

NASA Mission Critical Workforce, Infrastructure, and Technology

Committee

Norman R. Augustine

Chair

NORMAN AUGUSTINE (NAS/NAE) is retired chairman and CEO of Lockheed Martin Corporation. In 1958 he joined the Douglas Aircraft Company in California where he worked as a Research Engineer, Program Manager and Chief Engineer. Beginning in 1965, he served in the Office of the Secretary of Defense as Assistant Director of Defense Research and Engineering. He joined LTV Missiles and Space Company in 1970, serving as Vice President, Advanced Programs and Marketing. In 1973 he returned to the government as Assistant Secretary of the Army and in 1975 became Under Secretary of the Army, and later Acting Secretary of the Army. Joining Martin Marietta Corporation in 1977 as Vice President of Technical Operations, he was elected as CEO in 1987 and chairman in 1988, having previously been President and COO. He served as president of Lockheed Martin Corporation upon the formation of that company in 1995, and became CEO later that year. He retired as chairman and CEO of Lockheed Martin in August 1997, at which time he became a Lecturer with the Rank of Professor on the faculty of Princeton University where he served until July 1999. Augustine served on the President's Council of Advisors on Science and Technology under Democratic and Republican presidents and led the 1990 Advisory Committee on the Future of the U.S. Space Program and the 2005 National Academies commission that produced the landmark report, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*.

Jeri L. Buchholz

Member

JERI L. BUCHHOLZ is an Independent Strategic Advisor. She served as NASA's Chief Human Capital Officer and Assistant Administrator for Human Capital Management from 2011 to 2015. As the Assistant Administrator for Human Capital Management and NASA's Chief Human Capital Officer, Buchholz had stewardship responsibility for NASA's workforce. She advised and assisted the Administrator by carrying out responsibilities in accordance with the Chief Human Capital Officers Act of 2002. Her responsibilities included setting the agency's workforce development strategy, assessing workforce characteristics and future needs based on the agency's mission and strategic plan; aligning the agency's human resources policies and programs with organizational mission, strategic goals, and performance outcomes; and, serving as a member of the Office of Personnel Management-led Chief Human Capital Officers Council. Buchholz served as the Associate Director for Human Resources Operations and Policy at the U.S. Nuclear Regulatory Commission. She began her public service career in 1981 as a Peace Corps Volunteer in Zaire, now the Democratic Republic of the Congo. She also has served as the Chief Human Capital Officer at the Department of Health and Human Services' Office of Inspector General, as well as the U.S. International Trade Commission. In addition, she has held positions at the Office of Federal Housing Enterprise Oversight, the National Imagery and Mapping Agency, the Defense Intelligence Agency, the U.S. Information Agency and the U.S. Office of Personnel Management.

Elizabeth R. Cantwell

Member

ELIZABETH R. CANTWELL is the Senior Vice President of Research and Innovation at the University of Arizona. She previously served as director of Lawrence Livermore National Laboratory's Mission Development Engineering Directorate. She previously served as the deputy associate laboratory director for the National Security Directorate at Oak Ridge National Laboratory. Prior to joining Oak Ridge, Dr. Cantwell was the division leader for the International, Space, and Response Division at Los Alamos National Laboratory. Her career began in building life-support systems for human spaceflight missions with NASA. She received an M.S. in mechanical engineering from the University of Pennsylvania, an M.B.A. in finance from Wharton School, and a Ph.D. in mechanical engineering from the University of California, Berkeley. Dr. Cantwell has extensive NRC experience, including current memberships on the Space Studies Board and the Division on Engineering and Physical Sciences Committee; co-chair of the Committee on Decadal Survey on Biological and Physical Sciences in Space; and member of the Committee on NASA's Bioastronautics Critical Path Roadmap, the Review of NASA Strategic Roadmaps: Space Station Panel, the Committee on Technology for Human/Robotic Exploration and Development of Space, and the Committee on Advanced Technology for Human Support in Space.

Edward F. Crawley

Member

EDWARD F. CRAWLEY (NAE) is the Ford Professor of Engineering at Massachusetts Institute of Technology (MIT), where he is also the director of NEET, the New Engineering Educational Transformation. Earlier he was the director of the Bernard M Gordon MIT Engineering Leadership Program. He was a founder of the Systems Design and Management Program at MIT, served as the Department Head of Aeronautics and Astronautics at MIT, and as the Executive Director of the Cambridge (UK) MIT Institute. His research focuses on the domain of architecture, design and decision support in complex technical systems that involve economic and stakeholder issues. His current domains of architectural research include energy systems, Earth observation and human spaceflight. Crawley is a fellow of the AIAA, and the Royal Aeronautical Society (UK), and is a member of five national academies: in Russia, China, Sweden, the UK and the US. He has served as chairman of the NASA Technology and Commercialization Advisory Committee, and was a member of the Presidential Advisory Committee on the Space Station Redesign, and the U.S. Human Spaceflight Plans (Augustine) Committee. He was a visiting lecturer at the Moscow Aviation Institute, and is a Honorary Professor at Tsinghua University in Beijing. He was a finalist in the NASA Astronaut selection in 1980. He has founded five entrepreneurial companies, and currently sits on several corporate boards. He received an S.B., S.M., and Sc.D. in Aerospace Engineering from MIT.

