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# Nuclear Disarmament and International Security: Imperatives for the Global Community

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## **A note on the author**

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# **Nuclear Disarmament and International Security: Imperatives for the Global Community**

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## Executive Summary

This purpose of this report is to increase awareness and debate over the relationship between nuclear disarmament and international security. It briefly summarizes the history of the nuclear proliferation regime, paying particular attention to the development of nuclear deterrence as a component of military doctrine during the Cold War. The report then outlines in a broad manner; the contemporary situation as a result of decades of proliferation; the success of many non-proliferation initiatives (and the failure of others), and; the threat posed to the stability of the international system by the horizontal and vertical proliferation of nuclear weapons. The paper recognizes existing and emerging threats to the preservation of international security. It concludes that nuclear strategic doctrine has not evolved in synchronicity with our politico-military environment and, subsequently, has become a contributor to destabilisation. Finally, the paper introduces recommendations made by a number of policy analysts, military and government officials, lawyers, NGOs and the United Nations that must be pursued in earnest if certain nuclear disarmament objectives and a stable international security climate in the 21<sup>st</sup> century are to be achieved.

It is reasonable to suggest that our world is increasingly complex and in many places, increasingly unstable. Modern geopolitics and weapons technology require us to seriously evaluate old doctrine and apply necessary changes to achieve a more secure environment in light of newly developing threats. Many of the pressing security concerns that the international community face today cannot be solved by diplomacy alone. However, there are courses of action that can be taken, short of military intervention and it these options that this report seeks to investigate. It does not offer suggestions for how recent proliferation in, say, the Democratic People's Republic of Korea may be addressed (as it is unlikely that leadership in the DPRK will head calls for policy reform), but it outlines instead certain policies that can be adopted by rational state actors that will contribute to a more secure international environment. In reviewing the evolution of global nuclear policy in both Nuclear Weapon States (NWS) and Non-nuclear Weapon States (NNWS) alike we can better understand the current situation and apply lessons learned from the past to reduce the potential for nuclear confrontation in the near future.

The report recognises that there is also a significant cost associated with the maintenance of current nuclear stockpiles in the current NWS and concludes that we are not seeing an adequate return on investment. It recommends that a reduction in nuclear force levels would allow constrained defence budgets to be allocated to sectors of the military complex that will better utilise the diverted funding to address more immediate security concerns—particularly from non-state actors to whom a nuclear deterrent is unlikely to be effective. The report recognises that new developments in nuclear physics need not be constrained by policy and that current nuclear technologies and the vast body of knowledge acquired during the last half century are unlikely to

substantially erode over the course of the next half century. This complicates the crossover between the peaceful and military uses of nuclear technology and renders Article VI of the Nuclear Non-proliferation Treaty (the responsibility to move towards general and complete disarmament) a more than difficult task to achieve. The report subsequently investigates realistic methods of addressing proliferation today and evaluates popular recommendations for measures that can be taken to move towards a reduction in force levels that are consistent with the interests of NWS and NNWS alike. These recommendations include, but are not limited to:

- The creation of a Fissile Materials Cut-off Treaty
- Strengthened Negative Security Assurances
- The creation of a Nuclear Weapons Convention
- The multi-lateralisation of the fuel cycle
- A move towards de-alerting and a reduction of current arsenals
- Ratification of the Comprehensive Test Ban Treaty
- The renegotiation of pressing bi-lateral nuclear arrangements between Russia and the U.S.

Each of these topics will be discussed at length after having first established a context for the current nuclear policies of each respective NWS. The difficulties associated in employing each recommendation, relative to different geographic locations (The Middle East, Asia, Europe and North America), will not be overlooked. Finally the report outlines complications surrounding Ballistic Missile Defence programs and the extension of arms into outer space, recommending firmly a course of action that must be pursued in the immediate future to prevent further arms racing and the destabilization that would follow.

