

Capability Surprise on U.S. Naval Forces

Committee

Jerry A. Krill

Co-Chair

Dr. Krill is Assistant Director for Science and Technology and Chief Technology Officer at the Johns Hopkins University Applied Physics Laboratory, leading APL's innovation initiative and establishing a new Research and Exploratory Development Department. Previously he served as the JHU/APL Assistant Director for Programs and Chief Quality Officer. In that position Dr. Krill was responsible for all of APL's over 700 programs, implemented an ISO-based quality management system, and co-chaired milestone and program management reviews for APL's NASA science missions and instruments. Previous positions at JHU/APL include executive for air defense programs and head of the Power Projection Systems Department with its precision engagement and "info-centric" operations program portfolios. He holds a doctorate in electrical engineering from the University of Maryland. Dr. Krill's expertise includes combat systems, systems engineering, sensor and weapons networks, and microwave technology. He was a principal in developing the U.S. Navy's Cooperative Engagement Capability that networks air defense systems and, in 2000, led a joint Navy/BMDO working group to develop technical concepts for the Navy's role in national and regional missile defense. He holds 18 patents, and his awards include Innovator of the Year by the Baltimore Daily Record and the American Society of Naval Engineers "Jimmie" Hamilton Award. A member of the Naval Studies Board, he has served on NRC and Defense Science Board studies. Other memberships include the Institute of Electrical and Electronics Engineers, American Institute of Aeronautics and Astronautics, National Defense Industrial Association, National Space Society, and the International Council of Systems Engineering.

J. P. Reason, USN (Ret.)

Co-Chair

Admiral Reason is currently an independent consultant having retired from the U.S. Navy with the rank of Admiral after 35 years of service. His background includes naval and joint operations, as well as Department of Defense planning, programming, and budgeting. In his last position, he served as Commander-in-Chief, U.S. Atlantic Fleet, where his responsibilities included the training, maintenance, and readiness of naval forces deployed to the Mediterranean and Caribbean seas, South America, and the Persian Gulf. He was also responsible for the operations of most U.S. Navy bases and facilities along the East and Gulf coasts of the United States, in Puerto Rico, Cuba, and Iceland. He has served on numerous scientific boards and advisory committees, including as a member of the NRC Committee on The "1,000-ship Navy"—A Distributed and Global Maritime Network and the Committee on U.S. Forces' Capabilities for Responding to Small Vessel Threats; he is a member of the Naval Studies Board.

Ann N. Campbell

Member

Dr. Campbell is Director, Information Solutions and Services, at Sandia National Laboratories. She previously served as Senior Manager and Deputy to the Chief Technology Officer for Cyber Security Science and Technology. In this role she is responsible for developing and implementing an institutional strategy for cyber S&T. She was recently Acting Director for Sandia's Cyber Security Strategic Thrust, leading the laboratory's activities to expand its cyber workforce and infrastructure, and strategies to provide increased support for Sandia's national security sponsors' cyber missions. Dr. Campbell has also served as Deputy for Technical Programs for the Defense Systems and Assessments Strategic Management Unit (DSA SMU). In that role she advised the DSA SMU Vice President regarding the national security programs, was responsible for strategic planning and the investment strategy for the DSA SMU, and assisted with implementation of the laboratory's cyber strategy. From 2003 to 2007, Dr. Campbell led the Assessment Technologies Group in Sandia's Information Systems Analysis Center. She was responsible for development, coordination and oversight of programs focusing on vulnerability assessments and development of national security solutions in information technologies for multiple government sponsors. From 1999 to 2003 she was Manager of the Microsystems Partnerships Department which assessed and addressed microelectronics vulnerabilities for a variety of government sponsors. Dr. Campbell led Sandia's program to support the DOD Anti-Tamper Initiative. Dr. Campbell joined the Technical Staff at Sandia in 1985 and had assignments in the Materials and Process Center and Microsystems Science, Technology, and Components Center where she conducted research on the microstructure and physical properties of advanced materials, the physics of microelectronics failures, and the development of advanced microelectronics failure analysis techniques. Dr. Campbell serves on the NRC's Standing Committee on Technology Insight—Gauge, Evaluate, and Review (TIGER). She is a Senior Member of IEEE and served as Vice President Membership for the IEEE Reliability Society and on the Management Committee and Board of Directors for the IEEE International Reliability Physics Symposium. She has over 20 publications and several patents. She holds M.S. and Ph.D degrees in applied physics (materials science concentration) from Harvard University and a B.S. degree in materials engineering from Rensselaer Polytechnic Institute.

