PONI Fall Conference

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Atomic Weapons Establishment

Aldermaston, United Kingdom

Speaker Biographies

KEYNOTE SPEAKER

Lord David Owen, Former Secretary of State for Foreign and Commonwealth Affairs

David Owen was a Member of Parliament for 26 years from 1966-92. Under Labour Governments, he served as Navy Minister, Health Minister and Foreign Secretary. As one of the "Gang of Four", he was co-founder of the Social Democratic Party established in 1981 and its Leader from 1983-87 and 1988-90. He has served on a number of international independent commissions including the Palme Commission on Disarmament and Security Issues and the Carnegie Commission on Preventing Deadly Conflict.

David Owen was created a Life Baron in 1992 and sits as an independent social democrat in the House of Lords. From 1992-95 Lord Owen served as EU peace negotiator in the former Yugoslavia and was co-author of the Vance-Owen Peace Plan. He was Chairman of New Europe from 1999-2005, an organization that campaigned successfully for the UK to stay outside the eurozone while remaining a committed member of the EU. He served as Chancellor of the University of Liverpool from 1996-2009. He is currently a Director of the Centre for International Humanitarian Cooperation and has business interests in America and Russia.

He is the author of several publications including *Balkan Odyssey* (1995) *In Sickness and In Power* (2008) a unique study of illness in Heads of Government during the last 100 years; *Nuclear Papers* (2009) which made available for the first time newly declassified government papers from his time as Foreign Secretary relating to the UK's last full review of nuclear weapons policy and *Time To Declare: Second Innings* (2009), an updated and revised edition of his original autobiography, *Time to Declare*.

WELCOMING REMARKS

Mr. Robin McGill, Chief Executive Officer, Atomic Weapons Establishment

Robin McGill graduated from Edinburgh University with BSc, 1st Class Honours, Engineering Science (1977). He initially worked for BP Chemicals in Scotland as an Engineer before taking as series of operational and business roles in both the UK and the USA. Between 1988 and 1992, Robin worked for Carborundum Inc., as a Business Manager for Boron Nitride in Buffalo, New York. In 1992 he returned to BP plc and held a number of senior positions including Strategy and Projects Manager, BP Chemicals; Distribution Senior Business Advisor, BP Oil International; Marketing Division Manager Pittsburgh PA, BP America Inc; M&A Project Manager, BP Chemicals Ltd; Business Unit Leader Plastic Fabrications Group, BP Amoco Ltd; and Business Unit Leader European Polymers, BP Chemicals.

In 2001 he was appointed CEO, BP Solvay HDPE a market leading joint venture, which was a large merger involving a successful change and culture change programme. In 2004 Robin became the Managing Director BP Grangemouth, where he was responsible for the Forties Pipeline System, Kinneil gas terminal, the Petrochemical and Refining assets at Grangemouth – in total a strategic piece of UK infrastructure transporting a third of UK oil production with a value of $15bn and one of the top five petrochemical sites in Europe. In January 2007 he was appointed as the new Chief Executive & Secretary by The IET (Institute of Engineering and Technology). The IET was created in April 2006 by the merger of the Institution of Electrical Engineers and the Institute of Incorporated Engineers. The IET is the largest professional engineering society in Europe and reflects the interdisciplinary, global and inclusive nature of engineering and technology. In May 2009 he was appointed as the new Chief Executive of AWE (Atomic Weapons Establishment). AWE is a government owned contractor operated company accountable for the delivery of the weapons component of the UK nuclear deterrent and a key player in supporting UK National Nuclear Security and treaty verification activities.

INTRODUCTION TO THE PROJECT ON NUCLEAR ISSUES

Dr. Clark Murdock, Senior Adviser and PONI Director, Center for Strategic and International Studies
Clark Murdock is the senior adviser for the U.S .Defense and National Security Group at CSIS and the director of the Project on Nuclear Issues (PONI), Joining CSIS in January 2001, Murdock has completed studies on a wide range of defense and national security issues, including strategic planning, defense policy and governance, and U.S. nuclear weapons strategy and policy, He directed the four-phase study on Defense Department reform, "Beyond Goldwater-Nichols: USG and Defense Reform for a New Strategic Era," which released reports in March 2004, July 2005, and July 2006 and released several reports in 2008. Murdock is currently leading the U.S.-UK-France trilateral track-2 nuclear dialogue and has recently completed studies on methodological approaches to building force planning constructs and on nuclear posture implications of U.S. extended deterrence and assurance. He is the principal author of *Improving the Practice of National Security Strategy: A New Approach for the Post–Cold War World* (CSIS, 2004) and *The Department of Defense and the Nuclear Mission in the 21st Century* (CSIS, 2008). Murdock coauthored *Revitalizing the U.S. Nuclear Deterrent* (CSIS, 2002) and *Nuclear Weapons in 21st Century U.S. National Security (AAAS, 2008)*.

