I.T., Cambridge, MA
- John and Fannie Hertz Foundation; Livermore, CA; Advisor, Hertz Fellowship Program
- Materials Research Society
- National Research Council - National Materials Advisory Board; Member
- National Research Council - Space Studies Board; Member

- **National Reliable Energy Laboratory**; U.S. Department of Energy; Member, National Advisory Board
- **The Negro Educational Review**; Member, Editorial Board
- **Oak Ridge Associated Universities (ORAU)**; Member, Board of Directors

Dr. John H. Hopps, Jr.

PROFESSIONAL EXPERIENCE

MOREHOUSE COLLEGE, Atlanta, GA (Jan. 1996 - present)

Provost and Senior Vice President for Academic Affairs, and Professor of Physics

Second ranking official and Chief Operating Officer of the College, the nation's only all-male historically black college, with an enrollment of approximately 3,000 students. Directly responsible for all matters related to academic programs, faculty and student life. Has direct responsibility for all academic departments and interdisciplinary programs through department chairs and program, center and institute directors. Other officers reporting directly to the Provost and Senior Vice President for Academic Affairs are:

- *Vice Provost for Enrollment Management (Admissions, Financial Aid, and Records);*
- *Vice Provost for Student Affairs;*
- *Vice Provost for Special Academic Programs (e.g., Honors Program, Exchange Programs, Academic Support);*
- *Vice Provost for Information Technology and Resources;*
- *Vice Provost for Research;*
- *Director of Institutional Research;*
- *Director of Athletics; and*
- *Center and Institute Directors (e.g., International Affairs; Teacher Preparation; Leadership; Public Service)*

Has oversight responsibility for all college operations (budgeting, development, campus operations, policy and planning, etc.) to ensure their consistency with academic goals and priorities.

Played leadership role in the conceptualization, development and implementation of several innovative new programs:

- *Interdisciplinary undergraduate programs in the sciences (neuroscience, materials science, and telecommunications)*
- *Center for International Affairs, including the International Power Institute*
- *Center for Teacher Preparation*
- *Leadership Center*
- *3-2 B.S./M.S. Dual Degree Engineering and Science Programs between Morehouse and Georgia Tech*
- *Collaborative Residential Directors Program between Morehouse and the Interdenominational Theological Center*
- *Establishment of a full-service Office of Sponsored Research*
- *Intensive Language Training Initiative*
- *Community-Based Technology Insertion Project*
- *Learning outcome based approach to academic program development, enhancement and assessment*
- *Learning outcome based approach to work study, service learning, and other co-curricular programs*
- *Faculty classroom teaching load reductions (four-courses per term to three-courses per term)*

NATIONAL SCIENCE FOUNDATION, Arlington, VA (Sept. 1992 - Oct. 1995)

[on leave from the CHARLES STARK DRAPER LABORATORY (formerly the MIT Instrumentation Laboratory)]

Director, Division of Materials Research (Sept. '92 - Oct. '95)

Responsible for the development of program goals, metrics, plans, priorities and budgets to promote and advance the U.S. materials research and education enterprise. Responsible for the development, organization and management of the Foundation's largest Division, with a GFY'94 budgetary authority of \$180 million. Responsibilities include:

- *Oversight of the funding of large-scale (>\$800K/yr) multidisciplinary programs in materials research:*
 - *Material Research Science and Engineering Centers (31)*
 - *Science and Technology Centers (5)*
- *Oversight of the funding of National Facilities for experimental studies in materials science and engineering:*
 - *National High Magnetic Field Laboratory (Florida State University; Los Alamos National Laboratory)*
 - *Francis Bitter Nuclear Magnet Laboratory (Massachusetts Institute of Technology)*
 - *Cornell High Energy Synchrotron Source (CHESS)*
 - *Synchrotron Radiation Center (SRC - University of Wisconsin at Madison)*
 - *Center for High Resolution Neutron Scattering (CHRNS - National Institute for Standards and Technology)*
 - *Center for High Resolution Electron Microscopy (CHREM - Arizona State University)*

- Oversight of the funding of individual investigator grants in the areas of metals, ceramics, and electronic materials; materials theory; condensed matter physics; solid-state chemistry and polymers.
- Oversight of programs for curriculum development at graduate, undergraduate and technical education levels.
- Representation of the NSF in interagency program planning and implementation in materials research.