Timothy P. Coffey

Member

Dr. Coffey is an independent consultant having recently retired as the Edison Chair at the Center for Technology and National Security Policy at the National Defense University. He graduated from the Massachusetts Institute of Technology in 1962 with a B.S. degree in electrical engineering, and obtained his M.S. (1963) and Ph.D. (1967), both in physics, from the University of Michigan. Dr. Coffey joined the Naval Research Laboratory (NRL) in 1971 as Head of the Plasma Dynamics Branch, Plasma Physics Division. In this position, he directed research in the simulation of plasma instabilities, the development of multidimensional fluid and magnetohydrodynamic codes, and the development of computer codes for treating chemically reactive flows. In 1975, Dr. Coffey was named Superintendent, Plasma Physics Division; he was appointed Associate Director of Research for General Science and Technology in 1980. Two years later, Dr. Coffey was named Director of Research at NRL. Today, he serves on numerous scientific boards and advisory committees such as the recently completed NRC Committee on Operational Science and Technology Options for Defeating Improvised Explosive Devices; he is a member of the Naval Studies Board.

Stirling A. Colgate

Member

Dr. Colgate is a physicist at the Los Alamos National Laboratory and a Professor Emeritus of Physics at the New Mexico Institute of Mining and Technology (New Mexico Tech) where he still continues an experiment on the origin of the magnetic fields of the universe. During World War II he served in various positions in the U.S. Merchant Marine. After World War II, Dr. Colgate returned to Cornell University completing his B.S. and Ph.D. in nuclear physics, taking up a position as a postdoctoral fellow at Berkeley. In 1952, he moved to Livermore National Laboratory where he performed the diagnostic measurements for the nuclear tests of the hydrogen bomb, just developed at Los Alamos National Laboratory. He was responsible for the design and execution of the “fast nuclear diagnostics, (gamma rays, neutrons, and x-rays)” of the “Bravo” test, 15 Mega Ton equivalent yield, including a dozen vacuum pipe lines 2 miles long. Later, he served as the scientific advisor to the State Department during the test ban negotiations in Geneva where he proposed the mutual need for the detection of nuclear testing in space by use of spy satellites. The surprising Soviet acceptance of this concept pre-dated “peristrika.” Dr. Colgate went on to serve as president of New Mexico Tech from 1965 to 1974 where he also conducted research in astrophysics and atmospheric physics. He became an adjunct professor at New Mexico Tech, moving to Los Alamos National Laboratory where he currently continues work in astrophysics and inertial confinement fusion. Dr. Colgate is a fellow of the American Physical Society and the American Association for the Advancement of Science; he is a member of the American Astronomical Society and the American Meteorological Society among others; and he was a founding board member of the Santa Fe Institute. He is a member of the National Academy of Sciences.

Charles R. Cushing

Member

Dr. Cushing is President of C.R. Cushing & Co., Inc., a firm of naval architects, marine engineers, and transportation consultants with offices in New York and Europe. He has been responsible for the design and/or construction of over 250 ocean-going vessels in the United States, Europe, and the Far East. Specifically, he has directed the concept, preliminary, and contract design; strategic planning; plan approval; and supervision of construction of vessels from tankers and container ships to bulk carriers and passenger ships. His work has included new construction, conversion, repair, and refurbishment of vessels. Dr. Cushing has been directly responsible for risk analyses, safety audits, energy audits, and the preparation of the U.S. Coast Guard's Tankerman's Manual. He has designed intermodal shipping containers and a myriad of container handling equipment, and he holds a number of patents in maritime and intermodal technology. For 26 years he has taught a course "Ship Acquisition" and for 7 years "Maritime Casualty Investigation" at the United Nation's World Maritime University. For 12 years he has served on the final selection committee of the National Shipbuilding Research Program which sponsors and funds naval and commercial shipbuilding research in the United States. Dr. Cushing has served on scientific boards and advisory committees, and he is currently a member of the NRC's Marine Board as well as a member of the Naval Studies Board. He is a member of the National Academy of Engineering.