In 2000, Murdock taught military strategy, the national security process, and military innovation at the National War College. From 1995 to 2000, he was deputy director of the Air Force's headquarters planning function. As deputy special assistant to the chief for long-range planning, he helped define a coherent strategic vision for the 2020 Air Force and institutionalize a new long-range planning process. As deputy director for strategic planning, he helped implement the new planning process and led the development of several new planning products. Before joining the Air Force, he headed the Policy Planning Staff in the Office of the Under Secretary of Defense for Policy. Murdock has served in many roles in the defense world, including as a senior policy adviser to House Armed Services Committee chairman Les Aspin, as an analyst and Africa issues manager in the CIA, and in the Office of the Secretary of Defense. He also taught for 10 years at the State University of New York at Buffalo. He is an honors graduate of Swarthmore College and holds a Ph.D. in political science from the University of Wisconsin at Madison.

SESSION ONE: MEETING NONPROLIFERATION CHALLENGES

Prof. John Simpson, Director, Mountbatten Centre for International Studies, University of Southampton
John Simpson is an expert of international standing on the evolution of the Nuclear Non-Proliferation Treaty (NPT) and other international mechanisms to prevent nuclear proliferation. His current research work covers British nuclear history; missile proliferation and control; nuclear futures; proliferation resistance and sustainable nuclear energy.

He gained his PhD in 1976 for a thesis on weapon procurement issues. He became Professor of International Relations at the University of Southampton in 1990; headed its Mountbatten Centre for International Studies until 2008; and has also held a range of positions outside the university. These include representing the UK on the UN Secretary-General's Study Group on Conventional Disarmament 1982-4; membership of the UN Secretary-General's Advisory Board for Disarmament Matters 1992-8; co-founder and Programme Director of the Programme for Promoting Nuclear Non-Proliferation (PPNN) (1987-2002); and advisor to the UK delegation to NPT Preparatory Committee Sessions and Review Conferences (1999-2010). He has been a member of the Strategy Group of the Monterey Institute's James Martin Center for Nonproliferation Studies and was involved in the launch of the IAEA's new initiative to rethink nuclear fuel cycle issues. He is also a member of The Royal Society's Advisory Group on Scientific Aspects of International Security for a three-year term from 1 January 2008 until 31 December 2010; was a member of the UK Royal Society working group on the Future Management of Separated Plutonium in the UK published in September 2007; is a member of the Royal Society's current Study Group on proliferation resistance and the back of the nuclear fuel cycle; and is a principal researcher in a consortium tasked by the UK Engineering and Physical Sciences Research Council to produce an integrated Approach to a Sustainability Assessment of Nuclear Power. He is also General Editor of a new book series by Palgrave on Nuclear Weapons and International Security since 1945, with its first volume, Nuclear Illusion, Nuclear Reality: Britain, the United States and Nuclear Weapons 1958-64 having been published in April 2010. Professor Simpson was awarded the OBE in 1999 for services to nuclear non-proliferation.

Mr. Paul Gould, CSC National Security Analyst and M.A. Candidate, University of Denver
Mr. Gould graduated from the University of Denver's Josef Korbel School of International Studies with a Masters Degree in International Studies in March 2010, focusing on proliferation and international security. While in graduate school, he also researched US foreign policy and other aspects of US grand strategy. Currently, he is a contract analyst for the Nuclear Smuggling Outreach Initiative, which seeks to enhance partnerships with key countries around the world to prevent, detect, and respond to nuclear smuggling incidents.

