

# **Assessing and Improving Strategies for Preventing, Countering, and Responding to Weapons of Mass Destruction Terrorism: Nuclear Threats**

## **Committee**

### **Stephen E. Flynn**

#### **Chair**

Stephen Flynn is Professor of Political Science and Founding Director of the Global Resilience Institute at Northeastern University where he leads a major university-wide transdisciplinary research initiative to inform and advance societal resilience in the face of growing human-made and naturally-occurring turbulence. At Northeastern, he also holds affiliated faculty appointments in the College of Engineering and the School of Public Policy and Urban Affairs. Prior to September 11, 2001, Dr. Flynn served as an expert advisor to U.S. Commission on National Security (Hart-Rudman Commission), and following the 9/11 attacks he was the executive director of a blue-ribbon Council on Foreign Relations homeland security task force. He served as the principal advisor to the bipartisan Congressional Port Security Caucus, advised the Bush Administration on maritime and homeland security issues, and after the November 2008 election of President Barack Obama, served as the lead policy advisor on homeland security as a part of the presidential transition team. From 2003-2010 he served as a member of the National Research Council's Marine Board.

Dr. Flynn has previously served as President of the Center for National Policy and spent a decade as a senior fellow for National Security Studies at the Council on Foreign Relations. Dr. Flynn was an active duty commissioned officer in the U.S. Coast Guard for 20 years, including two tours as commanding officer at sea. He is co-author of the textbook, *Critical Infrastructures Resilience: Policy and Engineering Principles* (2018), and author of *The Edge of Disaster: Rebuilding a Resilient Nation* (Random House, 2007), and *America the Vulnerable* (HarperCollins 2004). He has a presidential appointment to serve on the Board of Visitors at the U.S. Coast Guard Academy where he earned a Bachelor of Science in 1982. Dr. Flynn holds the Master of Arts in Law and Diplomacy and PhD degrees from the Fletcher School of Law and Diplomacy, Tufts University.

## **Madelyn R. Creedon**

### **Vice Chair**

Madelyn Creedon is the President of Green Marble Group, LLC, a consulting company, and serves on a number of advisory boards related to national security. She is the vice chair of the Secretary of Energy's Advisory Board, a research professor at the George Washington University Elliott School of International Affairs and a nonresident senior fellow at the Brookings Institution. Prior to retirement, Ms. Creedon was Principal Deputy Administrator of the National Nuclear Security Administration (NNSA) within the Department of Energy from 2014-2017. She served in the Pentagon as Assistant Secretary of Defense for Global Strategic Affairs from 2011 to 2014, overseeing policy development in the areas of missile defense, nuclear security, cybersecurity, and space. She served as counsel for the U.S. Senate Committee on Armed Services for many years, beginning in 1990; assignments and focus areas included the Subcommittee on Strategic Forces as well as threat reduction and nuclear nonproliferation. During that time, she also served as Deputy Administrator for Defense programs at the NNSA, Associate Deputy Secretary of Energy, and General Counsel for the Defense Base Closure and Realignment Commission. She is currently a board member for the Nuclear and Radiation Studies Board at the National Academy of Sciences. Ms. Creedon holds a Juris Doctor from St. Louis University School of Law, and a Bachelor of Arts from the University of Evansville.

## **Julie A. Bentz**

### **Member**

Julie Bentz retired in 2019 after a successful 33-year career, spanning active, reserve and National Guard commissioned service. She has been a recurring member of the White House National Security Council Staff and Homeland Security Council for the Executive Office of the President. While working at the White House, her roles included Senior Advisor for Emerging Technologies, Deputy Senior Director for WMD, Director of Strategic Capabilities, and Director of Nuclear Defense Policy. Major General Bentz currently serves on the Avista Energy Corporation Board of Directors. She also serves as Chair of Sandia National Laboratory National Security Programs External Advisory Board, Board Member of Lawrence Livermore National Laboratory (LLNL) Global Security Directorate External Review Committee and LLNL's Weapons and Complex Integration Directorate External Review Committee. She is a member of Strategic Advisory Group for the CEO of CACI International Inc. She also advises the Santiam Canyon Long Term Recovery Group who assist those impacted by the September 2020 mega-fires in Oregon. Major General Bentz holds a PhD and Master of Science in Nuclear Engineering from the University of Missouri, a Master of Science in National Security Strategy from the National Defense University, and a Bachelor of Arts in Radiological Health from Oregon State University. She published the article "Learning from Catastrophe: Lessons from the COVID-10 Pandemic for Preparing for and Responding to a Domestic Radiation Emergency" (2021, an NTI paper) that addresses insights and lessons related to in preparedness for other major disasters.