Susan Hackwood

Member

Dr. Hackwood is currently Executive Director of the California Council on Science and Technology (CCST) and Professor of Electrical Engineering at the University of California, Riverside, where her research interests include electrical engineering, signal processing, cellular robotic systems to name just a few. CCST is a not-for-profit corporation comprised of 150 top science and technology leaders sponsored by the key academic and federal research institutions in California, and it advises the state on all aspects of science and technology including nanotechnology, stem cell research, intellectual property, climate change, energy, information technology, biotechnology, and technical workforce development and education. Dr. Hackwood has worked extensively with industry, academic, and government partnerships to identify policy issues of importance and is active in regional and state economic development. Dr. Hackwood is a Fellow of the Institute of Electrical and Electronics Engineers and the American Association for the Advancement of Science. Dr. Hackwood received a Ph.D. in solid state ionics from DeMontfort University. She has served on other scientific boards and advisory committees including a member of the NRC Committee on Improving the Decision Making Abilities of Small Unit Leaders; she is a member of the Naval Studies Board.

Lee M. Hammarstrom

Member

Mr. Hammarstrom is Special Assistant to the Director at the Applied Research Laboratory/Pennsylvania State University. Previously, he was the first Chief Scientist at the National Reconnaissance Office (NRO) and Chief Scientist at the Office of the Secretary of Defense for Command, Control, Communications, and Intelligence. Mr. Hammarstrom has broad expertise in areas ranging from technology development to the testing and deploying of military and intelligence systems. He has served on numerous scientific and advisory committees and is an NRO Pioneer and Senior Fellow.

Nathaniel Heiner

Member

Dr. Heiner is a Northrop Grumman Technical Fellow as well as Director and Principal Architect, C4I Integration, for Northrop Grumman Corporation's Technology and Engineering Group. He previously worked as the U.S. Coast Guard's senior civilian officer for technology, often acting as the Coast Guard Chief Information Officer. In his prior tour with Northrop Grumman and Federal Data Corporation in the 1990s, he was Director of Web/Internet Security Services, focusing on emerging threats to Internet-based systems. He spent his early career as a Unix networking expert, writing networked database applications and peripheral drivers, and securing communications systems law firms, Congress, AT&T, and MCI. uard systems. Specializing in mathematical logic and linguistics, Dr. Heiner earned Ph.D., M.Phil., M.A., and B.A. degrees at Columbia University, where he also taught.

Leon A. Johnson

Member

General Johnson is currently an independent consultant having retired from the U.S. Air Force with the rank of brigadier general after 33 years of service. During his career, General Johnson commanded a fighter squadron, fighter group, was the Vice Commander of 10th Air Force at the Joint Reserve Base in Ft. Worth, TX, and served as Mobilization Assistant to the Assistant Secretary of the Air Force and Director Operations at Air Education and Training Command. Following the events of 9/11, he served as a Director of the Air Force Crisis Action Team in the Pentagon. General Johnson is a member of several organizations including the Air Force Association, Military Officers Association of America, Military Order of World Wars, Veterans of Foreign Wars, Reserve Officers Association, League of United Latin American Citizens, Women in Aviation, the International Black Aerospace Council, Inc., and Tuskegee Airmen, Inc. General Johnson was elected to a two-year term as the Tuskegee Airmen, Inc. national president in July of 2010. He recently retired from United Parcel Service (UPS) after nearly 20 years of service where he served as the Flight Operations Employment Manager and concluded his career working on a special project as the Manager of Airline Manuals. In 2011, General Johnson was awarded a Doctorate in Humane Letters by Tuskegee University. In November 2011, he received an appointment by the Secretary of the Air Force to the Civil Air Patrol Board of Governors, the senior policy making body for that body as established by Public Law. He is a Trustee of the U.S. Air Force Falcon Foundation and is a member of the Naval Studies Board.

