

Enhancing U.S. Nuclear Forensics and Attribution Support Capabilities

Committee

Robert Rosner

Chair

Robert Rosner has been a theoretical physicist at the University of Chicago since 1987, where he is the William E. Wrather Distinguished Service Professor in the departments of Astronomy & Astrophysics and Physics, as well as in the Enrico Fermi Institute and the Harris School of Public Policy Studies. He served as Argonne National Laboratory's Chief Scientist and Associate Laboratory Director for Physical, Biological and Computational Sciences (2002-05), and was Argonne's Laboratory Director from 2005-09. He was the founding chair of the U.S. Department of Energy's National Laboratory Directors' Council (2007-09). His degrees are all in physics (B.A., Brandeis University; Ph.D., Harvard University). He was elected to the American Academy of Arts and Sciences in 2001, and to the Norwegian Academy of Science and Letters (as a Foreign Member) in 2004; he is also a Fellow of the American Physical Society.

Most of his scientific work has been related to fluid dynamics and plasma physics problems, as well as in applied mathematics and computational physics, especially in the development of modern high-performance computer simulation tools, with a particular interest in complex systems (ranging from astrophysical systems to nuclear fission reactors). Rosner has previously served on over a dozen Academies study committees, including the Committee to Review the Quality of the Management and of the Science and Engineering Research at the Department of Energy National Security Laboratories and the Committee on Evaluation of the Quantification of Margins and Uncertainty (QMU) Methodology Applied to the Certification of the Nation's Nuclear Weapons Stockpile. Recently, he has been increasingly involved in energy technologies, and in the public policy issues that relate to the development and deployment of various energy production and consumption technologies, including especially nuclear energy, the electrification of transport, and energy use in urban environments. He is the founding director of the Energy Policy Institute at Chicago (EPIC), located at the Harris School of Public Policy Studies, Booth School of Business and Social Sciences Division of the University of Chicago.

Marvin L. Adams

Member

Marvin L. Adams is the HTRI Professor of Nuclear Engineering and director of the Institute for National Security Education and Research at Texas A&M University. Dr. Adams received his Ph.D. in Nuclear Engineering from the University of Michigan and is a Fellow of the American Nuclear Society. He was a physicist at Lawrence Livermore National Laboratory from 1986 to 1992 and has remained extensively engaged with the U.S. national security laboratories since then. He has served on a variety of review and advisory committees and panels, many of which advise the U.S. government on matters related to national security. Dr. Adams has served on several NRC/NAS committees including the Committee on Technical Issues Related to the Comprehensive Nuclear Test Ban Treaty, the Committee on Sustaining and Improving the Nation's Nuclear Forensics Capabilities, and the Committee on Evaluation of Quantification of Margins and Uncertainty (QMU) Methodology Applied to the Certification of the Nation's Nuclear Weapons Stockpile. He has also served as Co-Chair of the Committee on Mathematical Foundations of Validation, Verification, and Uncertainty Quantification. Dr. Adams currently serves as a member of the NAS Committee on International Security and Arms Control.

Sue B. Clark

Member

Sue B. Clark is a Regents Distinguished Professor of Chemistry with tenure at Washington State University in Pullman, Washington and holds the position of Chief Science and Technology Officer and Battelle Fellow in the Energy and Environment Directorate with Pacific Northwest National Laboratory. In this joint appointment, she stewards discretionary research investments within the Energy and Environment Directorate, and she leads research focused on the chemistry and chemical engineering of processing nuclear materials and associated environmental impacts. Her current research areas include chemistry of radioactive waste systems, environmental chemistry, actinide separations, and radioanalytical chemistry.

She began her academic career at WSU in the Chemistry Department in 1996 as an Assistant Professor and served as Department Chair (Aug. 2005 – Dec. 2007). She also served as Interim Vice Chancellor for Academic Affairs at WSU's Tri-Cities campus in 2008 and Interim Dean of the College of Sciences (WSU system-wide) in 2010. Previously, she was a member of the U.S. Nuclear Waste Technical Review Board, appointed by President Barack Obama (2011-2014).