## Part I

### Our Mutual Quandary

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Over half a century has passed since Robert J. Oppenheimer misquoted the Hindu scripture, *Bhagavad-Gita* in his reflection on the successful Trinity test and subsequent obliteration of Hiroshima and Nagasaki, and lamented; “. . . now I am become death, the destroyer of worlds.”<sup>1</sup> Notwithstanding pressure from established military and political apparatus’, Oppenheimer’s alleged rationale for allowing the Manhattan Project to continue after the fall of Nazi Germany in Europe, and for sanctioning the use of atomic weapons on “virgin [civilian] targets”<sup>2</sup> (as opposed to an alternative “demonstration”<sup>3</sup>), was that the newly forming United Nations needed to be fully aware of the consequences of nuclear warfare so that measures could be taken to ensure international security in the atomic age. At the turn of the millennium, fifty-five years later, our global security climate shared little in common with that of the Manhattan Project or Cold War years. In recognising the changed relationship between the major Nuclear Weapons States (NWS) and the hubris of contemporary nuclear strategic doctrine, then-UN Secretary General Kofi Annan included in the Millennium Development Goals a requirement for “convening a major international conference to identify ways of eliminating nuclear dangers.”<sup>4</sup> Despite a persistent effort by the disarmament movement in the decades prior to Annan’s proposal, the strategic doctrine of the world’s NWS did not evolve in response to developments in international politics. As we prepare for the 2010 Nuclear Non-Proliferation Treaty (NPT) Review Conference, Oppenheimer’s rationale has been undermined by disinterest of the global

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<sup>1</sup> Else, Jon, Peoples, David, and Peoples, Janet, *The Day After Trinity*. Pyramid, 1980. Motion Picture, time into film: 1 hour 27 mins.

Note: *The Day After Trinity* is a documentary featuring interviews with major contributors to the Manhattan Project (including Robert J. Oppenheimer), and includes footage of the Trinity test and Hiroshima and Nagasaki detonations. Archival material provided by: Los Alamos Scientific Laboratories, National Atomic Museum, American Institute of Physics, National Archives, The Bancroft Library, Fox Movitone News, Hearst Metrotone News, NBC, UPTIN, DASIAC

<sup>2</sup> *Ibid.*, time into film: 1 hour.

<sup>3</sup> Robert Wilson, Physicist, worked closely with Oppenheimer and convened a meeting at Los Alamos (after VE Day, but prior to Hiroshima), involving a number of physicists who were participating in the Manhattan Project. The purpose of the meeting was to explore alternatives to using a nuclear weapon on a Japanese city or cities; one proposal suggested a controlled demonstration to the Japanese military of the new weapons capability.

<sup>4</sup> Annan, Kofi A. We, *The Peoples: The Role of the United Nations in the 21st Century*. 2000. New York, United Nations Department of Public Information, p. 79.

community and a lack of initiative on the part of the NWS. We must respond to the evolution of global polity and the subsequent requirement for a new approach to weapons proliferation by establishing an appropriate framework for achieving a reduction of nuclear force levels without negatively impacting current military apparatus'. Not only is this achievable, it will make us more secure.

## The Evolution of Nuclear Doctrine

In the years following Hiroshima and Nagasaki fear of a possible recurrence that would be suffered elsewhere at the hands of the two rising and increasingly adversarial nuclear superpowers lent itself to an arms race that would culminate in a tenuous stand-off; during which, several generations across the globe would be hostage to the climate of relations between the Soviet Union and the United States. Advocates for the vertical proliferation<sup>5</sup> of nuclear weapons have since argued that the strategy of Mutually Assured Destruction (MAD), tempered during this stand-off, ensconced the world in a period of stability and ensured peace at a time when a reliance solely on conventional weapons may have resulted in large scale state-to-state warfare. Certainly, inasmuch as a deterrent is an essential component of military strategic doctrine, the U.S.-Soviet nuclear deterrent served a defined purpose in an unstable time. However, in order for a deterrence mechanism to invoke sufficient fear to prevent aggression, it must reasonably be assumed that there is the possibility of it being used. Thus, a balance-of-terror, engendered by mutual suspicion, was delicately manipulated to provide a sense of equilibrium: North Atlantic Treaty Organisation (NATO) nuclear forces offset any possible Soviet conventional superiority; "The alliance also maintained high levels of readiness to compensate for NATO's smaller numbers of conventional forces. Like NATO's nuclear posture, these military assets were specific to the Soviet threat."<sup>6</sup> The threat was real and immediate enough that military strategy, rapidly evolving in an attempt to cope, transcended conventional war-planning and undertook a far more calculative and dangerous role. It is worth noting that while many 'proliferation-optimists' are quick to associate the Cold War with an extended period of peace (at least between the major powers: oft referred to as the "Long Peace"<sup>7</sup>), it was nevertheless a radically volatile period during which the consequences of total war were far more serious than any other time in human history. Despite exorbitant risk, the nuclear deterrent was

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<sup>5</sup> "Vertical proliferation" refers to the development and modernisation of nuclear weapons by existing NWS (as opposed to "horizontal proliferation" which refers to the spread of nuclear weapons technology to other states).

<sup>6</sup> Celeste A. Wallander, "International Assets and Adaptability: NATO After the Cold War," *International Organization* 54, no. 4 (2000): 705-735, p. 715.