Catherine M. Kelleher

Member

Dr. Kelleher is Professor for Public Policy at the University of Maryland and Senior Faculty Associate at Brown University's Watson Institute where her research interests include cooperative European defense and security policies, North Atlantic Treaty Organization relations, and international security and arms control. Dr. Kelleher served in the Clinton Administration as Personal Representative of the Secretary of Defense in Europe and as Deputy Assistant Secretary of Defense for Russia, Ukraine, and Eurasia. She has served on numerous scientific boards and advisory committees, including as a member of the NRC Committee on National Security Implications of Climate Change for U.S. Naval Forces and the NRC Committee on the "1,000-ship Navy—A Distributed and Global Maritime Network. She is a member of the Naval Studies Board.

Jeffrey E. Kline

Member

Mr. Kline is a Senior Lecturer in the Operations Research Department, and Program Director, Consortium for Robotics and Unmanned Systems Education and Research (CRUSER), at the Naval Postgraduate School (NPGS). He oversees over 25 interagency and interschool research and educational initiatives related to maritime security, maritime domain awareness, port security, counter-piracy operations, and maritime critical infrastructure with sponsors ranging from the Secretary of the Navy, Office of the Secretary of Defense, Department of Energy, and the U.S. Coast Guard. He retired as a captain from the U.S. Navy and has over 26 years of extensive naval operational experience including commanding two U.S. Navy ships and serving as Deputy Operations for Commander, Sixth Fleet, where he participated in theater-wide operational planning. In addition to his sea service, Mr. Kline spent three years as a naval analyst in the Office of the Secretary of Defense. He is a 1992 graduate of the NPGS's Operations Research Program where he earned the Chief of Naval Operations Award for Excellence in Operations Research, and is a 1997 distinguished graduate of the National War College where he earned the Chairman of the Joint Chief's Strategic Writing Award. Mr. Kline's NPGS faculty awards include the 2011 Institute for Operations Research and Management Science Award for Teaching of Practise, the 2007 Hamming Award for interdisciplinary research, 2007 Wayne E. Meyers Award for Excellence in Systems Engineering Research, and the 2005 Northrop Grumman Award for Excellence in Systems Engineering.

Annette J. Krygiel

Member

Dr. Krygiel is currently an independent consultant with expertise in the management of large-scale systems, particularly in regard to software development and systems integration. She served as a distinguished visiting fellow at the Institute for National Strategic Studies at the National Defense University, where she wrote a book on large-scale system integration. Prior to that, she was director of the Central Imagery Office (CIO), a Department of Defense combat support agency, until CIO joined the National Imagery and Mapping Agency in October 1996. Dr. Krygiel began her career at the Defense Mapping Agency, where she held various positions including chief scientist. Dr. Krygiel previously served as chair of the NRC Committee on the Role of Experimentation in Building Future Naval Forces and recently served as a member of the NRC Committee on U.S. Naval Forces' Capabilities for Responding to Small Vessel Threats.

Thomas V. McNamara

Member

Mr. McNamara is currently an independent consultant, having served previously as Senior Vice President and Chief Technology Officer for Textron Systems where he focused on long-term strategic technical investments and program execution to support Textron Systems' businesses. He was responsible for the development of technology and systems to address the emerging challenges in the areas of precision engagement, maritime and land platforms, advanced controls, and aircraft engines. His areas of expertise include guidance, navigation and control; intelligent autonomy; precision weapons delivery; micro-electromechanical sensors; dismounted soldier systems; mission planning; and systems integration for naval submersible and aircraft platforms. He recently served as a member of the NRC Committee on The "1,000-ship Navy"—A Distributed and Global Maritime Network, the Committee on Distribute Remote Sensing for Naval Undersea Warfare, and as co-chair of the Committee on U.S. Naval Forces' Capabilities for Responding to Small Vessel Threats.