Mr. Foy Hubert, M.A. Candidate, Monterey Institute of International Studies, Center for Nonproliferation Studies
Foy K. Hubert, Gard Nonproliferation Scholar, holds an MA in International Relations and Certificate in Nonproliferation Studies from the Monterey Institute's Center for Nonproliferation Studies (2010). He also holds an MS in Space Studies from International Space University Strasbourg (2007). After graduating from the Cameroon's University of Buea (2000) as a trained physicist and computer scientist, he taught physics and mathematics to high-school seniors and was subject examiner in the State General Certificate of Education Board for over six years. His areas of research interest include global

security missile-defense systems, global security-space weapons, nuclear weapons technology, WMD arms control and international security negotiations, nuclear nonproliferation and disarmament regimes. Hubert has published on space and nuclear weapon issues, and was recently a visiting scholar in the Africa's Development and the Threat of Weapons of Mass Destruction project at the Institute for Security Studies in Pretoria, South Africa. Hubert is currently conducting research on the challenges, opportunities and mechanisms required to establish the Middle East weapons of mass destruction free zone.

Dr. John Adams, Physicist, Atomic Weapons Establishment
John Adams is a Physicist working for Systems Assessment group at the Atomic Weapons Establishment (AWE) in the UK. He focuses on planning and analysing experiments conducted at AWE's Air Blast Tunnel at Foulness. He holds a PhD in Nuclear Physics from the University of Birmingham.

SESSION TWO: PERSPECTIVES ON EXTENDED DETERRENCE AND ASSURANCE

Dr. Philipp Bleek, Research Fellow, Harvard University Belfer Center for Science and International Affairs
Dr. Philipp C. Bleek is a Research Fellow at Harvard's Belfer Center for Science and International Affairs. As of January 2011, he will be Assistant Professor at the Monterey Institute of International Studies in Monterey, CA and a research affiliate at the Center for Nonproliferation Studies. He has held fellowships at Harvard, Georgetown, the Center for Strategic and International Studies, and the Center for a New American Security, and worked on President Obama's nonproliferation policy advisory team during the 2008 campaign. He holds a PhD in international relations from the Government Department at Georgetown, a master in public policy from Harvard's Kennedy School, and a bachelor's degree from Princeton's Woodrow Wilson School. He is a Fellow of the Truman National Security Project and a member of the International Institute for Strategic Studies.

Mr. Grant Schneider, M.A. Candidate, The George Washington University
Grant is currently an MA candidate in International Affairs at George Washington University focusing on security and nuclear weapons issues. He works as an assistant to Douglas B. Shaw, Associate Dean of the Elliott School of International Affairs. This summer, Grant participated in the Next Generation Safeguards and Security program at Brookhaven National Laboratory. Grant received his bachelor's degree in International Politics from Georgetown University's School of Foreign Service.

Mr. Mark Jansson, Deputy Director, Project on Nuclear Issues, Center for Strategic and International Studies
Mark Jansson is the deputy director for the Project on Nuclear Issues (PONI) and is responsible for organizing PONI's yearly conference series, running the Nuclear Scholars program, editing PONI publications, and handling the project's administrative functions. Prior to joining CSIS, Mark worked for a USAID contractor in Central America, where he helped analyze the societal and institutional impacts of rule of law reforms. He also has several years of experience in the nonprofit and public sectors as a grant writer, foundation liaison, and grant administrator. Mark earned an M.A. in Conflict Resolution from Georgetown University, where his studies focused primarily on international security and politics. He also holds a graduate certificate in World Religions, Diplomacy and Conflict Resolution from George Mason and a B.A. in Criminal Justice from Roanoke College.

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Dr. Daryl Landeg, Chief Scientist, Atomic Weapons Establishment
Daryl Landeg completed his academic training at Birmingham University, reading physics for his BSc. and then undertaking computational research in the inertial confinement fusion group for his PhD. He is a Fellow of the Institute of Physics. In 1986 he joined the Design Mathematics Department at Aldermaston and developed a new computer code for calculating plasma opacity. He moved to AWE Foulness in 1991 to lead the blast and thermal physics group before returning to Aldermaston in 1995. His subsequent management experience has included overall responsibility for the physics programme, taking AWE into the terascale computing era, and leading the Plasma Physics Department as they embarked on a major project to build the Orion laser facility. Throughout this period he was a key member of the team building the science based approach to warhead design and certification for the CTBT era. He was appointed Director Research & Applied Science in 2007 with executive responsibility for physics, material science and high performance computing capabilities, including sponsorship of the major science investments. In 2009 he was appointed Chief Scientist. In this role he provides independent scientific advice and capability assessment and co-ordinates international exchanges and technical outreach as well as having specific responsibility for warhead safety assurance. He has served on a number of advisory boards including the high end computing review committee and the fusion advisory board for the Engineering and Physical Sciences Research Council.

