Review of Capabilities for Detection, Verification, and Monitoring of Nuclear Weapons and Fissile Material

Committee

Sallie A. Keller

Chair

Dr. Sallie Ann Keller is an endowed Distinguished Professor in Biocomplexity, Director of the Social and Decision Analytics Division within the Biocomplexity Institute and Initiative at University of Virginia and Professor of Public Health Sciences. Her areas of expertise are social and decision informatics, statistical underpinnings of data science, and data access and confidentiality. Dr. Keller's is a leading voice in creating the science of all data and advancing this research across disciplines to benefit society.

Her prior positions include Professor of Statistics and Director of the Social and Decision Analytics Laboratory within the Biocomplexity Institute of Virginia Tech; Academic Vice-President and Provost at University of Waterloo; Director of the Institute for Defense Analyses Science and Technology Policy Institute; the William and Stephanie Sick Dean of Engineering at Rice University; Head of the Statistical Sciences group at Los Alamos National Laboratory; Professor of Statistics at Kansas State University; and Statistics Program Director at the National Science Foundation. Dr. Keller is an Elected Member of the National Academy of Engineering. She has served as a member of the National Academy of Sciences Board on Mathematical Sciences and Their Applications, the Committee on National Statistics, and has chaired the Committee on Applied and Theoretical Statistics. She is fellow of the American Association for the Advancement of Science, elected member of the International Statistics Institute, fellow and past president of the American Statistical Association, and member of the JASON advisory group.

Andrew G. Alleyne

Member

Andrew G. Alleyne is the Bennett Chair and Dean of the University of Minnesota College of Science and Engineering (CSE). As CSE dean, Alleyne is the college's chief executive officer and chief academic officer. Previously, he was the Ralph and Catherine Fisher Professor of Engineering at the University of Illinois, Urbana-Champaign.

His research interests encompass the modeling, simulation, and implementation of control systems for complex systems and nonlinear systems. His focus is on the optimization of energy and power systems using model-based approaches. He has developed simulations tools for understanding and prediction the behavior of complex multi-disciplinary energy systems and transitioned that to implementations of control systems for dynamic energy management. In particular, he works at the interface of electrical and thermal power for mobile systems since many of the thermal management challenges arise from electrical power usage. He established the National Science Foundation Engineering Research Center for Power Optimization of Electro-Thermal Systems (POETS). Additional areas of interest include Manufacturing Systems where he has investigated high precision motion control technologies. His academic record includes supervision of over 80 M.S. and Ph.D. students and over 400 conference and journal publications. Dr. Alleyne is the recipient of a CAREER award by the National Science Foundation, has been Distinguished Lecturer of the Institute for Electronic and Electrical Engineers (IEEE), and a National Research Council associate. He is a Fellow of the American Society of Mechanical Engineers (ASME), IEEE, and the American Association for the Advancement of Science (AAAS). From ASME, he has received the Gustus Larson Award, the Charles Stark Draper Award for innovative Practice, the Robert Henry Thurston Award, and the Henry Paynter Outstanding Investigator Award. He was a Fulbright fellow to the Netherlands and has held visiting Professorships at TU Delft, University of Colorado, ETH Zurich, and Johannes Kepler University. He is also a recipient of the AACC Control Engineering Practice Award. Dr. Alleyne has held leadership positions for ASME, IEEE, and the International Federation of Automatic Control and been active in external advisory and review boards for universities, industry and government including the Scientific Advisory Board for the U.S. Air Force and the NASEM Board on Army Research and Development (BOARD). Dr. Alleyne received his B.S. in Mechanical and Aerospace Engineering from Princeton University and an M.S. and Ph.D. in Mechanical Engineering from the University of California, Berkeley.