# 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. During his career leading up to the leadership roles in the weapons community, Dunning was recognized as a weapons designer responsible for the first subcritical experiments for LLNL (1994-1999), was the LLNL representative to the Department of Energy (DOE) Defense Programs "Science Council" in Washington DC (1998), and worked with the National Nuclear Security Administration in the DOE help establish a counter nuclear terrorism program focused on understanding novel potential threat devices (1999-2000). Prior to 2006, he also 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.

Since retiring Dunning has participated on several reviews supporting the Associate Administrator for Counter-terrorism & Counter-proliferation (NA-80) and will be part of a small team compensated for reviewing the Joint Technical Operations Team in the summer of 2023.

## **Robert C. Dynes**

### **Member**

Robert Dynes is a professor of physics at the University of California, San Diego (UCSD). He was the 18th President of the University of California, from 2003 to 2008. A first-generation college graduate and a distinguished physicist, Dr. Dynes served as the sixth Chancellor of UCSD's campus from 1996 to 2003. His numerous scientific honors include the 1990 Fritz London Award in Low Temperature Physics, his election to the National Academy of Sciences in 1989 and the American Academy of Arts and Sciences in 1994. As a professor of physics at UCSD, he founded an interdisciplinary laboratory where chemists, electrical engineers, and private industry researchers investigated the properties of metals, semiconductors and superconductors. He subsequently became chair of the Department of Physics and then senior vice chancellor for academic affairs. Since leaving the UC presidency in June 2008, Dr. Dynes has joined the boards of Argonne National Laboratory, the review panel for the Canadian Foundation for Innovation, the Helmholtz Foundation in Germany and the San Diego Foundation.

For the National Academies of Sciences, Dr. Dynes is currently the co-chair for the Intelligence Community Studies Board, chaired three consensus studies (Disposal of Surplus Plutonium in the Waste Isolation Pilot Plant, Improving the Assessment of Proliferation Risk of Nuclear Fuel Cycles and Evaluating Testing, Costs, and Benefits of Advanced Spectroscopic Portals) and was a committee member for Protecting Critical Technologies for National Security in an Era of Openness and Competition and Assessment of Inertial Confinement Fusion (ICF) Targets. The study's report on advanced radiation detectors was given to the Department of Homeland Security in March 2009. A native of London, Ontario, Canada, and a naturalized U.S. citizen, Dr. Dynes holds a Bachelor's degree in mathematics and physics and an honorary Doctor of Laws degree from the University of Western Ontario, and Master's and Doctorate degrees in physics and an honorary Doctor of Science degree from McMaster University. He also holds an honorary Doctorate from L'Université de Montréal. Currently, Dr. Dynes is consulting for Decision Sciences, a company developing muon sensors capable of detecting high Z materials including special nuclear materials.

## **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. Dr. Fetter received a Bachelor of Science in physics from the Massachusetts Institute of Technology in 1981 and a PhD in energy and resources from the University of California, Berkeley in 1985.