Reorganized Division to achieve enhanced intellectual integration, operational efficiency and organizational agility, and developed strategies and systems for ensuring total quality management of Division operations.

Dr. John H. Hopps, Jr.

PROFESSIONAL EXPERIENCE (continued)

NATIONAL SCIENCE FOUNDATION, Arlington, VA (Sept. 1992 - Oct. 1995) (continued)
[on leave from the CHARLES STARK DRAPER LABORATORY (formerly the MIT Instrumentation Laboratory)]

Director, Division of Materials Research (Sept. '92 - Oct. 1995)

Conducted major review and evaluation of Materials Research Laboratory and Groups Programs involving large segment of the materials science and engineering community. This culminated in a Materials Research Science and Engineering Center (MRSEC) Program with added emphasis upon K-12 outreach and industrial partnerships.

Diversified and strengthened technical staff, enhanced collegiality throughout Division, and significantly enhanced the stature of the Division within the Foundation and within the national academic science and engineering community.

Established the Foundation's first "Industrial Residency Program" within the Division of Materials Research.

Established interagency partnerships with agencies such as the Advanced Research Projects Agency (ARPA) and the Office of Naval Research (ONR) that has led to both joint funding of awards, as well as joint sponsorship of special initiatives and solicitations.

Conceived and implemented Mathematical and Physical Sciences Directorate program for "Collaborative Research in Undergraduate Institutions" based upon dialogue with faculty of HBCU and other undergraduate institutions.

Member of State Department/National Science Foundation/Department of Energy Working Group for the planning of long-range scientific collaboration with member nations of the North American Free Trade Agreement (NAFTA).

- Member of international delegation meeting in Saltillo, Mexico on May 4-5, 1995 to develop long-range plans for collaboration in mathematics and the physical sciences.
- Member of Organizing Committee for first "Pan American Advanced Study Institute", to be held Aug. 21 -Sept. 1, 1995 in Merida, Yucatan, Mexico. Institutes modeled after highly successful NATO Advanced Study Institutes.

Served as NSF member of Working Group on Defense Technology Conversion. The group is responsible for the design, development and implementation of the Technology Reinvestment Project (TRP).

- TRP reinvested \$800M in defense funds to commercial and dual-use activities within the private sector.
- Received Citation by the President of the United States for outstanding achievement in project implementation.

Served as NSF representative for numerous interagency Federal Initiatives within the new White House National Science and Technology Council structure for science and technology policy. These included:

- Member of Government-Industry Technical Working Group of the Partnership for a New Generation Vehicles (PNGV). Heads subgroup on Vehicle Technologies.
- Member of Committee on Civilian Industrial Technology Government-industry Subcommittee on Aeronautic Materials and Manufacturing Technology.

Served as member of NSF working group which planned and coordinated programmatic activities in Manufacturing.

On-site Research and Education Program Reviews/Evaluations:

- *University of Amsterdam*
- *Arizona State University*
- *University of California at San Diego*
- *University of California at Santa Barbara*
- *University of Chicago*
- *Cornell University*
- *Florida A&M University*
- *Florida State University*
- *Georgia Institute of Technology*
- *Harvard University*
- *University of Houston*
- *University of Illinois at Chicago*
- *University of Illinois at Urbana*
- *Jagelonian University (Krakow, Poland)*
- *Kent State University*
- *Los Alamos National Laboratory*
- *University of Maryland at College Park*

- *Massachusetts Institute of Technology*
- *Michigan State University*
- *Northeastern University*
- *Northwestern University*
- *Ohio State University*
- *University of Pennsylvania*
- *Prairie View A&M University*
- *Princeton University*
- *Purdue University*
- *Rensselaer Polytechnic Institute*
- *Rice University*
- *Stanford University*
- *Tohoku University (Sendai, Japan)*
- *University of Tokyo*
- *Virginia Polytechnic Institute and State University*
- *University of Washington*
- *University of Wisconsin at Madison*

Dr. John H. Hopps, Jr.

PROFESSIONAL EXPERIENCE (continued)

THE CHARLES STARK DRAPER LABORATORY, Cambridge, MA (1977 to 1995)

Principal Member of Technical Staff (Nov. '92 - Dec. 95)
Chief, Photonics Technology (Nov. '90 - Sept. '92)

Responsible for development and maintenance of the Laboratory's technology infrastructure in photonics upon which advanced systems development activities in sensors, communications and signal processing are based. Responsible for externally and internally funded technology research and development programs, fabrication and test facilities, and supervision of technical personnel . Technologies directed included high performance fiber optic components, integrated optic components, laser devices, semiconductor photonic devices, photonics fabrication automation and packaging, optical signal processing and optical design and analysis.