Charles Craft

Member

Charles Craft is a consultant to Sandia National Laboratories and Zel Technologies, LLC providing mentoring and advice on nuclear forensics and intelligence analyses. He has extensive experience in nuclear monitoring research, development, and technology engineering, and technology trends. Mr. Craft was previously a manager and staff member at Sandia for 37 years, leading Sandia's Field Intelligence Element's Technical Assessments Department from 1997 until his retirement in 2017. In this role, he was responsible for technical analyses of current intelligence related to foreign nuclear weapons programs.

From 2000 to 2007, Mr. Craft also served as the Chairman of the Joint Atomic Energy Intelligence Committee (JAIEC). In this role, he led the development of multiple assessments on foreign nuclear programs and led a national study (seven national laboratories and four federal agencies) on fissile material security. In recognition of his exemplary service, Mr. Craft received the Director of National Intelligence's Seal Medallion Award, the highest Intelligence Community Award given to contractor personnel.

Mr. Craft is a member of the Technical Nuclear Forensics Science Panel, an advisory panel to DHS's National Technical Nuclear Forensic Center. He is also a participant in multiple Air Force Technical Applications Center advisory panels, serving as Chair of both the Nuclear Plant Program Senior Advisory Panel and the Reactor Products Mission Advisory Panel, and member of the Nuclear Debris Collection and Analysis Senior Review Panel. Mr. Craft received BS and MS Nuclear Engineering degrees from North Carolina State University and a Business Management MA from New Mexico Highlands University.

Mona Dreicer

Member

Mona Dreicer is the former Deputy Director of the Center for Global Security Research at Lawrence Livermore National Laboratory (LLNL). Dr. Dreicer spent 17 years at LLNL, focusing on the Laboratory's nonproliferation programs, including international material protection and threat reduction, verification and safeguards technology, nonproliferation regimes and policy analysis, and international engagement. Prior to joining LLNL, Dr. Dreicer served as Director of the Office of Nuclear Affairs at the U.S. Department of State, responsible for assessing compliance with nuclear arms control treaties and coordinating U.S. positions on measures needed for effective verification of nuclear arms control treaties and agreements.

Over the past 30 years, Dr. Dreicer has worked in nuclear-related areas of international security, dose reconstruction, consequence management, environmental risk assessment and protection, and nuclear reactor safety for the U.S. government (Arms Control and Disarmament Agency, State Department), three U.S. national laboratories, (Los Alamos National Laboratory, LLNL, and the Environmental Measurements Laboratory), the International Atomic Energy Agency's Department of Nuclear Safety, and a French nonprofit research organization (Centre d'etude sur l'Evaluation de la Protection dans le domaine Nucleaire, or CEPN). She has previously served on the National Academies Policy and Global Affairs Committee and is a Fellow of the Institute of Nuclear Materials Management (INMM). Dr. Dreicer holds a Doctorate en Energetique from l'Ecole Nationale Superiere des Mines de Paris (School of Mines of Paris), Centre d'Energetique (Center of Energy Studies), Paris, France.

Keith J. Masback

Member

Keith J. Masback is the Owner and Principal Consultant at Plum Run, LLC, providing advisory and consulting services to leading-edge companies working in geospatial intelligence and related fields. He was named “2019 Geospatial Ambassador of the Year” by Geospatial World Media and is an active early stage investor. Prior to founding Plum Run, Mr. Masback spent over a decade as the President / Chief Executive Officer of the United States Geospatial Intelligence Foundation. Before joining USGIF, he spent over 20 years combined as an Infantry and Military Intelligence officer in the U.S. Army and as a government senior executive civilian on the Army Staff and at the National Geospatial-Intelligence Agency (NGA).

Mr. Masback is a Councilor and Fellow of the American Geographical Society, a member of the Board of Advisors of the Global Special Operations Forces Foundation, and a member of the Advisory Board of the International Spy Museum. He is also a member of the Board of Advisors of Hermeus Corporation, Anno.ai, Inc. and Orbital Insight, Inc. He is the immediate past Chair of the Department of Interior’s National Geospatial Advisory Committee (NGAC) where he remains a member of the Landsat Advisory Group. He holds a Bachelor of Arts in Political Science from Gettysburg College and completed the Post-Graduate Intelligence Program at the National Intelligence University.