## **Eleanor Melamed**

### **Member**

Elly Melamed retired in June 2020 from the position of Associate Assistant Deputy Administrator for the Office of Global Material Security (GMS) in the National Nuclear Security Administration. The purpose of this office was to prevent terrorists from obtaining and using nuclear and radioactive materials. This work was carried out by working with partners worldwide to build sustainable capacity to secure these materials, and to interdict and investigate the trafficking of those materials. Ms. Melamed joined the Department of Energy in 1994, where she worked for the DOE Office Environment, Safety and Health on projects in the US and Russia related to radiation exposure. She moved to the National Nuclear Security Administration Office of Defense Nuclear Nonproliferation in 2000, where she has worked on a variety of nuclear nonproliferation issues. Beginning in July 2003, Ms. Melamed worked in the Office of the Second Line of Defense, recently renamed Nuclear Smuggling Detection and Deterrence (NSDD). In 2005 she was appointed Deputy Director of the Program and in October of 2011, she became the Director. She was instrumental in promoting the growth of NSDD from a start-up program with a small federal staff, and one foreign partner, to a program of recognized effectiveness and global reach. Before joining this program, Ms. Melamed was Deputy Director and then Acting Director of the Nuclear Cities Initiative, a joint U.S./Russian program designed to assist the Russian Government in developing sustainable non-weapons employment for its weapons scientists. She is currently a board member for the Nuclear and Radiation Studies Board at the National Academy of Sciences. Ms. Melamed holds a Bachelor of Arts from Oberlin College, and a Master of Arts in European History from the University of Chicago.

## **Brendan G. Melley**

### **Member**

Brendan Melley is Director of the Center for the Study of Weapons of Mass Destruction (CSWMD), Institute for National Strategic Studies, at National Defense University. He joined CSWMD as a Senior Research Fellow in 2011, and his civilian government experience includes senior staff assignments at the Defense Intelligence Agency, the President's Foreign Intelligence Advisory Board, and on the National Security Council staff as Director for both Proliferation Strategy and for Intelligence Programs. At the NSC he supported priority U.S. intelligence and counterproliferation efforts and led the development and coordination of weapons of mass destruction (WMD) interdiction policies across the Federal government and with foreign partners. As Director, Mr. Melley oversees CSWMD's three lines of work: research and analysis involving the role of WMD in U.S. national security policies and strategies, including deterrence and countering WMD plans and activities; direct policy support to senior Defense and other USG leaders on WMD-related matters; and WMD education within the Joint Professional Military Education system and to other academic institutions in the Department of Defense. Mr. Melley served on active duty in the U.S. Army as a light infantry and military intelligence officer. He graduated from Providence College, Rhode Island, the Postgraduate Intelligence Program at the Defense Intelligence Agency, and earned a Master of Science in WMD Studies from Missouri State University.

## Scott Roecker

### Member

Scott Roecker is the Vice President for Nuclear Material Security at the Nuclear Threat Initiative (NTI). He focuses on work to reduce the risk associated with nuclear and radiological materials through a number of NTI projects, including the Global Dialogue, Nuclear Security Index, and targeted cooperation with priority countries. He also supports nuclear verification efforts and advises leadership on issues related to Iran. Mr. Roecker previously served as the Director of the Office of Nuclear Material Removal at the National Nuclear Security Administration (NNSA). In this position, he was responsible for all U.S.-led activities to remove or dispose of highly enriched uranium (HEU) and separated plutonium with partner countries. From 2014 - 2017, Mr. Roecker served as the Director for Nuclear Threat Reduction at the National Security Council. In that role, he coordinated the development and implementation of policies to prevent nuclear terrorism through efforts to secure nuclear and radiological materials, minimize HEU and plutonium, and counter nuclear smuggling. He also was the Sous-Sherpa for the United States at the 2016 Nuclear Security Summit. Mr. Roecker holds a Masters in International Affairs from The George Washington University and a Bachelor of Science from The University of Minnesota. Mr. Roecker published the article “Nuclear Power Plants Under Attack: The Legacy of Zaporizhzhia” (April 2023 in Arms Control Today) that discusses the international response to events at the Zaporizhzhia Nuclear Power Plant.

## Jessica Stern

### Member

Jessica Stern is a research professor at Boston University and a senior fellow at both the Center for Naval Analyses and the Community Safety Branch at the Harvard T.H. Chan School of Public Health. Stern has taught courses on counter-terrorism for over 20 years. She is a Member of the Homeland Security Experts Group. Stern is the coauthor with J.M. Berger of *ISIS: The State of Terror*; and the author of *My War Criminal*, *Denial*, *Terror in the Name of God*, and *The Ultimate Terrorists*. Stern served on President Clinton’s National Security Council Staff in 1994-95. She was included among seven “thinkers” in Time Magazine’s 2001 series profiling 100 innovators. She was selected as a Guggenheim Fellow in 2009, a World Economic Forum Fellow from 2002-2004, an International Affairs Fellow in 1994, and elected to Sigma Xi, an engineering honors society, in 1986. Stern advises a number of government agencies on issues related to terrorism. She has a bachelor’s degree from Barnard College in chemistry, a master’s degree from MIT in technology policy (chemical engineering), and a doctorate from Harvard University in public policy. She is a 2016 graduate of the Massachusetts Institute of Psychoanalysis.