Clark is a fellow of the American Association for the Advancement of Science (AAAS), Sigma Xi, the Scientific Research Society, and the American Chemical Society (ACS), and is the 2012 recipient of the ACS's Olin-Garvan Medal. She is also an elected member of the Washington State Academy of Sciences. She served as an elected member of the Governing Board for the U.S. Council for Chemical Research. She also served on the National Academy's Nuclear and Radiation Studies Board from 2004 to 2009, and as a member of many Academy study committees. She serves on the Basic Energy Sciences Advisory Committee for the U.S. DOE, and has served as a consultant to Battelle Memorial Institute and the Helmholtz Association of German Research Centers. Dr. Clark holds a B.S. in chemistry from Lander College and M.S. and Ph.D. degrees in chemistry from Florida State University.

Donald L. Cook

Member

Donald L. Cook served as the Deputy Administrator for Defense Programs at the National Nuclear Security Administration (NNSA) from 2010-2015. He was responsible for managing the U.S. nuclear security enterprise of laboratories and manufacturing facilities.

Prior to his appointment to NNSA, Dr. Cook served as managing director and chief executive officer of the Atomic Weapons Establishment (AWE) in the United Kingdom from 2006 to 2009. In this capacity, he was accountable for AWE's performance on the contract with the UK Ministry of Defence, which includes support of the UK Trident warheads and development and sustainment of capability in nuclear weapon design, engineering development, manufacturing, qualification, assembly, transport, support in service, and finally, decommissioning, dismantlement, and disposal.

From 1977-2005, Dr. Cook worked in Pulsed Power Sciences, Microtechnologies, Infrastructure, and Security at Sandia National Laboratories in Albuquerque, New Mexico. From 1999-2005, he was director of the MESA Program Center, accountable for design and construction of the Microsystems and Engineering Sciences Applications (MESA) complex. In 2003, he assumed program director responsibilities for Sandia's Infrastructure Program and for Sandia's Safeguards and Security Technologies Program. Dr. Cook previously led efforts in pulsed power accelerator design and experimentation, fusion research, hydrodynamics, radiography, diagnostic development, and computational code development. Work during this period included construction and development of a number of accelerators, including the Z-machine.

Dr. Cook is a graduate of the University of Michigan and the Massachusetts Institute of Technology, and a Fellow of the American Association for the Advancement of Science and the Institute of Physics.

Donald J. DePaolo

Member

Don DePaolo received his Ph.D. in Geology from Caltech in 1978, and has been a professor of geochemistry and geology at UCLA (1978-1988) and UC Berkeley (1988-2016). He is currently Graduate Professor of Geochemistry and Chancellor's Professor Emeritus at U.C. Berkeley. He served as chair of the Department of Geology and Geophysics at U.C. Berkeley, and was director of the Lawrence Berkeley National Laboratory (LBNL) Earth Sciences Division. From 2010-2016 he was Associate Laboratory Director for Energy Sciences at LBNL. He is a member of the U.S. National Academy of Sciences and the American Academy of Arts and Sciences, and has served on numerous advisory and study committees for federal agencies, universities, and the National Research Council. His research involves the use of isotopic measurements as tracers and chronometers of Earth processes. From 2009 through 2018 he was the director of the Center for Nanoscale Controls of Geologic CO₂, a US DOE Energy Frontier Research Center (EFRC) led by LBNL.

Michael Dunning

Member

Michael Dunning retired from Lawrence Livermore National Laboratory (LLNL) in 2018, where he was principal deputy principal associate director of Weapons and Complex Integration. Prior to this role, Dunning was the program director and division leader for Primary Nuclear Design (PND). Under his leadership, PND operated a large-scale experimental facility at Site 300 and LLNL's High Explosives Applications Facility—both of which are national resources for the study of high explosives, conventional munitions, and propellants. PND also maintained a vigorous code-development and simulation capability, using some of the world's most capable supercomputers. Prior to 2006, Dunning served as the Nevada Experiments and Operations Program Leader and was responsible for the LLNL program and operations executed at the Nevada Test Site (NTS). Dunning also led LLNL efforts to detect, assess, and disable unauthorized nuclear and radiological dispersal devices. Dunning joined the Laboratory in 1989 as a postdoctoral researcher. He completed his bachelor's, master's, and doctoral degrees in nuclear engineering at the University of Michigan.