Chris A. Pickett

Member

Mr. Pickett retired from Oak Ridge National Laboratory (ORNL) as a Distinguished Member of the R&D staff and now serves at Spectra Tech Inc. in Oak Ridge, TN, as the Director of Nuclear Safeguards and Nonproliferation Services. He has 40+ years' experience as a researcher and a technical leader supporting many domestic and international efforts associated with nuclear nonproliferation and safeguards.

From 2016-2019, he served as a Technical Advisor at the National Nuclear Security Administration's (NNSA) Defense Nuclear Nonproliferation R&D Program in Washington, DC. He provided (Rad/Nuc) monitoring support for 2004 Republican Convention in New York City; supported multiple international efforts with the IAEA and several collaborative projects to secure nuclear material at Russian sites. In 2001-2002, he served on the DOE/NNSA post – 9/11 Task Force for Nuclear Safeguards and Security and remains active in DOE/NNSA/ESARDA working groups associated with Arms Control and Safeguards.

He has extensive operating knowledge and experience with many nuclear fuel cycle processes including weapon's production; and has authored or co-authored over 150 technical papers and presentations on safeguards tracking and monitoring technologies, characterization of uranium materials, and sealing methods. His work in tagging, sealing, and tracking technologies is internationally recognized by the IAEA and other nonproliferation communities.

Chris is active in the Institute of Nuclear Materials Management (INMM) where he served as president of the Central Region Chapter, Chair of the Charles E. Pietri Special Service Award subcommittee, a Member–at-Large, Chair of the MC&A Technical Division, and continues to serve as a Committee chair and as a member of the Technical Program Committee. HE is an INMM Fellow and recently served as the Institute's Secretary (2009-2019). He also is a member of the Containment and Surveillance (C/S) working group of the European Safeguards Research and Development Agency (ESARDA). Chris holds degrees in Physics and Electrical and Computer Engineering from Bowling Green State University and the University of Tennessee. He is member of Sigma Pi Sigma (Physics) and Eta Kappa Nu (Electrical Engineering) honorary societies.

Dean A. Souleles

Member

Mr. Dean Souleles is a uniquely experienced technology advisor with four decades experience in a variety of senior executive roles in government and private industry. He is the former Founding Director of the U.S. Intelligence Community's AI Innovation Center and Chief Technology Advisor at the Office of the Director of National Intelligence; he led the development of the US IC's strategy for rapidly adopting AI and related technology. During his tenure with the ODNI he served as the Chief Technology Advisor to two successive Principal Deputy Directors of National Intelligence and was the founding Chief Technology Officer of the National Counterintelligence and Security Center. Previously he served as COO of Resolution Health and EVP and CTO of QuadraMed Corporation, key players in healthcare IT. Previously he founded an early Internet Service Provider and served ten years as a Principal Engineer at NASA's Jet Propulsion Laboratory.

William H. Tobey

Member

William H. Tobey is director of the Office of National Security and International Studies at Los Alamos National Laboratory. Prior to his current position, he wrote and taught about matters related to nonproliferation, nuclear strategy, arms control, and nuclear security as a Senior Fellow at the Harvard Kennedy School's Belfer Center for Science and International Affairs (where he remains a Senior Fellow, nonresident). In government service, he was most recently deputy administrator for Defense Nuclear Nonproliferation at the National Nuclear Security Administration. There, he managed the U.S. government's largest program to prevent nuclear proliferation and terrorism by detecting, securing, and disposing of dangerous nuclear material. Mr. Tobey also served on the National Security Council (NSC) staff under Presidents Reagan, George H. W. Bush, and George W. Bush—working on defense policy, arms control, and counterproliferation issues. As director of counterproliferation strategy at the NSC, he: oversaw development and implementation of U.S. policy on the nuclear programs in Iran and North Korea; was a delegate to the Six Party Talks with North Korea; managed U.S. efforts to dismantle Libya's weapons of mass destruction programs; and, authored the first draft of United Nations Security Council Resolution 1540, which criminalizes nonstate proliferation and obligates all states to establish and maintain effective security and export controls over sensitive materials. Mr. Tobey previously participated in a variety of international negotiations, including the Nuclear and Space Talks with the Soviet Union and the U.S.-Russia Space Cooperation agreement. He has served on several National Academies committees, as well as the Nuclear and Radiation Studies Board, which he chairs. He was recently elected to the American Nuclear Society's Nonproliferation Division Executive Committee. He also chairs the board of the World Institute for Nuclear Security. He received a B.S. from Northwestern University and an M.P.P. from Harvard University.