- *Supervised thesis research of 3 Draper Fellows (1 PhD, MIT, Electrical Engineering; 1 PhD, Tufts, Electrical Engineering; 1 MS, Northeastern, Electrical Engineering).*

Manager, Laser Research and Development Facility (Mar. '87 to Sept. '92)

Responsible for laser development to meet Corporate requirements for communication, tracking, and fiber optic sensor systems. Specific responsibility for laser devices for resonant fiber optic gyro (RFOG) program. Technical responsibilities include laser performance testing and analysis, quantum well semiconductor laser research, and quantum optics research related to the generation of squeezed states in semiconductor lasers. Initiated, facilitated, and monitored laser research and development subcontracts to MIT, University of Illinois and AT&T.

- *Initiated and built Laboratory's programs in laser research and development.*
- *Developed state-of-the-art computer-based facility to characterize dynamical properties of laser devices.*
- *Developed collaborative program with AT&T leading to 10 KHz linewidth DBR diode laser for RFOG.*
- *Originated dual-electrode concept leading to flat baseband FM response of RFOG DBR lasers fabricated by AT&T.*
- *Implemented and experimentally supported university research programs for quantum well lasers.*
- *Collaborated in development of piezo-modulated solid state microlasers packaged in diode laser cans.*
- *Supervised thesis research of one Draper Fellow (MS, MIT, Electrical Engineering).*

Manager, Fault-Tolerant Systems Technology Research (Feb. '86 to Mar. '87)

Responsible for the management of internally funded research and development programs in fault-tolerant systems area. Programs included hardware concepts, prototype development, design and analysis methodology development, as well as test-bed development and prototype systems implementation and evaluation. Pioneering work by the Laboratory on the development of high-speed, high throughput, fault-tolerant parallel processing systems begun during this period.

- *Initiated program for the development of intelligent, "real-time" operator support system for high risk, dynamically fast systems such as nuclear power plants and high performance aircraft.*
- *Developed and successfully tested, using the MIT research reactor, an intelligent, real-time operational support system for sustaining safe plant operation under conditions of plant state uncertainty.*
- *Supervised thesis research of one Draper Fellow (PhD, MIT, Nuclear Engineering).*

Manager, Energy Programs Development (May '79 to Mar. '87)

Responsible for the development and management of Laboratory's programs in Energy Technology. Program activities included externally and internally funded research and development, as well as system development and implementation for research and commercial reactors. Program activities were directed towards the application of fault-tolerant systems, and other advanced instrumentation and control related technologies, to enhance the availability, performance and operational safety of power plants.

- *Developed Laboratory's instrumentation and control technology and programs in the nuclear power area.*
- *Developed program resulting in first Nuclear Regulatory Commission (NRC) licensed reactor (MITR-II at MIT) for full operation under computer control.*
- *Developed program resulting in first fault-tolerant computer controlled reactor safety system (EBR-II at Idaho National Engineering Laboratory).*
- *Developed program resulting in first use of "analytic redundancy" in fault-tolerant safety systems of commercial nuclear plant (Northeast Utilities' Millstone-II).*
- *Conceived and managed first Internal Research & Development subcontracts to MIT which were to become model for the Laboratory's "University Research Subcontract Program".*
- *Supervised thesis research of 5 Draper Fellows (3 PhD, MIT, Nuclear Engineering; 1 PhD, MIT, Mechanical Engineering; 1 MS, MIT, Mechanical Engineering).*

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PROFESSIONAL EXPERIENCE (continued)

THE CHARLES STARK DRAPER LABORATORY, Cambridge, MA [1977 to present (continued)]

Education Director (July '83 to Aug. '84)

Responsible for administration of Laboratory's Corporate Education Office. Responsibilities included student programs having thesis and dissertation research component (approximately 100 graduate students), as well as Faculty, Military, and Industrial Residency Programs. Responsible for student recruitment, evaluation, and facilitation of student research placements. Non-residence program responsibilities included seminars and special courses offered in-house and on campus (MIT). Also responsible for in-house technical staff development programs.

