The opening session focused on technical aspects of terrorism with weapons of mass destruction, primarily nuclear. Participants reviewed the wide range of destructive effects of nuclear weapons, including death, injury and the physical destruction of infrastructure through blast and heat, as well as widespread contamination by radioactive fallout (including long-term genetic effects). A nuclear device like the type used in Hiroshima (13 kilotons), detonated in a big city, could kill up to a hundred thousand unprotected civilians and devastate an area of several square kilometers, with tremendous longer-term physical, economic, social and political consequences. Even the detonation of a one-kiloton nuclear device in a densely populated area is likely to create an overwhelming challenge for catastrophe-management response services.

Concerning the design of nuclear weapons, much scientific information is publicly available. The most significant technical barrier to constructing such devices is the acquisition of fissile material, either highly-enriched uranium (>20% U-235) or plutonium-239. It is generally agreed in the scientific community that fabricating a gun-type HEU-device is difficult but feasible, whereas the implosion-type plutonium device is far more technically demanding. The HEU device could be constructed in several weeks or months by groups having access to sufficient...
quantities of HEU (on the order of 100 kilos), though without being able to test the device, its precise yield would remain unknown. [See the Pugwash Issue Brief, ?Nuclear Terrorism: The Danger of Highly Enriched Uranium (HEU)? by Jeffrey Boutwell, Francesco Calogero and Jack Harris (available at www.pugwash.org)].

Despite progress by the US and Russia to secure and eliminate much excess HEU in Russia, there remains far too much ‘loose’ fissile material. Given sufficient resources and political will, excess HEU could be eliminated far more quickly than the current 20-year projection. One participant warned that politicians will grasp the scale of the problem only when it is too late, when ?a nuclear explosion is triggered by a terrorist organization.? Scientists have a responsibility to draw the attention of all governments, not just the US and Russian, to the problem, and to propose ways of overcoming political and commercial obstacles to the speedy implementation of eliminating HEU all over the world. The explosion by terrorists of an HEU-device is a threat to all peoples and nations.

As noted in the Pugwash Issue Brief: ?a team of terrorists with sufficient knowledge of physics, explosives and machining could, having gathered information in open and easily available sources, construct a crude nuclear bomb that would have a high probability of exploding with a high nuclear yield.? (p.3) Nevertheless, nuclear aspirants must still (a) develop a design for its nuclear device or obtain it from a nuclear weapon state; (b) produce the nuclear material for the device or obtain it from external sources; (c) shape the nuclear and non-nuclear parts into a nuclear device; and (d) verify the reliability of all of these elements.

The requirements for the performance and delivery of a military weapon versus a terrorist device are, of course, quite different. A terrorist device will entail less technical sophistication in terms of yield, safety and reliability. For terrorists, any explosion within the lower kiloton range would represent an unprecedented achievement. Even a plutonium device that failed to achieve a sustained, critical reaction would represent a radiological weapon with severe consequences. Terrorists also have the option of seeking to steal or buy a ?tactical nuclear weapon? from the large stockpiles of TNW remaining in Russia. Many older TNWs are not secured with modern electronic permissive action links (PALs), thus making it easier for nuclear terrorists to detonate

There exist worldwide many sources of weapons-grade nuclear material. There are in military stockpiles some 1300-2100 metric tons of HEU and 200-270 metric tons of separated plutonium, with an additional 200 metric tons in civilian stockpiles. More than 20 metric tons of HEU are located at research reactors in 39 countries, and HEU also serves as fuel for reactors of nuclear-propelled submarines.

The risk of such material being smuggled, stolen or purchased illegally most definitely exists, even if it is difficult to quantify. Some cases of illicit activity have been thwarted, most involving material that originated from nuclear facilities in Russia or the former Soviet Union. Given the difficulties of ensuring the security of fissile materials in storage, or controlling borders and interdicting attempts at smuggling, the only viable option is to eliminate this material altogether.