<sup>7</sup> For further reading: John Lewis Gaddis, *The Long Peace: Inquiries into the History of the Cold War* (New York: Oxford University Press, 1987), "The Cold War, the Long Peace, and the Future," *Diplomatic History* 16, no. 2 (1992): 234-246 and "The Long Peace: Elements of Stability in the Postwar International System," *International Security* 10, no. 4 (1986): 99-142. John Mueller, "The Catastrophe Quota: Trouble After the Cold War," *The Journal of Conflict Resolution* 38, no. 3 (1994): 355-375. Richard Ned Lebow, "The Long Peace, the End of the Cold War and the Failure of Realism," *International Organization* 48, no. 2 (2008): 249-277.

largely accepted as a necessary but not sufficient condition<sup>8</sup> of the maintenance of stability in the international system. The concept of military deterrence must be well understood in order to comprehend the ensuing arms race; but also to establish a context for non-proliferation in a post-Cold War era.

Deterrence, whether conventional, nuclear or otherwise, “is an integral part of the permanent canon, or lore, and the eternal practice of statecraft and strategy.”<sup>9</sup> In the milieu of Cold War Europe, states party to both NATO and the Warsaw Pact relied on the provision of deterrence by either the U.S. or Soviet Russia respectively to meet the threat of complete annihilation. In Clausewitz’ comprehensive analysis *On War* he posits: “What is defence in conception? The warding off a blow. What is then its characteristic sign? The state of expectancy (or of waiting for this blow).”<sup>10</sup> Additionally, he notes: “Frequent periods of inaction in war remove it further from the absolute, and make it still more a calculation of probabilities.”<sup>11</sup> Certainly both statements were exemplified during the “Long Peace”. The drive to design weapons that would approach the ability to deliver victory or complete destruction, or both, in a single blow gave rise to a period of escalation that grew quite out of proportion with the actual military efficacy of the weapons themselves. Nuclear weapons were effectively unusable—at least, not to the benefit of any state-actor—and in the unprecedented destructive power that they harnessed, nuclear weapons provided the ultimate countermeasure. The ‘calculation of probabilities’ became the methodology through which a state of expectancy was prevented from manifesting a state of war—the consequences of which, would have been horrific: The destructive power of the bomb dropped on Hiroshima measured a mere 15 kilotons<sup>12</sup> (equivalent to 15,000 tons of TNT), but the largest bomb created during the Cold War, the 1961 Soviet *Tsar Bomba* had a yield of over 58 Megatons<sup>13</sup>—equivalent to more than 58 million tons of TNT. Proliferation became a vehicle for competition. By 1986 global stockpiles had surpassed 70,000 nuclear warheads—of which, 97

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<sup>8</sup> Clandestine operations in the third world; such as the supply of the Mujahedeen in Afghanistan with anti-aircraft missiles to undermine Soviet expansion, intelligence and counter-intelligence operations and treaties between third world countries and the U.S. and Soviet Union (see: Zafar Imam, "Soviet Treaties With Third World Countries," *Soviet Studies* 35, no. 1 (1983): 53-70 and David Kinsella, "Conflict in Context: Arms Transfers and Third World Rivalries During the Cold War," *American Journal of Political Science* 38, no. 3 (1994): 557-581.) all contributed to the maintenance of a delicate balance of power. Furthermore, Vietnam and Korea (whether ‘proxy-wars’ or otherwise) were examples of a reaction to the possible spread of communism during the Cold War. There were numerous, complex tactical and strategic initiatives on the part of the politico-military infrastructures of the U.S. and Soviet Union in addition to an overarching nuclear doctrine to which public discourse on the matter has largely been subsumed. It would be a mistake to attribute a peaceful outcome to the Cold War solely on the maintenance of a nuclear deterrent; but for the scope of this paper, exploring the logic behind strategic nuclear policy and its justification during the Cold War will be sufficient to establish a context for contemporary international security concerns.

<sup>9</sup> Collin S. Gray, "Deterrence in the 21st Century," *Comparative Strategy* 19, no. 3 (2000): 255-261, p. 255.

<sup>10</sup> Carl von Clausewitz, *On War*, ed. Tom Griffith. (Hertfordshire: Wordsworth Editions Limited, 1997), p. 279 Note: The publication cited (translation by J. J. Graham and revised by F. N. Maude) is a reprint of the original work, published posthumously in 1832.

<sup>11</sup> *Ibid.*, p. 19.