Richard W. Mies

Member

Admiral Mies is the CEO and President of The Mies Group, Ltd. and provides strategic planning and risk assessment advice and assistance to clients on international security, energy, defense, and maritime issues. A distinguished graduate of the U.S. Naval Academy, he completed a 35-year career as a nuclear submariner in the U.S. Navy and commanded U.S. Strategic Command for four years prior to retirement in 2002. Admiral Mies served as a Senior Vice President and Deputy Group President of Science Applications International Corporation (SAIC) and as the President and Chief Executive Officer of Hicks and Associates, Inc., a wholly owned subsidiary of SAIC from 2002 to 2007. He also served as the Chairman of the Department of Defense Threat Reduction Advisory Committee from 2004 to 2010 and as the Chairman of the Board of the Navy Mutual Aid Association from 2003 to 2011. He presently serves as the Chairman of the Strategic Advisory Group of U.S. Strategic Command, Chairman of the Board of the Naval Submarine League, and more recently became a trustee of the U.S. Naval Academy Foundation. He is a member of the Committee on International Security and Arms Control of the National Academy of Sciences, a member of the Boards of Governors of Los Alamos National Laboratory and Lawrence Livermore National Laboratory, and a member of the Board of Directors of Mutual of Omaha Company, Babcock and Wilcox Company, and Exelon Corporation. He also serves on numerous advisory boards. Admiral Mies completed post-graduate education at Oxford University, England, the Fletcher School of Law and Diplomacy, and Harvard University. He holds a Masters degree in government administration and international relations.

C. Kumar N. Patel

Member

Dr. Patel is the founder, president, and CEO of Pranalytica, Inc., a Santa Monica based company that is the leader in quantum cascade laser technology for defense and homeland security applications. He is also professor of physics and astronomy, electrical engineering, and chemistry at the University of California, Los Angeles (UCLA). He served as vice chancellor for research at UCLA from 1993-1999. Prior to joining UCLA, he was the executive director of the Research, Materials Science, Engineering and Academic Affairs Division at AT&T Bell Laboratories, where he began his career by carrying out research in the field of gas lasers. He is the inventor of the carbon dioxide and many other molecular gas lasers that ushered in the era of high power sources of coherent optical radiation. Dr. Patel was awarded the National Medal of Science for his invention of the carbon dioxide laser. His other awards include the Ballantine Medal of the Franklin Institute, the Zworykin Award of the National Academy of Engineering, the Lamme Medal of the Institute of Electronic and Electrical Engineers, the Texas Instruments Foundation Founders Prize, and many more. Dr. Patel holds a B.E. in telecommunications from the College of Engineering in Poona, India, and received his M.S. and Ph.D. in electrical engineering from Stanford University. He is a member of the National Academy of Sciences and the National Academy of Engineering.

Heidi C. Perry

Member

Ms. Perry is Director, Algorithms and Software, at the Charles S. Draper Laboratory, Inc. Previously she was Director, Internal Research and Development, at the Draper Laboratory. Her expertise includes guidance, navigation and control; global position system anti-jam and ground control; precision weapons delivery command and control, autonomous systems, mission critical software, and C4ISR systems. She served as a member of the NRC Committee on National Security Implications of Climate Change for U.S. Naval Forces and on the NRC Committee on the "1,000-ship Navy—A Distributed and Global Maritime Network. She is a member of the Naval Studies Board.

Gene H. Porter

Member

Mr. Porter is an adjunct staff member at the Institute for Defense Analyses. His areas of expertise include national security planning and weapons systems development and in defining the defense planning scenarios that are intended to guide the development of the U.S. military force structure. Mr. Porter formerly served as the Director of Acquisition Policy and Program Integration at the Office of the Under Secretary of Defense for Acquisition. He has served on numerous scientific boards and advisory committees, including as chair of NRC Committee for Mine Warfare Assessment and more recently as a member of the NRC Committee on U.S. Naval Forces' Capabilities for Responding to Small Vessel Threats.