Steven A. Fetter

Member

Steven Fetter is Associate Provost, Dean of the Graduate School, and professor of public policy at the University of Maryland. He is a member of the Council on Foreign Relations and a fellow of the American Physical Society. Fetter worked for five years in the White House Office of Science and Technology Policy during the Obama Administration, leading both the National Security and International Affairs and the Environment and Energy divisions. In 1993-94 he served as special assistant to the Assistant Secretary of Defense for International Security Policy and he worked in the State Department as an American Institute of Physics fellow. He has been a member of the Director of National Intelligence's Intelligence Science Board and DOE's Nuclear Energy Advisory Committee; served as president of the Association of Professional Schools of International Affairs and as vice chairman of the Federation of American Scientists; and has been a visiting fellow at Stanford's Center for International Security and Cooperation, Harvard's Center for Science and International Affairs, MIT's Plasma Fusion Center, and Lawrence Livermore National Laboratory. He holds an S.B. in physics from MIT and a Ph.D. in energy and resources from U.C. Berkeley.

Benjamin C. Garrett

Member

Prior to retiring in January, 2015, Benjamin C. Garrett was assigned to the FBI Laboratory Division, Forensic Response Section, Quantico, Virginia. He had been appointed to the Senior Level Executive Service in July 2005 and served as the FBI's senior scientist for operational response to crimes or incidents involving weapons of mass destruction (WMD). As a member of the FBI Laboratory executive management, Dr. Garrett assisted with advancing the FBI's methods for crime scene processing and for examining evidence contaminated by toxic chemicals, biological pathogens, and radiological and nuclear materials. In addition to his responsibilities in the FBI Laboratory Division, Dr. Garrett has served as an instructor for the International Atomic Energy Agency (IAEA) for its Workshop on Radiological Crime Scene Management and Nuclear Forensics and in a similar capacity with INTERPOL, the international policing organization. He guided the development of the Implementing Guide for Radiological Crime Scene Management, issued in November 2014 by the IAEA and published jointly by the IAEA, INTERPOL and the United Nations Interregional Crime and Justice Research Institute (UNICRI). From 2009 to 2014, he served as the co-chairman of the Nuclear Forensics International Technical Working Group (ITWG). He holds a B.S. from Davidson College, Davidson, NC, and a Ph.D. (Chemistry) from Emory University, Atlanta, GA.

Laura S. Holgate

Member

As vice president for materials risk management, Ambassador Laura S. H. Holgate is responsible for designing and executing NTI's activities to prevent nuclear terrorism, such as reducing quantities and enhancing security of nuclear and radiological materials around the world, promoting cooperation between the United States and key partners on nuclear and radiological security, and strengthening the global nuclear security architecture.

Previously, she served as U.S. Representative to the Vienna Office of the United Nations and the International Atomic Energy Agency from July 2016 to January 2017. In this role, Holgate advanced multilateral approaches to reduce global threats and seize opportunities in the areas of nuclear nonproliferation, nuclear security, verification of the Iran Deal, nuclear testing, counterterrorism, anti-corruption, drug policy, export control, and the Nuclear Suppliers Group.

Holgate led the design and launch of Gender Champions in Nuclear Policy in November 2018, aimed at increasing the presence, visibility and impact of women in nonproliferation, nuclear deterrence, nuclear security, disarmament, nuclear energy and other related areas. During her ambassadorial posting, she promoted gender balance in the staff and programming of the Vienna-based international organizations, laying the groundwork for the creation of the Vienna chapter of the International Gender Champions.