<sup>12</sup> David Biello, "A New for New Warheads?," *Scientific American*, 2007, 80-85, p. 82

<sup>13</sup> Alexander V. Kalinin, "Secrets of the Soviet Nuclear Complex," *IEEE Spectrum* 31, no. 5 (1994): 32-38.

percent belonged to the U.S. and Soviet Russia<sup>14</sup>. While many of the warheads were designed to be used in conjunction with U.S.-based Inter-Continental Ballistic Missiles (ICBM), Submarine Launched Ballistic Missiles (SLBM) and various aircraft delivery systems (such as nuclear armed B-52 strategic bombers), a significant number of U.S. nuclear weapons were deployed to Europe under NATO nuclear sharing and “third party” stockpile agreements<sup>15</sup>:

*The U.S. first deployed nuclear weapons to Europe in September 1954 when the first weapons arrived in Britain. Within 10 years, deployments spread to Germany, Italy, France, Turkey, the Netherlands, Greece, and Belgium, and in 1971 the deployment peaked with approximately 7,300 nuclear warheads deployed in Europe.*<sup>16</sup>

The Soviet Union had similarly deployed nuclear weapons to states within the communist Warsaw Pact and, following the dissolution of the Soviet Union decades later, arsenals would be in the custody of a great many more nations.<sup>17</sup> These deployments were to become a violation of Articles I and II (the direct or indirect transfer or receipt of nuclear technologies)<sup>18</sup> of the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) but this was less of a concern than was the provision of a multilateral nuclear deterrent that could match the enemy threat in size and capability—particularly the ability to react immediately to suppress aggression (and to react to developments in delivery systems that drastically shortened the launch-to-impact times of ICBMs<sup>19</sup>). Given the rapid escalation, both sides were drawn to a position of unremitting hair-trigger alert, involving a network of advance warning systems upon which ‘launch-on-warning’ capabilities relied:

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<sup>14</sup> Robert S. Norris and Hans M. Kristensen, "Global Nuclear Stockpiles, 1945-2006," *Bulletin of the Atomic Scientists* 62, no. 4 (2006): 64-67, p. 64.

Notes: Article prepared by the Natural Resources Defense Council.

<sup>15</sup> “Third party” stockpile agreements “are government-level agreements between the United States, third nation and user nation. It guides stockpiling of nuclear weapons within the territory of a third-nation for the use by NATO committed forces of a signatory user nation.” Kristensen, Hans M. U.S. Nuclear Weapons in Europe; A Review of Post Cold-War Policy, Force Levels and War Planning. 2008. New York, Hans M. Kristensen; Natural Resources Defense Council, p. 12.

<sup>16</sup> *Ibid.*, p. 24.

<sup>17</sup> The majority of tactical weapons being in the possession of Belarus, Kazakhstan and the Ukraine but with a number of tactical weapons in Georgia, Kirghizia, Tajikistan, Turkmenistan, and Uzbekistan. All were returned to Russia by 1992—but strategic nuclear weapons still remain in Belarus, Ukraine and Kazakhstan. This is of primary concern to the Cooperative Threat Reduction (CTR) program today whose mandate includes the securing of “loose nukes” in ex-Soviet satellite nations against modern security threats—particularly terrorism.

<sup>18</sup> The United Nations Department for Disarmament Affairs. The Treaty for the Non-Proliferation of Nuclear Weapons. 1970. Note: Article I prohibits NWS party to the NPT from transferring nuclear weapons technologies or the use or control of such technologies to “any recipient whatsoever” nor may NWS assist or encourage the aforementioned. Article II prohibits NNWS party to the NPT from acquiring nuclear weapons or the control of them and forbids the manufacture or acceptance of assistance in the manufacturing of nuclear weapons. Full text can be found at: <http://www.un.org/events/npt2005/npttreaty.html>. (Accessed 5 August 2008).

<sup>19</sup> Shaun Gregory and Alistair Edwards, "The Hidden Cost of Deterrence: Nuclear Weapons Accidents 1950-88," *Bulletin of Peace Proposals* 20, no. 1 (1989): 3-26. An example of such a delivery system is given on page 5—the Soviet launch of the Sputnik Satellite demonstrated an ICBM capability that could threaten U.S. assets in half an hour or less.