- *Extended the Draper Fellows (Graduate Research Assistantship) Program to universities other than MIT.*
- *Initiated funded Faculty Research Participation Program for faculty supervisors of Draper Fellows.*
- *Worked on admissions committees of several MIT departments (selected students for admission as Draper Fellows).*
- *Responsible for interviews and evaluations of Hertz Fellowship applicants from New England region.*
- *Established in-house closed circuit Continuing Education programs with Northeastern and Boston Universities.*

Manager, CSDL Adaptive Optics Facility (Oct. '78 to Nov. '79)

Responsible for the design, implementation and operation of scaled experimental facility devoted to the investigation of high energy laser (HEL) propagation phenomena and real-time adaptive optics control.

- *Developed unique laboratory experimental facility incorporating appropriately scaled thermal blooming and turbulence effects simultaneously over the same optical propagation path.*

Research Scientist (Sept. '77 to Dec. '78)

Engaged in research in plasma dynamics aimed at modeling the behavior of fusion plasmas as a basis for the development of control concepts for tokamak and mirror fusion reactors. Principal investigator on project to develop control concepts for fission-fusion hybrid reactors. Activities included the neutronic modeling of several fission-fusion hybrid conceptual designs and the characterization of their control behavior.

- *Developed "real-time" models for first in-depth Tokamak Reactor (Princeton) instrumentation and control system conceptual design.*
- *Developed "real-time" models for first in-depth Mirror Reactor (Lawrence Livermore) instrumentation and control system conceptual design.*

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA (1977 to 1995)

Research Affiliate, Department of Electrical Engineering and Computer Science (Feb. '90 - Sept. '93)

Engaged in collaborative research and supervision of thesis students in the development III-V quantum well photonic materials, components, devices and integrated systems. Research emphasis included:

- *Microscopic modeling, and theoretical and experimental analysis of linewidth narrowing mechanisms in quantum well semiconductor lasers, incorporating the effects of materials and device architecture.*
- *Microscopic modeling and theoretical design of quantum well phase modulators.*
- *Study of squeezed states of semiconductor laser radiation, which included the study of third order susceptibilities, $\chi^{(3)}$, in rare-earth doped optical fibers and four-wave mixing based squeezing in the phase quadrature of the radiation field. The experiments were preliminary to experiments planned on directly rare earth doped semiconductors lasers.*

Research Affiliate, Department of Nuclear Engineering (Sept. '77 to Aug. '88)

Engaged in collaborative research and supervision of thesis students in the development and implementation of advanced computer-based techniques for real-time nuclear power plant operational support. Research disciplines include estimation and control theory, decision theory and statistical physics. Work included prototype systems implementation on the MIT Research Reactor.

Visiting Scientist, Department of Nuclear Engineering (Sept. '76 to Aug. '77)

Engaged in theoretical research on the nonequilibrium statistical mechanics of dense fluids and the connection of dynamical structure functions and higher order dense fluid correlation functions with slow neutron scattering and other experimental data.

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PROFESSIONAL EXPERIENCE (continued)

THE OHIO STATE UNIVERSITY, Columbus, OH (1971 to 1977)

Assistant Professor, Department of Physics (Sept. '71 to Aug. '76)

Research areas: Plasma Physics, Nonequilibrium Statistical Mechanics

Teaching areas: General Physics, Optics, Quantum Mechanics, Statistical Mechanics, Plasma Physics,

Research in Physics, and Research in Atmospheric Sciences:

- Theses Supervised:
 - *Physics* -- 2 MS, 1 PhD
 - *Atmospheric Sciences* -- 1 PhD
- Thesis Committees:
 - *Physics* -- 2 MS, 9 PhD
 - *Atmospheric Sciences* -- 2 PhD
 - *Electrical Engineering* -- 1 PhD

Administrative responsibilities included development and administering of written and oral graduate exams in Physics and the physics sections of graduate exams in Electrical Engineering and Atmospheric Sciences.

Served on committee for development of Atmospheric Sciences Program which later became a department.

SANDERS ASSOCIATES, INC., Nashua, NH (1967 to 1971)

Manager, Laboratory for Optical Sciences (Jan. '67 to Aug. '71)

Responsible for the planning, development and operation of an optical test facility consisting of several laboratories and indoor and outdoor optical test ranges of lengths up to 13 miles. The facility was engaged in the characterization of radiation sources, detectors and passive optical components for military infrared systems, as well as the alignment and testing of infrared subsystems. Performed spectroscopy studies in support of development activities in the solid state laser area.