Dana R. Potts

Member

Mr. Potts is the senior Navy experienced Systems Engineer Principal for the Horizontal Integration Operational Concepts Team at Lockheed Martin Aeronautics Advanced Development Programs (Skunk Works) having retired from the U.S. Navy with the rank of captain. He is responsible for projects that include any maritime component. He was scenario lead for two corporate-level Marine Air Ground Task Force Experiments, creating the scenarios and coordinating the efforts involving aeronautics, electronic systems, enterprise operations, information systems and global solutions, mission systems, and space systems. He also led the man-in-the-loop experiment studying the attributes of the Skunk Works concept for the Unmanned Carrier Launched Airborne Surveillance and Strike system. He has received two Lockheed Martin Nova awards for projects involving teamwork with these scenarios. Prior to joining Lockheed, Mr. Potts completed over 28-years with the U.S. Navy with leadership positions both ashore and at sea, primarily in tactical aviation flying the F4 Phantom and the F14 Tomcat. Significant operational experience included command of Fighter Squadron ONE FIVE FOUR and command of Carrier Air Wing SEVENTEEN in combat operations. He was also a fellow with the CNO Strategic Studies Group XXIII that conducted research, developed innovative concepts, and made recommendations to the Chief of Naval Operations concerning the "Navy After Next." He earned a B.S. in Computer Science from Texas A&M and an M.S. in National Security Strategy from the National Defense University, National War College.

John E. Rhodes

Member

General Rhodes is currently an independent consultant having retired from the U.S. Marine Corps with the rank of Lieutenant General after 34 years of service. His background is in development of warfighting concepts and in the integration of all aspects of doctrine, organization, training and education, equipment, and support and facilities to enable the Marine Corps to field combat-ready forces. In his last position, he served as commanding general of the U.S. Marine Corps Combat Development Command, where his responsibilities included assessments of current and future operating environments and adaptation of the Corps' training infrastructure and resources in order to ensure that integrated capabilities were delivered to the combatant commanders. General Rhodes has served on numerous scientific boards and advisory committees, including as a member of the NRC Committee on Manpower and Personnel Needs for a Transformed Naval Force and the Committee on U.S. Forces' Capabilities for Responding to Small Vessel Threats; he is a member of the Naval Studies Board.

Robert M. Stein

Member

Mr. Stein is currently an independent consultant, having served previously as Vice President of the Raytheon Company until he retired in 2000. He managed Raytheon's Advanced Systems Office. He was responsible for the formulation and implementation of advanced systems and concepts for current and future Raytheon product lines. Mr. Stein led concept formulation and advanced development studies for the company and the U.S. Government addressing the advanced strategic and tactical defense needs for the United States and many of our allies. These have spanned the spectrum from early concept studies on the protection of the continental United States (CONUS) and the defense of retaliatory forces against nuclear attack in the 1960s, to tactical defense of land and sea forces in the 1970s, to defense of CONUS, theater, and allied military and civilian assets against air, cruise, or ballistic missile attack in the 1980s and 1990s. He has participated in a number of Army Science Board, Air Force Scientific Advisory Board, and Navy Research Advisory Committee task forces. He has served on and/or co-chaired many Defense Science Board Task Forces and Summer Studies and is currently a senior fellow on the Board. He currently serves as a member of the Missile Defense Agency Advisory Committee. Mr. Stein performed undergraduate work in electrical engineering at Massachusetts Institute of Technology (MIT) and has performed extensive graduate studies at MIT and Boston University in mathematical physics. He holds a patent in multi-beam radar antenna techniques, has published numerous articles on defense technology and related policy issues, and has taught a variety of courses on radar and information theory. In 1992, Raytheon awarded Mr. Stein the Thomas L. Phillips Award of Excellence in Technology—the company's highest recognition for technical achievement.