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The second session was devoted to the prevention of terrorism with WMD, especially the control of critical material in the former Soviet Union and elsewhere. An analysis of the US-Russian ?Cooperative Threat Reduction? (CTR) program showed that arms control, not security issues, are driving the reductions. Ten years of dismantlement has yielded impressive results: 6,000 nuclear warheads, 900 launchers and 800 silos have been eliminated thus far, but the legacy of the Cold War is still huge: too many warheads, missiles and silos remain active. After September 11, expenditures for fissile material security were doubled by the Bush Administration to $320 million for 2002. Nevertheless, too many security gaps remain: chemical weapons stockpiles are still vulnerable to air attacks, border control is not yet implemented, and the oversight of weapons scientists will be essential for the next 10 years. Continuing problems are lack of funds for high-priority projects, extremely thin support from politicians, poorly coordinated strategies and an intransigent bureaucracy.
The IAEA is preparing a concrete action plan to improve security against terrorism, comprising physical protection of nuclear material and facilities, detection of malicious activities involving nuclear and radioactive materials, the security of radioactive resources, the assessment of safety and security related vulnerabilities at nuclear facilities and the enhancement of program coordination and information management, etc.? The G-8 Global Partnership Program ?10+10 over 10 years? is an important step to invest more for threat reduction, but there are doubts that the G-8 program will be well coordinated and fully funded. It was suggested that Pugwash could strengthen such efforts by establishing a road map of priorities. Certainly the Europeans should do more to support the nuclear cities initiative and the ISTC and TACIS programs. There are also continuing issues of Russian transparency regarding CTR.

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The third session dealt with military means to prevent terrorism with WMD, and began with a discussion of Bush administration calls for launching a preventive war against Saddam Hussein’s Iraq. For the US government, Saddam Hussein represents a clear and imminent danger; Iraq has substantial biological and chemical weapon capabilities and missiles and, left unfettered, the nuclear option for Iraq would only be a question of time. Regime change is therefore the only option.

For many participants, attacking Iraq cannot be justified by Article 51 of the UN Charter [editor’s note: this was prior to adoption of UN Security Council Resolution 1441 on November 8, 2002], and that a more realistic assessment of Saddam’s WMD capabilities is needed. There is much opinion that the Iraqi forces are now weaker than they were ten years ago and that Saddam Hussein might deploy and possibly use biological and chemical weapons only if driven to a hopeless situation.

Participants discussed the pros and cons, and possible scenarios and outcomes, of a military intervention. Most participants did not feel that a war against Iraq should be seen in the context of the war on terrorism, but rather by the beliefs of a small group of US officials that Saddam Hussein must be dealt with ‘once and for all ’. To achieve this, a full scale invasion and costly
urban warfare will likely be needed. And, while the Bush administration may hope for a post-
Saddam ?democratic Iraq?, it is unclear how this is to be accomplished. There are concerns over
political unrest and violence in Jordan and throughout the Islamic world, not to mention between
Palestinians and Israelis. Finally, even though a regime change in Iraq is likely to be welcomed
by most of the international community, hostility and terrorism toward the West is likely to
increase significantly.

On the other hand, the US military might just win such a war in fairly short order, given the
tactical operational capabilities of US forces and the degraded state of Iraqi weapons and troops.
Yet the important question remains: why Iraq and why now? More than a few think that a war
mentality since September 11, 2001 is being used by some hardliners as a pretext to achieve
other foreign policy goals, such as US influence and control of oil supplies in the Middle East.

Regarding WMD, the irony is that Saddam would likely be more prone to use such weapons
when attacked. Chemical weapons, especially, could be used as weapons of mass disruption to
complicate and raise the costs of an invasion. The same holds true for setting the oil fields on fire
and putting large numbers of Iraqi civilians at risk in defending the country. It remains unclear
how the Iraqi people and military forces will react to an attack, what the ramifications will be for
civil war in Iraq involving the Kurds in the north and the Shiites in the South, and how difficult
any post-war occupation might be.