Assistant Manager, Plasma Physics Department (Nov. '69 to Oct. '71)

Performed theoretical and experimental research and development in plasma physics aimed at development of plasma infrared radiation devices. Developed, and studied dynamic electrical and radiation characteristics of, alkali vapor arc discharge lamps and electromagnetic shock tubes.

- *Developed prototype radiation devices for first generation infrared targeting and countermeasure systems.*

NASHUA CORPORATION, Nashua, NH (1964 to 1967)

Research Scientist

Responsible for concepts and basic developments in imaging and high speed recording directed towards application to office copy and high speed recording systems. Participated in the development of the Nashua toner for the Xerox process. Served as consultant to Production Engineering Division on basic technical problems related to quality control.

- *Conceived and did basic research leading to patent in high frequency ultrasonic recording.*
- *Conceived and did basic research leading to patent in electrosensitive recording.*

BOSTON UNIVERSITY, Boston, MA (1962 to 1964)

Assistant Coach, Varsity Football

Responsible for coaching offensive and defensive backs. Participated in the development of offensive and defensive systems. Other responsibilities included the development of game plans and strategies, scouting and recruiting.

- *Developed and patented football training machine.*
- *Coached four players who later played professionally in AFL and NFL.*

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RECENT KEYNOTE SPEECHES AND MAJOR PRESENTATIONS

"Materials Research Instrumentation Development: A New Paradigm", Keynote Address, *Atomic Force/Scanning Tunneling Microscopy Conference*, Natick, Massachusetts, June 8-10, 1993, (*in press*, Elsevier).

"NSF Activities in Undergraduate Materials Chemistry", Keynote Address, *Symposium on Materials Chemistry Education*, National Meeting of the American Chemical Society, Chicago, Illinois, August 22-27, 1993.

"New Perspectives on Materials Research Education in the U.S.", Materials Science Frontiers Lecture, *3rd International Conference on Advanced Materials of the International Union of Materials Research Societies*, Tokyo, Japan, August 31-September 4, 1993.

"Privatization in the Post Cold War U.S.: The Technology Reinvestment Project", Invited Address, *International Conference on Privatization and Socioeconomic Policy in Central and Eastern Europe*, Krakow, Poland, October 18-21, 1993, (*in press*). Chair of workshop on Country Perspectives.

"Reformulation of the Social Contract for Federal Support of Science and Engineering: New Vistas and Opportunities", *International Symposium II: The Culture of Engineering in a Rapidly Changing Environment*, University of California at Berkeley, Berkeley, California, November 8-10, 1993, (*in press*).

"Advanced Manufacturing Initiative: General Perspectives and Materials Research Opportunities", Keynote Address, *Materials Processes for Manufacturing Symposium*, Materials Research Society Meeting, Boston, Massachusetts, November 29-December 3, 1993.

"New Priorities for the National Science Foundation", *College of Engineering Research Review*, University of California at Santa Barbara, Santa Barbara, California, February 24, 1994.

"New Priorities for NSF", Luncheon Address, *Federation of Materials Societies*, Washington, DC, March 10, 1994.

"NSF Division of Materials Research: Status, Priorities and New Directions", *Special Session*, National Meeting of the American Physical Society, Pittsburgh, Pennsylvania, March 22, 1994.

"Directions in Materials Research", Keynote Address, *4th Conference on Computational Research on Materials*, Morgantown, West Virginia, May 11, 1994.

"The Evolving Role of DMR in Materials Research", Keynote Address, *Think Tank on Materials Science and Engineering in the 21st Century*, University of California at Santa Barbara, Santa Barbara, California, May 20, 1994.

"Real Advances in Materials Research", Award Presentation Remarks, *1st National Symposium Honoring the Most Significant Advances in Materials Research*, National Association for Science, Technology and Society, National Press Club, Washington, DC, September 26, 1994.

- Program broadcasted by the National Technological University to a national academic and industrial audience.
- Portions of the program, including my presentation of awards, featured on *Dateline NBC*.

"The Increasing Importance of U.S. Academic/Industry Partnerships and Alliances in a Competitive Global Economy", *Symposium and Ceremony in Dedication of NSF supported Facility in Advanced Electronic Packaging Facility*, Cornell University, Ithaca, New York, October 13, 1994.

"Grand Challenge in Materials Science", Keynote Address, *Japan Science and Technology Agency (STA) Symposium: Material and Matter Design in the Virtual Laboratory*, Tokyo, Japan, December 8, 1994.