## **Kristine Svinicki**

### **Member**

Kristine Svinicki currently serves as Adjunct Professor of Nuclear Engineering and Radiological Sciences in the College of Engineering at the University of Michigan. She is an internationally recognized policy expert and innovator with over 30 years of public service at the state and federal levels. Appointed to her role by three successive United States presidents, Ms. Svinicki is the longest-serving member of the United States Nuclear Regulatory Commission (U.S. NRC) in the agency's history, having stepped down as Chairman in early 2021. Prior to her appointment to the U.S. NRC, Ms. Svinicki served as an expert and policy advisor for over a decade to members of the United States Senate on subjects ranging from energy to national security. She previously managed nuclear research and development programs at the U.S. Department of Energy and worked as an energy analyst for the State of Wisconsin. She was selected as a Brookings Institution Fellow in 1997 and as a John C. Stennis Congressional Fellow of the 108th U.S. Congress. She currently sits on the boards of TerraPower and the Southern Company and serves on the Idaho National Laboratory Nuclear Science and Technology Strategic Advisory Committee. Ms. Svinicki was awarded a Bachelor of Science in Nuclear Engineering from the University of Michigan in 1988.

## **Rodney K. Wilson**

### **Member**

Rodney Wilson retired from Sandia National Laboratories in March, 2020 where he was the Director of Sandia's Center for Global Security and Cooperation that supports U.S. government agencies responsible for Non-Proliferation & Arms Control, Cooperative Threat Reduction, and International Security. His other assignments included Director for National Security Studies & Integration, and Chief of Staff to the Deputy Laboratories Director for Nuclear Weapons Programs. Dr. Wilson began his career at Sandia in 1980, and during nearly 40 years at Sandia led and participated in a broad range of national security-related activities, including: the security and survivability of theater nuclear forces; studies of nuclear weapon transportation safety and security; studies on the transparency and verification of nuclear warhead dismantlement; and activities that support government programs to prevent the misuse of nuclear, chemical, biological and radiological materials. He also worked in the Office of Policy Planning, Analysis and Assessment at National Nuclear Security Administration (NNSA) when it was created in 2001. Upon his retirement in 2020 he was awarded the NNSA Administrator's Distinguished Service Gold Award. Dr. Wilson holds a Bachelor of Science in Engineering (BSE) in Engineering Science from the University of Michigan, and both a Masters of Science and PhD in Theoretical & Applied Mechanics from the University of Illinois.

# Michael Janicke

## Staff Officer

Michael Janicke from Los Alamos National Laboratory is joining the National Academies as a Senior Program Officer on the NRSB. Mike graduated from Rice University with a B.S. in chemical engineering and continued his education at the University of California Santa Barbara where he earned his Ph.D. in chemical engineering. Following his studies, Mike was an Alexander von Humboldt Fellow at the Max Planck Institute for Carbon Research in Mülheim an der Ruhr. While in Germany, he was extremely lucky to work with Prof. Ferdi Schüth, former vice president of the German National Science Foundation. In 2000, Mike returned to New Mexico as a postdoctoral fellow at LANL and became a staff member in 2002. Most recently Mike was the center director for REFOCUS, the Resonance Center for Chemical Signatures, and has spearheaded efforts in developing new methods to detect chemical threat agents and synthetic opioids at border and airport checkpoints using magnetic resonance techniques. At Los Alamos he was also been involved in several programmatic studies for Enhanced Surveillance Campaigns and Lifetime Extension Programs for the weapons community, participated in NA-22 projects analyzing funded research programs across the DOE complex, and assisted in addressing chemical questions associated with Medical Isotope and Basic Energy Sciences Heavy Element programs.