For many, what is more important than regime change in Iraq are good faith efforts to resolve the
Israeli-Palestinian conflict and the wider Middle East confrontation; resolution of the Israeli-
Palestinian conflict would undercut much of Saddam’s appeal and that of terrorist groups like al-
Qaeda.

Regarding the possible return of UN weapons inspectors [editor’s note: UN inspectors returned
to Iraq on November 18, 2002], there were concerns that Iraqi compliance might not be enough
to dissuade the Bush administration from military action. The proposed coercive inspections also
create new questions: Can Hussein differentiate between forces supporting the inspections and an
occupation force? And who ultimately decides on the use of force: Chief Weapons Inspector
Hans Blix, the UN Security Council or the US government?

For some, the Iraq issue must be seen in the light of the new ?National Security Strategy? of the US, published in September 2002, which states that the US would not hesitate to act alone and ?pre-emptively? to thwart dangers from rogue/hostile countries or terrorist groups armed with, or seeking, nuclear, biological or chemical weapons. The strategy also calls for the Pentagon to be able to defeat two aggressors at the same time, ?while preserving the option for one massive counteroffensive to occupy an aggressor´s capital and replace its regime?. (Donald Rumsfeld, ?Transforming the Military,? in Foreign Affairs, May/June 2002, pp. 20-46, p. 24). While ?regime change? is defined as a new mission for the military, the question remains as to who decides which country is ripe for a forceful regime change and what kind of a new world order would be created? In light of this, one participant argued that ?the biggest trouble spot today is the United States.?

Concern was also expressed over the proclivity for unilateralism in US foreign policy. These objections were expressed mainly in regards to the credibility and sustainability of international law as expressed by the UN charter, the Non-Proliferation Treaty (NPT) and other arms control regimes, such as the ABM Treaty, the CTBT and the Biological Weapons Convention. The 13 practical steps to implement Article VI of the Non-Proliferation Treaty, unanimously adopted in the Final Declaration at the 2000 Review Conference, are still awaiting implementation. One participant especially pointed to the fact that the US is not in compliance with the BWC and the CWC and that additionally, the USA is not funding the CTBT verification efforts. Pugwash should bring such facts to the attention of politicians, the media, and the public.

Generally, multilateral institutions and agreements are being marginalized by the Bush administration, and could set dangerous precedents for other countries. This could especially be true in the area of nuclear weapons testing. Accordingly, Pugwash should base its thinking and action on seeking to strengthen international norms and regimes. The absence of superpower rivalry provides unique opportunities to create new international frameworks and norms of behavior, and Pugwash should continue to bring its expertise to bear in these areas.
PARTICIPANTS

Dr. Gunnar Arbman, Director of Research, Swedish Defence Research Agency (FOI), Stockholm, Sweden

Ms. Carin Atterling Wedar, Lector, Theological Faculty, University of Gothenburg; Secretary-General, Swedish Initiative for Peace, Security and International Relations (SIPSIR), Stockholm, Sweden; Member, Swedish Pugwash Group

Prof. Gabriel Baramki, Consultant to the Palestinian Ministry of Higher Education, Ramallah; President, Palestinian Council for Justice and Peace

Mr. Matt Bunn, Senior Research Associate, Science, Technology and Public Policy Program, Kennedy School of Government, Cambridge, MA, USA; Consultant, Nuclear Power Initiative; Member, RANSAC; Member, Board of Directors, Arms Control Association

Prof. Francesco Calogero, Professor of Theoretical Physics, University of Rome "La Sapienza", Rome, Italy; Member, Pugwash Council

Mr. Pierre Canonne, Member, Pugwash Council; Lecturer/Disarmament and Verification issues, Univ. Marne-la-Vallés/Paris, France

Prof. Paolo Cotta-Ramusino, Secretary General, Pugwash Conferences on Science and World Affairs; Professor of Mathematical Physics, University of Milan, Italy; Director, Program on Disarmament and International Security, Landau Network – Centro Volta, Como, Italy