Terry C. Wallace, Jr.

Member

Dr. Terry C. Wallace is Director Emeritus at Los Alamos National Laboratory, where he was the 11th Director serving until the end of 2018. Los Alamos National Laboratory has played a role in some of the most transformational discoveries of the 20th and 21st centuries. As the premier national nuclear science laboratory, Los Alamos is a principal contributor to the U.S. Department of Energy mission to maintain the nation’s nuclear weapons stockpile but also protects the nation through programs in nuclear counterproliferation and nonproliferation, and to provide solutions to complex National Security. Before becoming Director, Wallace served as the Principal Associate Director for Global Security, and the Senior Intelligence Executive leading national security programs—nonproliferation, counter-proliferation, intelligence, DOD, and industry partnerships/technology transfer.

Raised in Los Alamos, Wallace served for 20 years as a professor of geosciences and an associate in the applied mathematics program at the University of Arizona. He returned to LANL in 2003 as Director of Los Alamos’s Earth and Environmental Sciences Division. Wallace holds Ph.D. and M.S. degrees in geophysics from California Institute of Technology and B.S. degrees in geophysics and mathematics from New Mexico Institute of Mining and Technology. Wallace is a Fellow of the American Geophysical Union (AGU), and in 1992 he received the AGU's Macelwane Medal. Wallace has served as President of the Seismological Society of America, and Chairman of the Incorporated Institutions for Research in Seismology. Wallace is the co-author of the most widely used seismology textbook, “Modern Global Seismology”, and has authored more than 130 peer review articles on various aspects of seismology. Wallace chaired The National Academy of Science Committee on Seismology and Geodynamics for 6 years, and was a member of the Board of Earth Science and Resources. In June 2011, Wallace has a mineral named after him by the International Mineralogical Association Commission on New Minerals, Nomenclature and Classification.

Ned Wogman

Member

Dr. Ned Wogman is the former Chief Scientist of the National Security Directorate at Pacific Northwest National Laboratory (PNNL) and continues to assist various programs at the laboratory. He was awarded PNNL's Laboratory Directors Award for Lifetime Achievement in Science and Technology in 2007 in recognition for his impact in the fields of nuclear and radiochemistry, as well as for his leadership in the development of analytical techniques for radionuclide detection and analysis.

In a career at PNNL spanning over four decades, Dr. Wogman analyzed lunar rocks from the Apollo missions, applied environmental measurement techniques for international organizations such as the International Atomic Energy Agency and United Nations, and developed solutions to national security problems that impact U.S. policy. He was a key participant in an international team that developed the Wide Area Environmental Study that was used by the IAEA to start their 93+ 2 program (WAES-321), and served as a nuclear inspector for the UN Action Team in Iraq in 1998.

After Sept. 11, 2001, Dr. Wogman worked with the Chief Scientists from LLNL, LANL, and SNL to develop the future science needs for what was to become DHS. He then served as the inaugural Director of Homeland Security Programs at PNNL for six years before becoming the Chief Scientist of the National Security Directorate. Dr. Wogman holds a doctorate in physical chemistry from Purdue University and is a Fellow of the American Nuclear Society.

Marie Kirkegaard

Staff Officer