SESSION THREE: NUCLEAR ASPECTS OF TERRORISM AND COUNTERTERRORISM

Mr. Jay Tilden, Director, Office of Nuclear Counterterrorism, National Nuclear Security Administration
Jay Tilden is currently the director, Office of Nuclear Counterterrorism, and leads an integrated technical staff of federal, contractor, and national laboratory personnel that execute the ~$50m multi-laboratory Nuclear Counterterrorism (NCT) Program at the National Nuclear Security Administration (NNSA). The NCT Program integrates, sustains, and executes key activities and specialized expertise in partnership with the weapons design-, stockpile science-, weapons surety-, and nuclear material-related programs to advise and enable all technical aspects of U.S. Government non-proliferation, counterproliferation, and nuclear counterterrorism missions.

Mr. Tilden is a subject matter expert in understanding the nuclear threat and has worked in the nuclear security and counterterrorism arenas since 1991. He has held a variety of positions, including serving as the Director of the Counterterrorism Division (CTD) and the Associate Director for Intelligence (acting) within the Department of Energy Office of Intelligence and Counterintelligence, responsible for providing technical intelligence analysis on: terrorist radiological and nuclear capabilities; potential terrorist threats to nuclear facilities, materials, and activities; and worldwide nuclear materials holdings and their security (Nuclear Materials Information Program – NMIP). In addition to his work for the Department of Energy and the NNSA at Headquarters in the Forrestal (Washington, DC), Mr. Tilden has held a variety of positions at the Hanford Nuclear Reservation and at the DOE Germantown, MD facility related to nuclear security, counterproliferation, intelligence, emergency response, and use control programs.

Mr. Tilden is retired from the Army as a Chief Warrant Officer (Counterintelligence and All-Source Intelligence) and served on both active duty and in the reserves, including Desert Shield/Desert Storm

and Enduring Freedom/Noble Eagle. Mr. Tilden graduated from the University of Maryland in 1990 and completed post-graduate studies in strategic intelligence from DIA's Joint Military Intelligence College in 1999.

Dr. Tom Tierney, Physicist and Senior Project Leader, Countering Terrorist Tactics Program Office, Los Alamos National Laboratory

Tom Tierney is currently a physicist and senior project leader in the Countering Terrorist Tactics Program Office at Los Alamos National Laboratory (LANL). Tom primarily performs research and development to counter terrorism and nuclear threats; however, he is also participating in research projects on supernova astrophysics and nuclear stockpile stewardship programs. Tom is currently co-chair of the Department of Commerce's Emerging Technology and Research Advisory Committee, which assists in shaping U.S. export control policies. In 2009, Tom served as a Science and Diplomacy Fellow to the U.S. Department of State's Office of the Coordinator for Counter Terrorism (S/CT) Technical Programs, where he provided scientific advice in support of nuclear treaties, nonproliferation, cybersecurity, and counterterrorism technologies. In 2006-2009, he led a LANL experimental program for weapons code validation under Secondary Assessment Technologies. Tom has led experiments at Sandia National Laboratory's Z accelerator and Z-Beamlet Laser, University of Rochester's OMEGA laser, and LANL's TRIDENT laser facility. Tom received his doctorate (Ph.D.) in physics in 2002 from University of California, Irvine using research he performed at LANL. He is a contributing member of a number of national and international technical standards organizations as well as professional organizations (AAAS, ACA, AGU, APS, ANS, and IEEE). Tom has coauthored over 150 classified and unclassified journal articles, proceedings articles, and reports in the areas of high energy density physics, astrophysics, dynamic materials sciences, radiation transport, radiation hydrodynamics, inertial confinement fusion, and nuclear policy. Tom has been a member of PONI since its inaugural year.