Jill P. Dahlburg

Member

JILL P. DAHLBURG is retired from the U.S. the Naval Research Laboratory (NRL), which she joined in 1985 and most recently served as Superintendent of the Space Science Division (SSD) and member of the Senior Executive Service. In this position she led conception, planning, and execution of space science research theory and instrumentation across a scope that encompassed geophysics, heliophysics, and the high-energy space environment. She served as NRL Senior Scientist for Science Applications from June 2003 to December 2007. From 2001 to mid-2003, Dr. Dahlburg left NRL to direct the Division of Inertial Fusion Technology at General Atomics in San Diego. She joined NRL as a civil servant in 1985, and her early research there included spearheading the development of the first three-dimensional multi-group radiation transport hydrodynamics code appropriate for laser-plasma modeling, and co-proposing and serving as the co-principal investigator to develop Dragon Eye, an innovative small air vehicle, which saw active duty in Iraq. Dr. Dahlburg's previous professional service includes multiple roles with the American Physical Society (of which she is a Fellow), NASA, and the Department of Energy. Her honors include six NRL Allan Berman Awards for scientific publication excellence, a DOE Appreciation Award, and a 2018 Meritorious Civilian Service Award from the Navy. Dr. Dahlburg holds a Ph.D. in theoretical plasma physics from the College of William & Mary. She has served on many Academies committees, including as co-chair of two studies.

Amanda R. Hendrix

Member

AMANDA R. HENDRIX is a senior scientist with the Planetary Science Institute. Her research interests focus on moons and small bodies in the solar system to understand composition, activity, and evolution. Hendrix is The Director of NASA's SSERVI TREX node, previously a co-investigator on the Cassini UVIS and Lunar Reconnaissance Orbiter LAMP teams, was a co-investigator on the Galileo UVS team and served as the Cassini Deputy Project Scientist. In 2016 she published a book (Penguin/Random House) with co-author Charles Wohlforth, *Beyond Earth: Our Path to a New Home in the Planets*, a discussion of the technological, medical, and social hurdles to overcome in considering a human space establishment in the outer solar system. Hendrix is co-chair of the Roadmaps to Ocean Worlds group, serves as a steering committee member of the Outer Planets Assessment Group (OPAG), and is a member of the Hubble Space Telescope Europa Advisory committee. She earned her Ph.D. in aerospace engineering with an emphasis in planetary science from the University of Colorado. Hendrix has served on various Academies' committees including the Committee on the Review of Progress Toward Implementing the Decadal Survey Vision and Voyages for Planetary Sciences.

Hans Koenigsmann

Member

HANS KOENIGSMANN is an independent technical advisor to several companies. Previously, Koenigsmann held several of senior positions at SpaceX and developed the avionics, guidance and control, and software departments; and designed the avionics system of Falcon 1 and supported the early launches directly as launch chief engineer. In management and flight reliability roles, Koenigsmann resolved high-profile anomalies and was responsible for production quality, as well as flight risk and safety. Such responsibilities included change engineering, process development, and the quality system. Koenigsmann has supported more than 100 launches with thorough readiness reviews prior, and flight data reviews post flight. Feeding back the lessons learned, preventing mission failures, and improving both production and operation remains the top priority. Koenigsmann received a Ph.D. in aerospace engineering and manufacturing from the University of Bremen in Germany.

Lester L. Lyles

Member

LESTER L. LYLES (NAE) is an independent consultant and former chairman of the board of the United Services Automobile Association (USAA). Gen Lyles retired from the United States Air Force after a 35 year military career. His last assignment was Commander of the Air Force Materiel Command, where he was responsible for overseeing research, development, test and evaluation, acquisition management services, and logistics support for the USAF. Previously, he was assigned as Vice Chief of Staff at Headquarters U.S. Air Force from 1999-2000. Gen Lyles entered the USAF in 1968 as a distinguished graduate of the Air Force ROTC program. He served in various assignments, including Special Assistant and Aide-De- Camp to the Commander of Air Force Systems Command; and Avionics Division Chief in the F- 16 Systems Program Office. He served as Program Director of the Medium-Launch Vehicles Program and Space-Launch Systems offices in 1997 during the recovery from the Challenger Space Shuttle accident. Gen Lyles served as Vice Commander of Ogden Air Logistics Center from 1992-1994, and then commanded the Space and Missile Systems Center at Los Angeles AFB, Calif., until 1996. General Lyles became the Director of the Ballistic Missile Defense Organization in 1996. He received his B.S. in mechanical engineering from Howard University in 1968, his M.S. in mechanical and nuclear engineering from New Mexico State University in 1969, and an Honorary Doctorate of Laws degree from New Mexico State University in 2002. He is a graduate of the Defense Systems Management College (1980), the Armed Forces Staff College (1981), the National War College (1985), and the National and International Security Management Course at Harvard University (1991).