Vincent Vitto

Member

Mr. Vitto is the retired President and Chief Executive Officer (CEO) of Charles Stark Draper Laboratory, Inc., where he served for 9 years until 2006. Since 2006, he has been working as an independent consultant. Before joining Draper in 1997, he spent 32 years at Massachusetts Institute of Technology's Lincoln Laboratory, rising to Assistant Director of Surface Surveillance and Communications. He holds an M.S. in physics from Northeastern University and a B.S. in physics from the Polytechnic Institute of Brooklyn. Currently, Mr. Vitto is Chairman of the Board of Directors of Mercury Computer Systems, a member of the QinetiQ North America Proxy Board of Directors, and a member of the Board of Trustees for the Aerospace Corporation. He is also a member of the National Associates of the National Academies and a fellow of the American Institute of Aeronautics and Astronautics. He serves on the Board of Trustees at the Massachusetts Eye and Ear Infirmary. Mr. Vitto has received numerous public service awards in his career including the Meritorious Public Service Award and Superior Public Service Award from the Department of the Navy, the Decoration for Exceptional Civilian Services from the Department of the Air Force, and in 2009 the Department of Defense Medal for Distinguished Public Service Award. He has served on numerous scientific boards and advisory committees, including the Intelligence Science Board, the Defense Science Board, National Reconnaissance Office Technical Advisory Group, and the National Geospatial Intelligence Agency Advisory Group. He also chaired the Naval Studies Board from 1999 to 2004.

David A. Whelan

Member

Dr. Whelan is Chief Scientist, Boeing Defense, Space, and Security, and Vice President, Strategic Innovation, Phantom Works, at the Boeing Company. His areas of expertise include defense research, development, and enabling technologies, such as autonomous vehicles and space-based moving target indicator radar systems. Prior to joining Boeing, he served as Director of the Tactical Technology Office at the Defense Advanced Research Projects Agency. His high-technology development experience includes roles as a research physicist for Lawrence Livermore National Laboratory, and as a lead engineer at Northrop Grumman. Dr. Whelan has served on numerous scientific boards and advisory committees, including the Defense Science Board Task Forces, the Air Force Scientific Advisory Board, and the NRC Committee on Research, Development and Acquisition Options for U.S. Special Operations Command, and the NRC's Committee on National Security Implications of Climate Change for U.S. Naval Forces and the NRC's Americas Climate Choices: Panel on Advancing the Science of Climate Change; he is Vice Chair of the Naval Studies Board. He is a member of the National Academy of Engineering.

Peter G. Wilhelm

Member

Mr. Wilhelm is Director of the Naval Center for Space Technology (NCST) at the Naval Research Laboratory (NRL). He is responsible for the technical and managerial leadership of the NCST's mission, which is to preserve and enhance a strong space technology base and provide expert assistance in the development and acquisition of space systems which support naval missions. During Mr. Wilhelm's tenure, the space program at NRL has grown from a branch to a division to a Center. Under his direction, NCST and the Navy have achieved numerous successes and "firsts" in space including the Global Positioning System satellite and the highly successful Clementine Deep Space Mission, which demonstrated the capability of, and has become the model for low-cost, high-value space exploration.

Mr. Wilhelm's achievements include contributions to the design, development and operation of 100 scientific and fleet-support satellites. Mr. Wilhelm is a Fellow for the American Institute of Aeronautics and Astronautics (AIAA) and the Washington Academy of Science. He is a member of the National Academy of Engineering.

John Wilkinson

Member

Mr. Wilkinson is an Assistant Group Leader at MIT Lincoln Laboratory, in the Air Defense Techniques Group of the Air and Missile Defense Technology Division. He has worked at Lincoln Laboratory since 1998, beginning in the Intelligence, Test, and Evaluation Group. After a decade of radar data analysis, radar system engineering, and radar testing experience, Mr. Wilkinson now serves as the Lincoln Program Manager for several science and technology programs related to air defense. In this role he proposed and led the development of an UHF radar installed on Lincoln's Boeing 707, and helped design, build, and deploy two other radar systems as well. He was awarded a B.S. in physics from the University of Massachusetts at Amherst and an M.S. in electrical engineering from Tufts University.