Mr. Dan Dalton, Interagency and International Section Lead, Office of Nuclear Counterterrorism, National Nuclear Security Administration

Dan Dalton is head of the Policy, Interagency and International Section of the Office of Nuclear Counterterrorism (NCT) at the U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA). He serves as the NCT liaison to the President's administration, U.S. interagency, and international partners. His section advises these various entities on nuclear counterterrorism policy development and the integration of policy with NCT science and technology development, ultimately enabling these organizations to understand the full range of nuclear threat device designs. Prior to his time at the NNSA, Mr. Dalton was a project engineer in the unmanned aerial vehicle industry, specializing in communication and sensor integration. Mr. Dalton has a Masters of Arts in International Relations from Johns Hopkins School of Advanced International Studies (SAIS) and a Bachelor of Science in Aerospace Engineering from the University of California San Diego.

Mr. Matt Cowan, Deputy Program Manager, Defense Technologies Engineering Division, Lawrence Livermore National Laboratory

Matt Cowan joined the Defense Technologies Engineering Division (DTED) at Lawrence Livermore National Laboratory (LLNL) in 1996 and is currently the Deputy Program Manager for the LLNL Nuclear Counterterrorism Program. Other experience at LLNL includes group leader for the B Advanced Development (BAD) Pu Studies group, leading engineers to build experiments to gather material equation of state data under strong shock conditions, building hydrodynamic experiments, and working

on several life extension programs for US systems. Matt earned a BSME from California Polytechnic State University, San Luis Obispo in 1996 and a MSME from Stanford University in 2000.

TRI-LAB EFFORTS ON COUNTERPROLIFERATION

Dr. William J. Rees, Principal Associate Director for Global Security, Los Alamos National Laboratory
The Global Security (GS) organization at Los Alamos National Laboratory has the mission to provide early identification, creative maturation and timely delivery of scientifically robust solutions to the most urgent and technically challenging security issues. To accomplish this, GS hosts programs across nine key areas of national security interest: Nuclear Nonproliferation; Cyber Systems; Space Systems; Intelligence Analysis, Integration and Exploitation; Warfighter Support; Countering Terrorist Tactics; Countering Weapons of Mass Effect; Event Response and Resilient Global Infrastructure. With FY10 budget in excess of $700M, Global Security programs span the breadth of the Laboratory's multidisciplinary capabilities to provide unique resources to sponsors across the full range of government departments and agencies. In leading the cross-cutting organization, Principal Associate Director William S. Rees, Jr. (PADGS) plays a key role in integrating strategy for non-nuclear weapons national security programs across the Laboratory.

Coming to Los Alamos from key leadership positions that include the Office of the Secretary of Defense, Department of Homeland Security and Georgia Institute of Technology, Rees' credentials are broad and deep in both scientific research and national security. At the Pentagon, as Deputy Under Secretary of Defense for Laboratories and Basic Sciences, Rees was responsible for providing scientific leadership, management oversight, policy guidance and coordination of the more than $1.8 billion annual Basic Research (6.1) programs of the Military Services and Defense Agencies. In addition, at OSD Rees was responsible for Defense Laboratories policy for a workforce of >45,000 scientists and engineers, international S&T programs, DoD Science, Technology, Engineering and Mathematics (STEM) education and workforce issues and grants policy. He was the U.S. S&T lead to NATO and the U.S. principal on the NATO Research and Technology Board. Prior to his service in DOD he was with the DHS S&T Directorate. Rees has earned BS (Texas Tech University) and PhD (UCLA) degrees in Chemistry and is a fellow of several national and international professional societies. He held a postdoctoral fellowship at MIT and was a Humboldt Research Fellow at Technische Universitaet, Berlin. He has chaired and served on numerous national and international scientific committees, panels, commissions and task forces. He has been a professional journal editor, and he served on the international advisory boards of six technical journals--including as a founding board member for *Advanced Materials,* the most cited journal in the profession. Rees has over 140 publications, has edited one book, holds seven patents, and has delivered invited technical lectures at more than 20 international meetings, over 75 universities and over 200 other locations. Rees is widely recognized internationally as a chemist and as leader in national security, basic research and national laboratory policy. He has been an external PhD examiner at several international universities. For over a decade prior to entering federal service, Rees was a full professor and Director of the Molecular Design Institute at Georgia Tech, where he mentored 23 undergraduate research students, 19 graduate research students, and 20 postdoctoral fellows.