"The Impact of Advances in Materials Technology in Developing Nations", Contribution to the film *Marshaling Technology for Development* produced by the World Bank, February 21, 1995, Washington, DC. The film will serve the following purposes: (1) Training of World Bank staff, (2) Information resource for economic and industrial planners, and other leaders, of Developing Nations, and (3) Public Broadcasting System Documentary.

"(Title to be announced)", Invited Address, *Conference on the Role of Science in Advanced Societies*, Massachusetts Institute of Technology, Cambridge, MA, April 6-7, 1995.

"Science, Technology and Industrial Policy: Rationalization of the Privatization Process", Invited Address, *International Conference on The Implications of Privatization in Eastern Europe, the European Union, the Balkans and Beyond*, Komotini, Thrace, Greece, June 26-July 2, 1995.

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PUBLICATIONS

J. Hopps, "New Perspectives on Materials Research Education in the U.S.", *Transactions of the Materials Research Society of Japan*, **19B**, 619 (1994).

J. H. Hopps, Y. Royter and C. G. Fonstad, "Modeling and Design of Narrow Linewidth Quantum Well Semiconductor Lasers", **in preparation**.

J. H. Hopps, et. al., "Effects of Gamma Rays and Neutrons upon the Dynamical Behavior of Diode Lasers", **in preparation**.

J. H. Hopps, et. al., "Total Gamma Ray Dose and Neutron Effects on Diode Lasers", in "USASDC Solid State Inertial Measurement Unit Nuclear Hardening Test Program", **Final Report, DOD DASG60-88-C-0045, CSDL-R-2324**, Charles Stark Draper Laboratory, April, 1991.

J. H. Hopps, et. al., "Validation of Critical BWR Signals", **Final Report, EPRI NP-5211M, Project 2448-1**, Charles Stark Draper Laboratory, May 1987.

J. H. Hopps, et. al., "Design and Experimental Evaluation of an Automatically Reconfigurable Controller for Process Plants", **1987 American Control Conference**, Minneapolis, MN, 10-12 June 1987.

J. H. Hopps, et. al., "The Application of Digital Technology to the Control of Reactor Power: A Review of the MIT Reactor Experiments", "**Proceedings of the 6th Power Plant Dynamics, Control and Testing Symposium**", 14-16 April 1986, Knoxville, TN.

J. H. Hopps, H. N. Jow and C. K. Whitney, "Information Prioritization for Tactical Support of Nuclear Power Plant Operators in Off-Normal Situations", **Proceedings of the International Conference on "Computer Applications for Nuclear Power Plant Operation and Control"**, Pasco, WA, 8-15 September, 1985.

J. H. Hopps, et. al., "Advanced Control Test Operation-Task Team Report", **Final Report, U.S. Dept. of Energy, DE-AT03SF11699**, September, 1985.

J. H. Hopps, et. al., "MIT Reactor Fault-Tolerant Systems Demonstration", **Trans. Am. Nucl. Soc.**, June, 1985.

J. H. Hopps, "Safety Parameter Display Systems: A High Information Reliability Design Concept", **ASME Trans. on Computers in Engineering**, 4, 39 (1982).

J. H. Hopps, J. L. Shohet and W. L. Waldron, "Surface Modes in Magnetized Fully Ionized Plasmas", **Phys. Fluids** 23(1), 129 (1980).

J. H. Hopps and W. L. Waldron, "Nonlinear Effects in Plasma Surface Mode Dynamics", **Bull. Am. Phys. Soc. II** 23, 795 (1978).

J. H. Hopps, et. al., "Hybrid Reactor Neutron Kinetics Study", **Final Report, EPRI Project 546-2**, Charles Stark Draper Laboratory, May 1978.

J. H. Hopps, "Microscopic Theory of Surface Modes in Bounded Plasmas", **Third International (Kiev) Conference on Plasma Theory**, Trieste, Italy, 5-9 April, 1977.

J. H. Hopps and W. L. Waldron, "Surface Modes in Electron Plasmas", **Phys. Rev. A** 15(4), 1721 (1977).

J. H. Hopps and W. L. Waldron, "Anomalous Bulk Modes in Bounded Plasmas", **Bull. Am. Phys. Soc. II** 22(1), 70 (1976).

J. H. Hopps, "Electromagnetic and Particle Scattering in Collisional Plasmas", **Bull. Am. Phys. Soc. II** 21(4), 647 (1976).