Richard M. Obermann

Member

RICHARD OBERMANN formerly served as the Chief of Staff for the U.S. House Committee on Science, Space, and Technology. As such he acted as Committee staff director, administrator, and senior policy adviser to Chairwoman Eddie Bernice Johnson. He is responsible for managing a team of Committee scientists, engineers, attorneys, and other professional support staff as well as the Majority budget. The Committee on Science, Space, and Technology has legislative and oversight jurisdiction over NSF, NIST, NASA, NOAA, EPA R&D, DOE R&D, DOT R&D, DHS S&T, various DOC activities, and OSTP. He started his career as a Member of the technical staff at the MITRE Corporation and as a senior program officer on the Aeronautics and Space Engineering Board of the National Research Council. He is a Fellow of the American Institute of Aeronautics and Astronautics, the American Astronautical Society, the British Interplanetary Society, and a Member of the International Academy of Astronautics. Obermann has a B.S.E. and PhD in Aerospace and Mechanical Sciences from Princeton University, and an M.S.E. in Aeronautics and Astronautics from Stanford University. He also completed the Senior Managers in Government Program at Harvard's Kennedy School of Government.

Mark P. Saunders

Member

MARK P. SAUNDERS is an independent consultant. Since retiring from NASA, he has been consulting to various NASA offices providing program/project management and systems engineering expertise. This has included support to the Office of Chief Engineer, the Office of Independent Program and Cost Evaluation, the Mars Program and the Science Office for Mission Assessments (at Langley Research Center LaRC). He has participated in the rewriting of NASA's policy on program/project management; advised and supported the Agency's independent program/project review process; and has supported the review of various programs and projects. At NASA headquarters Mr. Saunders served as director of the independent program assessment office, where he was responsible for enabling the independent review of the agency's programs and projects at life cycle milestones to ensure the highest probability of mission success. At NASA's Langley Research Center he was initially the deputy director and then the director, Space Access and Exploration Program Office (SAEPO) and had the responsibility for planning, directing and coordinating the center's research, technology, and flight programs for advanced aerospace transportation and human/robotic exploration systems. Prior to this he was the Manager of Exploration Programs and led all LaRC space exploration research and development activities supporting the agency's Aerospace Technology (AST), Human Exploration and Development of Space (HEDS) and Space Science Enterprises (SSE). At the office of space science Mr. Saunders' served as program manager for the Discovery Program, and at the space station freedom program operations he served as special assistant to the deputy director. He has received a Presidential Meritorious Rank Award, numerous Outstanding Performance awards, and three NASA Outstanding Leadership Medals. He earned his B.S. in industrial engineering from the Georgia Institute of Technology.

Kathryn D. Sullivan

Member

KATHRYN D. SULLIVAN, NAE, is the former Undersecretary of Commerce for Oceans and Atmosphere and NOAA Administrator and former NASA Astronaut. Her areas of expertise include earth system science, spaceflight and marine operations, public policy and governance. She serves on the board of International Paper, Accenture Federal Services and the National Audubon Society. She has been inducted into the Astronaut Hall of Fame and National Aviation Hall of Fame (TBA imminently), among others, and received NASA's Outstanding Leadership and Exceptional Service Medals. She holds a PhD in marine geology from Dalhousie University in Nova Scotia and served on the NAE Committee on Measuring Community Resilience.

Susan White

Member

SUSAN WHITE is the director of the Statistical Research Center at the American Institute of Physics (AIP). Since joining AIP thirteen years ago, she has overseen and participated in a number of research projects examining physics education and the workforce. She and her colleagues have provided workforce data for a number of decadal surveys, including astronomy and astrophysics, planetary science, and solar and space physics. In addition to examining physics education and the workforce within the U.S., Dr. White helped direct the Global Survey of Science as part of a study examining gender differences in science disciplines around the world. Prior to joining AIP, Dr. White taught statistics and quantitative methods in business schools in Louisiana, Texas, and Washington DC. She has a Ph.D. in management science.

A. Thomas Young

Member

A. THOMAS YOUNG is the retired executive vice president of Lockheed Martin. Previous positions include director of NASA's Goddard Space Flight Center, president and chief operating officer of Martin Marietta Corporation, and chair of Science Applications International Corporation. Mr. Young received high acclaim for his technical leadership in organizing and directing national space and defense programs, especially the Viking program. He is a fellow of the American Institute of Aeronautics and Astronautics (AIAA) and of the American Astronautical Society (AAS). He is a member of the JPL Advisory Council and chaired the Independent Review Board for the James Webb Space Telescope. He has received many awards, including NASA's highest award, the Distinguished Service Medal, as well as the Outstanding Leadership Medal, the Meritorious Executive Presidential Rank Award, and the Distinguished Executive Award. He earned his M.S. in management from the Massachusetts Institute of Technology.