SESSION FOUR: MAPPING NEW DIRECTIONS FOR THE NUCLEAR ENTERPRISE

Mr. Steve Henry, Deputy Assistant to the Secretary of Defense for Nuclear Matters
Mr. Henry became the Deputy Assistant to the Secretary of Defense for Nuclear Matters in July 2003. In this position, he is responsible for coordination, review, and approval of all activities related to nuclear and radiological matters, to include acquisition and modernization of the nuclear weapons stockpile. The Nuclear Matters office manages nuclear surety, integration, storage, transportation, surveillance, maintenance and support. Prior to his appointment, Mr. Henry served in the Pentagon as the Deputy Division Chief for Nuclear Weapons, Strategic Operations Division, J-3, Joint Staff. In 1996, Mr. Henry received an Excepted Service appointment by the Secretary of Energy, to create, develop, and manage a program to extend the life of the nuclear weapons stockpile – now known as the Stockpile Life Extension Program (SLEP) and for the creation of the 6X Acquisition Process. In 1999, he became the Associate Deputy Assistant Secretary for the Nuclear Weapons Stockpile where he was responsible for management, oversight, and direction for the Stockpile Life Extension, Enhanced Surveillance, and Advanced Design and Manufacturing Technologies Programs as well as the Special Materials Readiness Campaign.

Mr. Henry spent over 21 years as a U.S. Army officer in various Field Artillery and Nuclear Operations Research and Development assignments. These assignments included Operations Officer of a Pershing Task Force; Division Operations Officer and Team Chief for Nuclear Weapons Technical Inspections; Nuclear and Chemical Targeting Officer, Allied Air Forces Central Europe; and Program Manager, Department of Energy. Mr. Henry holds a B.B.A. from the University of Oklahoma, a M.S. in Systems Management and Information Systems from the University of Southern California, and a M.A. in National Decision Making from the U.S. Naval War College. He and his wife, Linda, reside in Springfield, Virginia.

Dr. Steve Hughes, Senior Scientist, Computational Physics Group, Atomic Weapons Establishment
Dr. Steve Hughes joined AWE in 2005 following completion of a degree and a PhD, both in Physics, at Imperial College London. His career at AWE has continued in a technical vein; his specific role is a computational physicist. He has worked in support of the laser-physics programmes, providing software for simulating the experiments conducted on large-scale facilities, facilities used by AWE and other laboratories to understand the behaviour of materials in extreme conditions. He is a visiting academic at Imperial College in support of work investigating the development of laser-driven fusion energy research.

Mr. Jason Wood, Policy Analyst, Science Applications International Corporation
Jason D. Wood is a Washington, D.C.-based policy analyst with Science Applications International Corporation. Working in support of the Defense Threat Reduction Agency's Advanced Systems and Concepts Office, his research focuses on nuclear deterrence, arms control, security assurances, fourth generation nuclear weapons, and deterring WMD terror attack. In 2010, Jason was selected to participate in the Nuclear Scholars Initiative, sponsored by the Center for Strategic and International Studies. In 2009, Jason co-authored a case study on the legislative origins of the Nunn-Lugar Cooperative Threat Reduction Program, published by National Defense University's Center for the Study of Weapons of Mass Destruction. Previously, Jason was a Research Associate at the Institute for Foreign Policy Analysis, researching national security space issues and missile defense. He has also worked as an

independent consultant to Jane's Information Group, specializing in military command and control systems. From 2005-2007, Jason served as an Earhart Foundation Fellow at Missouri State University's Graduate Department of Defense and Strategic Studies, where he earned a Master of Science with distinction. His writing has also appeared in *Joint Force Quarterly*, *World Politics Review*, *Comparative Strategy*, and *National Journal*.