J. H. Hopps, "Direct Variational Approach to the Calculation of Dynamic Structure Functions", **Phys. Rev. A** 13, 1226 (1976).

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PUBLICATIONS (continued)

J. H. Hopps, "Local Reference Beam Holography: Theory and Application to Optical Countermeasures", **Technical Report LOS-70-P-1908**, Sanders Associates, Laboratory for Optical Sciences; November, 1970.

J. H. Hopps, "Details of the Line Ratio Atmospheric Extinction Correction Method", **Technical Report LOS-70-P-1975**, Sanders Associates, Laboratory for Optical Sciences; August, 1970.

J. H. Hopps, "Atmospheric Attenuation Corrections Using a Method of Line Ratios", **Technical Report LOS-70-P-1869**, Sanders Associates, Laboratory for Optical Sciences; August, 1970.

J. H. Hopps, and E. Wainwright, "Source Development Study", **Final Contract Report, Naval Air Systems Command, N0w-64-0580-ci**; Sanders Associates, Plasma Physics Laboratory; July, 1970.

J. H. Hopps, "High Pressure Pulsed Discharges: Electrical and Radiative Dynamics", **Technical Report LOS-70-019-IRD-NXF**, Sanders Associates, Laboratory for Optical Sciences; June, 1970.

J. H. Hopps, and E. Wainwright, "Electromagnetic Shock Tube Program", **Final Contract Report, Naval Air Systems Command, N00019-69-c-0612**; Sanders Associates, Plasma Physics Laboratory; January, 1970.

J. H. Hopps, "Dynamics of Electromagnetic Shock Tubes: An Analysis of the T-Tube", **Technical Report LOS-69-14-IRD-NXF**, Sanders Associates, Laboratory for Optical Sciences; December, 1969.

J. H. Hopps, "Infrared Sources for the 10 μ - 19 μ Region: A Feasibility Study", **Technical Report LOS-68-06-IRD-NXF**, Sanders Associates, Laboratory for Optical Sciences; December, 1968.

J. H. Hopps, "Notes on High Pressure Discharge Lamps: Theory, Operation and Testing", **Technical Report LOS-68-01**, Sanders Associates, Laboratory for Optical Sciences; February, 1968.

J. H. Hopps, "Plasma Instabilities and the Radiation Modulation of Pulsed Discharges", **Technical Report IRD-8-H-093**, Sanders Associates, Laboratory for Optical Sciences; January, 1968.

SELECTED CIVIC ACTIVITIES

- **Atlanta International School**; Atlanta, GA; Board of Directors
- **Brookline (MA) Pop Warner Football**: Former Head Coach, (Ages 12 - 14), 1984-1991
- **Brookline School Department**; Brookline, MA; Gifted and Talented Program, Advisory Committee
- **Brookline (MA) Youth Track Club**: Founder and Former Director, (Boys and girls ages 8 - 18), 1990-1992
 - The Athletics Congress (TAC) and Amateur Athletic Union (AAU) Regional Championships.
 - Thirteen (13) National Junior Olympians in two year period.
 - Seven (7) medals in National Junior Olympic competition in two year period.
- **Cambridge Partnership for Public Education**; Cambridge, MA; Former Member, Science Advisory Board
- **East Columbus Community Organization Day School**; Columbus, OH; Past Chair, Board of Directors
- **Fernbank Museum**; Atlanta, GA; Advisory Board
- **First Baptist Church**; Nashua, NH; Board of Deacons; Choir and Soloist
- **Mable M. Chandler Scholarship Foundation**; Dallas, TX; Board of Directors
- **Merrimack (NH) Pop Warner Football**: Former Associate Head Coach, (Ages 12 - 14), 1980-1983
 - Coached in first Pop Warner National Championship game; Alexander City, AL; 1983.
- **Morehouse College Alumni Association**; Past Chapter President; Columbus, OH
- **NUPRIME**; Northeastern University Progress in Minority Engineering; Advisory Board; Boston, MA
- **Project SEED (Science and Engineering Education for the Disadvantaged)**; Northeastern University; Boston, MA; Advisory Board
- **Reggie Jackson/Mr. October Foundation for Kids**; Nashua, CA; Board of Advisors
- **Rotary International**; Nashua, NH; Charter Member and Past Director, Nashua West

FAMILY

Spouse
(b)(6)



Children
(b)(6)



Grandchildren
(b)(6)