Mr. Lars van Dassen, Director, Swedish Nuclear Non-Proliferation Assistance Programme (SNNAP), Office of Non-Proliferation, Swedish Nuclear Power Inspectorate (SKI), Stockholm, Sweden

Dr. Michael Donovan, Research Analyst, Center for Defense Information (CDI), Washington, DC, USA

Prof. Ahmed Hashim, US Naval War College, Newport, Rhode Island, USA

Mr. Jeremy Issacharoff, Deputy Director General for Strategic Affairs, Ministry of Foreign Affairs, Israel

Gen. (ret.) Dr. Mohamed Kadry Said, Member, Pugwash Council; Head of Military Studies Unit and Technology Advisor, Al-Ahram Center for Political and Strategic Studies, Al-Ahram Foundation, Cairo, Egypt; Professor of Missile Mechanics of Flight, Military Technical College (MTC), Cairo

Mr. Sverre Lodgaard, Director, International Peace Research Institute Oslo (PRIO), Norway

Mr. Rüdiger Lüdeking, Director, Nuclear Arms Control and Non-Proliferation, Federal Foreign
Office, Berlin, Germany

Mr. Kenneth Luongo, Executive Director, Russian-American Nuclear Security Advisory Council, Washington, DC, USA; Visiting Research Collaborator, Program on Science and International Security, Princeton University

Mr. Morten Bremer Maerli, Researcher, Norwegian Institute of International Affairs (NUPI), Oslo, Norway

Prof. Maurizio Martellini, Secretary General, Landau Network-Centro Volta (LNCV), Como, Italy; Professor of Physics, University of Insubria, Como, Italy

Dr. Timothy McCarthy, Director and Senior Analyst, Proliferation Research and Assessment Program, Center for Non-Proliferation Studies, Monterey Institute of International Studies (MIIS), Monterey, CA, USA

Dr. Steven Miller, Director, International Security Program, Center for Science & International Affairs (CSIA), Harvard University, Cambridge, Massachusetts, USA; Editor-in-Chief, International Security; Member, Pugwash Council; Co-Chair, U.S. Pugwash Group

Dr. Götz Neuneck, Senior Fellow, IFSH, Hamburg, Germany; Member, Pugwash Council

Dr. Alexander Nikitin, Director, Center for Political and International Studies (CPIS), Moscow, Russia; Deputy Chair, Russian Pugwash Committee of Scientists for Disarmament and International Security; Vice-President of the Russian Political Science Association; Professor, Moscow State Institute of International Relations; Member, Pugwash Council

Mr. Jan Prawitz, Visiting Scholar, Swedish Institute for International Affairs, Stockholm, Sweden

Prof. George Rathjens, Professor Emeritus, Massachusetts Institute of Technology (MIT), Cambridge, Massachusetts, USA

Mr. Tariq Rauf (Pakistan), Head, Verification and Security Policy Coordination Section, Office of External Relations and Policy Coordination, International Atomic Energy Agency (IAEA), Vienna, Austria

Hon. John B. Rhinelander, Senior Counsel, Shaw Pittman, Washington, DC, USA; Vice Chairman, Lawyers Alliance for World Security (LAWS); Director, Arms Control Association (ACA)

Prof. Carlo Schaefer, Professor of Physics, University of Rome ?Tor Vergata?, Rome, Italy; President and Director, International School on Disarmament and Research on Conflicts (ISODARCO), Rome

Prof. László Valki, Professor of International Law, Eötvös University, Budapest, Hungary;
Director, NATO Information and Research Center, Eötvös University

Mr. Lars Wredberg, Consultant to the Swedish Nuclear power Inspectorate (SKI), Stockholm, Sweden

Staff:
Pugwash Rome Office: Claudia Vaughn, Pugwash Conferences, via della Lungara 10, I-00165 Rome, Italy, Tel. (++39-06) 687-2606, Fax: (++39-06) 687-8376, Mobile: (++39-333) 456-6661, E-mail: pugwash@iol.it