Mr. Stephen I. Schwartz, Editor, The Nonproliferation Review, James Martin Center for Nonproliferation Studies, Monterey Institute of International Studies
Stephen I. Schwartz is editor of The Nonproliferation Review, published by the James Martin Center for Nonproliferation Studies at the Monterey Institute of International Studies (MIIS), as well as an adjunct professor at MIIS. He is the author, most recently, of Nuclear Security Spending: Assessing Costs, Examining Priorities (Carnegie Endowment for International Peace, 2009). From 1998 to 2005, Schwartz served as publisher and executive director of the Bulletin of the Atomic Scientists. From 1994 to 1998, he was a guest scholar with the Foreign Policy Studies Program at the Brookings Institution, where he directed the U.S. Nuclear Weapons Cost Study Project and edited and co-authored the award-winning book, Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons Since 1940. Before working at Brookings, he was the Washington representative for the Alliance for Nuclear Accountability, a national network of more than thirty organizations addressing safety, security, and environmental issues at the Department of Energy's nuclear weapons production complex. A widely published commentator and analyst, Mr. Schwartz received a B.A. in sociology (summa cum laude and college honors) with a minor in politics from the University of California, Santa Cruz.

Mr. Joel B. Forrester, Research Scientist, Pacific Northwest National Laboratory
Joel Forrester is a Research Scientist at Pacific Northwest National Laboratory whose work focuses on monitoring technologies for nuclear test-ban verification and preventing nuclear smuggling. Upon graduation from Idaho State University in 2004 with a degree in chemistry, Forrester led quantitative analysis method development efforts for biological and chemical weapons detection and classification. He made the transition to nuclear non-proliferation projects in 2007 when he was invited to assist in the development of noble gas processing and quantification systems in support of the CTBTO's International Monitoring System. In the following years, Forrester has helped manage PNNL's noble gas (xenon) system development portfolio, has been recognized for his leadership in border interdiction programs in Eastern Europe and Central Asia, and was recently invited to contribute to the draft Concept of Operations plan for the CTBTO's on-site inspection regime. A particular interest lies in bridging the gap between scientists and policy makers.

SESSION FIVE: THINKING AHEAD ABOUT STRATEGIC STABILITY

Mr. Robin Pitman OBE FinstP, Associate Director, Institute for Security Science and Technology, Imperial College London
Robin Pitman retired from the Ministry of Defence in November 2008 after more than 40 years of service in government science. His appointment as an Officer of the Most Excellent Order of the British Empire was announced in the New Year's Honours List in January 2009. His last position with the MOD was with the British Defence Staff in the British Embassy, Washington DC, USA, where he took up the post of Head of Defence Nuclear and Strategic Technologies in May 2003. In that position he was responsible for all co-operation between the UK and US on nuclear warhead and nuclear propulsion

matters under the 1958 Mutual Defense Agreement. On his departure he became the first non-U.S. nation to receive the National Nuclear Security Administration's Gold Medal for Distinguished Service.

He graduated from the University of Kent at Canterbury with BSc (Hons) in Physics in 1968. Following graduation he joined the UKAEA Atomic Weapons Research Establishment, Aldermaston, where he worked in the Design Mathematics Division on radiation-hydrodynamics problems relating to warhead design and on the behaviour of potential laser fusion targets. In 1974 he moved to the Laser Division at AWRE, where he led a team on the construction of a 100GW neodymium-glass laser and was subsequently responsible for optical and target alignment in the early days of the 2TW HELEN laser.

During 1980 he moved to the Royal Artillery Range on the Isle of Benbecula in the Outer Hebrides to take up the post of Range Analyst. In this position he oversaw the development of the range for short-range air defence systems. He moved to London in 1984 and for six years headed the team responsible for scientific and technical assessments of ballistic missile and ballistic missile defence systems in the Defence Intelligence Staff, subsequently moving to the Joint Air Reconnaissance Intelligence Centre at RAF Brampton near Huntingdon as Scientific Adviser. He returned to MOD to take up a post in the office of the Assistant Chief Scientific Adviser (Nuclear) with responsibility for the sponsorship and scrutiny of the UK nuclear warhead research and capability maintenance programme, and for international collaboration in this area. He subsequently completed a major review of the UK nuclear warhead capability as Deputy Director Strategic Technologies (Nuclear Warhead Capability).

Robin Pitman now lives in Oldbury-on-Severn, Gloucestershire, with his wife Iris. He holds a Private Pilots Licence and has many varied interests which include industrial archaeology with particular reference to the development of the technological infrastructure of London.