Holgate was previously the special assistant to the president and senior director for weapons of mass destruction terrorism and threat reduction on the U.S. National Security Council. In this role, she oversaw and coordinated the development of national policies and programs to reduce global threats from nuclear, biological and chemical weapons; detect, identify, secure and eliminate nuclear materials; prevent malicious use of biotechnology; and secure the civilian nuclear fuel cycle. She was the U.S. Sherpa to the Nuclear Security Summits and co-led the effort to advance the President's Global Health Security Agenda.

From 2001 to 2009, Holgate was the vice president for Russia/New Independent States programs at the Nuclear Threat Initiative. Prior to that, she directed the U.S. Department of Energy's Office of Fissile Materials Disposition from 1998 to 2001, and was special coordinator for cooperative threat reduction at the Department for Defense from 1995 through 1998, where she provided policy oversight of the "Nunn-Lugar" Cooperative Threat Reduction program.

Holgate received a Bachelor of Arts Degree in politics from Princeton University and a Master of Science Degree in political science from the Massachusetts Institute of Technology, and spent two years on the research staff at Harvard University's Belfer Center for Science and International Affairs at the Kennedy School of Government. Holgate currently advises the Third Way Foundation's project on advanced nuclear reactors and national security. She serves on the Steering Group of the Fissile Material Working Group and on the Szilard Advisory Board of the Center for Arms Control and Nonproliferation. She is a senior nonresident fellow at the Belfer Center, and a member of advisory panels for the nuclear engineering departments at the University of Michigan and Pennsylvania State University. She is a past president of Women in International Security and a member of the Council on Foreign Relations. She lives in Arlington, Virginia.

William A. Jeffrey

Member

William Jeffrey, Ph.D., is chief executive officer of SRI International, a leading research and development organization serving government and industry. Jeffrey joined SRI in 2014. From 2008 to 2014, Jeffrey was president and CEO of HRL Laboratories, a corporate R&D organization owned by The Boeing Company and General Motors.

Prior to joining HRL, Jeffrey served in the George W. Bush Administration as director of the National Institute of Standards and Technology (NIST). Jeffrey also served in the Executive Office of the President as senior director for homeland and national security and as assistant director for space and aeronautics within the Office of Science and Technology Policy (OSTP).

Earlier in his career, Jeffrey was deputy director for the Advanced Technology Office and chief scientist for the Tactical Technology Office at the Defense Advanced Research Projects Agency (DARPA), and assistant deputy for technology at the Defense Airborne Reconnaissance Office. Jeffrey started his professional career at the Institute for Defense Analyses (IDA).

Jeffrey is an elected Fellow of the American Physical Society, an elected Honorary Member of the International Society of Automation, a recipient of the 2008 Navigator Award from the Potomac Institute for Policy Studies, and a recipient of the Secretary of Defense Medal for Outstanding Public Service.

Jeffrey serves on the board of TE Connectivity, and serves on the Office of Director of National Intelligence (ODNI) Technical Advisory Board. He previously served on the Lawrence Livermore National Lab External Review Committee.

Jeffrey received his M.A. and Ph.D. in astronomy from Harvard University, and his B.Sc. in physics is from MIT.

Benjamin J. Rusek

Staff Officer

Benjamin J. Rusek is a Senior Program Officer for the Committee on International Security and Arms Control in the Policy and Global Affairs Division of the National Academies of Sciences, Engineering, and Medicine. In this role, Ben has led successful projects with counterpart organizations in China, India and other countries on cooperative threat reduction, nuclear forensics, nuclear warhead and material monitoring and verification, biological safety and other international security issues. He served as the co-director for the project that produced the NAS report *The Comprehensive Nuclear Test Ban Treaty: Technical Issues for the United States* (2012). He was a member of the Executive Board of International Student/Young Pugwash (ISYP) and Chair of ISYP from 2008-2013. He previously held various positions at the Henry L. Stimson Center, the Arms Control Association, and the U.S. National Air and Space Museum. Ben has a B.A. in political science from Ohio State University and an M.A. in political science from Purdue University.