Mr. Andrew Futter, PhD candidate, Department of Political Science and International Studies, University of Birmingham
Andrew Futter is an ERSC funded doctoral researcher in the Department of Political Science and International Studies at the University of Birmingham, UK. He holds a Ba in Political Science and International Studies from Birmingham, Ma in Intelligence and International Security from Kings College London, and a MRes in Social Science Research Methods also from Birmingham. His thesis is entitled "The evolution of US ballistic missile defence policy 1989-2010: systemic pressures, politics and the quest for protection against missile attack". His wider academic interests include Ballistic Missile Defence, Nuclear weapons and arms control, US and UK foreign and security policy and diplomatic history.

Mr. John Warden, Research Assistant, Center for Strategic and International Studies
John Warden is a research assistant at the Center for Strategic and International Studies (CSIS), where he works with the Defense and National Security Group and the Project on Nuclear Issues (PONI). He leads a number of PONI initiatives including International Outreach, the Next Generation Working Group, and PONI's first essay contest and also coordinates the CSIS U.S.-Japan-South Korea Track II Nuclear Dialogues. He previously worked on the project staff for *Exploring the Nuclear Posture Implications of Extended Deterrence and Assurance* as well as *Technical Challenges Associated with the New U.S. Nuclear Agenda* and has been a frequent contributor to the PONI Debates the Issues blog. After receiving a BA from Northwestern University, he joined the CSIS as a recipient of the William J. Taylor debate internship.

Mr. Frank O'Donnell, Research Assistant and MSc Strategic Studies Student, University of Aberdeen
Frank O'Donnell is an MSc candidate in Strategic Studies and Research Assistant at the University of Aberdeen. His research focuses on Indian nuclear force and doctrine development and strategic impacts of its emerging civilian nuclear power market. Mr O'Donnell is also presently concluding a research project analyzing British and French nuclear cultures. He is a frequent contributor to ISN Security Watch, specializing in Asian nonproliferation and nuclear strategy issues. He has previously served as a country desk officer for the Centre for the Study of Terrorism and Political Violence, and as a facilitator for the 'Rising Powers' forum of the Security Jam 2010 conference. *Mr O'Donnell holds a MA Honours (First Class) degree in International Relations and Middle East Studies from the University of St Andrews.*

Mr. Paul Burton, Radiation Sciences, Atomic Weapons Establishment
Paul Burton is an Experimental Physicist engaged in research on the effects of High Intensity X-radiation on electronic systems. From 1989 to 1998 he worked in the field of Radiological and Chemical Protection at the Joint European Torus project at Culham and at AWE. Prior to this he developed CAD/CAM software for the Civil Aviation Industry and Optical Chip design. In addition to his research he has published numerous articles on Military History and War Gaming in the Ancient and Medieval world for the Journal 'Slingshot'.

LUNCH ADDRESS

Mr. Peter Sankey, Director of Strategic Technologies, UK Ministry of Defence
Peter Sankey graduated from King's College, London in 1970 with a First Class Honours Degree in Mathematical Physics. Apart from a brief spell in Industry in the mid seventies Peter has worked at AWE (was AWRE) since then. He worked for ten years or so on Scientific Advice Special Duties for OGDs before becoming AWE Deputy Trials' Director for UK Underground Testing in Nevada, USA from the mid eighties until the 1993 Nuclear Test Moratorium. Peter then provided direct technical support to the UK Ambassador to the Conference on Disarmament, Sir Michael Weston, during the Comprehensive Test Ban Treaty negotiations in Geneva (1994 to 1996). On his return to AWE he took the role of International and University Liaison. From 2001 he was Head of Threat Reduction, managing both Resource and Programme in this ever changing area. These activities include provision of Radiological and Nuclear technical advice and support to Defence and OGD Intelligence services; Nuclear Treaty (NPT, CTBT, FissMat etc) verification; and providing the scientific support to Weapon Accident and Counter Terrorism Radiological and Nuclear incidents.

In June 2009 he was appointed Director of Strategic Technologies in the Ministry of Defence where he is SRO for the Nuclear Warhead Capability Sustainment Programme and responsible for the day-to-day operation of the 1958 US/UK Mutual Defence Agreement; in addition he is responsible for nuclear propulsion technology development, developing programmes to counter the emerging CB threat, technical support to CBRN counter-terrorism, and the UK Missile Defence Centre to understand BMD architectures and technologies. Peter is married to Alexandra, has two daughters Elisabeth and Rebecca and, four grandchildren. He was awarded the OBE for services to Defence in the 2004 Queen's Birthday Honours.