*A move from a policy of “launch after confirmed impact” to a policy of “launch on warning” would decrease the probability of not being able to respond to an attack . . . but it would also increase the probability of an accidental strike following a false alert . . . One of the dangers involved in such an escalation of alert stages by both sides is that, even if the escalation were halted prior to the intentional launch of nuclear weapons, the probability of an accidental exchange becomes very high.*<sup>20</sup>

In a high-consequence environment, any mistake can be very costly—furthermore, an extended period of tension lends itself very well to error. The ability to maintain a balance-of-terror in the zero-sum game of nuclear deterrence without error was a challenging task, made exponentially more-so as the duration of time spent under high-alert increased. The breakdown of U.S. airborne alert<sup>21</sup> tactics in the 1960s is worthy of mention:

*On 24 January 1961 a B-52 on airborne alert crashed as a result of structural failure, dropping two nuclear weapons near the town of Goldsboro in North Carolina. On 17 January 1966 another B-52 on airborne alert crashed with a KC-135 refuelling tanker over the southern coast of Spain, dropping four nuclear weapons near the town of Palomares and causing widespread radioactive contamination. After another accident on 21 January at Thule in Greenland in which a B-52 on alert crashed with four nuclear weapons aboard, the US ended airborne alert.*<sup>22</sup>

The practice of ensuring that nuclear weapons remain unarmed until immediately prior to use ensured that the aforementioned accidents did not result in nuclear detonations. However, there still existed the potential to mistakenly launch a nuclear strike based on inaccurate data or a system malfunction. In 1984 at Warren Air Force Base in Wyoming, an armoured car was parked over a silo in an attempt to prevent the accidental near-launch of a malfunctioning

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<sup>20</sup> M. E. Paté-Cornell and J. E. Neu, "Warning Systems and Defense Policy: A Reliability Model for the Command and Control of U.S. Nuclear Forces," *Risk Analysis* 5, no. 2 (1985): 121-138, p. 122. Paté-Cornell (Associate Professor, Department of Industrial Engineering and Engineering Management, Stanford University) and Neu; (Lieutenant Colonel, U.S. Air Force, Weapon System Liaison Division, Office of Legislative Liaison, Pentagon), discussed four response policies: Launch on Impact, Launch on Attack Assessment, Launch Under Attack and Launch on Warning. In their analysis, they proposed a computational method for determining the probability of accidental nuclear strike based on “variations of probabilities of Type I and Type II errors,” concluding that their model could assist in the reduction of the possibility of accidental nuclear war.

<sup>21</sup> ‘Airborne alert’ refers to the maintenance of a permanently airborne rotation of nuclear-armed aircraft. This was an escalation of ‘ground alert’ which provided a number of nuclear-armed aircraft on high-alert, manned by aircrew trained to deploy within the predicted time interval between launch and impact of any potential enemy nuclear strike. For further analysis of U.S. Airborne Alert and the Palomares incident see: John Megara, "Dropping Nuclear Bombs on Spain: The Palomares Accident of 1966 and the U.S. Airborne Alert" Florida State University, 2006).

<sup>22</sup> Gregory & Edwards, "The Hidden Cost of Deterrence: Nuclear Weapons Accidents 1950-88," p. 5.

Minute-man missile<sup>23</sup>. Four years earlier, one hundred nuclear-armed B-52s were alerted for take-off to conduct a retaliatory strike on the Soviet Union following a false alarm generated by a faulty computer chip in the North American Aerospace Defense Command (NORAD) computer.<sup>24</sup> These were not isolated events—in the appendix to the report; *The Hidden Cost of Deterrence: Nuclear Weapons Accidents 1950-88*, Gregory and Edwards cite more than 230 nuclear weapons accidents involving the U.S., U.K. and U.S.S.R., and they speculate that this was only a fraction of the total number of accidents due to the inherent secrecy of the topic. Meanwhile, developments in tactical nuclear weapons would necessitate a reliance on the conduct and professionalism of individual military personnel not bound to the same level of responsibility as strategic command—adding further to the potential for accidental misuse. The report goes on to cite numerous examples of human error (by far the most common source of accident) including drug and alcohol abuse by soldiers actively manning nuclear-capable missile batteries and the tampering with or attempted detonation of nuclear devices by psychologically unstable soldiers. The numbers are significant—for example: 30,000 individuals were removed from nuclear duties during the period 1975-1984 for psychiatric reasons. Naturally, nuclear weapons were subject to the same technological shortcomings and safety compromises as other weapons in the NWSs inventory; even in the hands of responsible and rational actors, the possibility existed (and does exist) for misuse or system failures with catastrophic consequences. The situation required measures to be taken towards de-escalation if MAD was to be a sustainable method from which to derive a sense of stability.

Subsequently, counter-measures to arrest the momentum of the nuclear weapons industry had been proposed at various international and bilateral fora and by the early 1980s there had been significant progress towards establishing a framework for non-proliferation. Treaties existed to restrict both the testing and placement of strategic nuclear weapons.<sup>25</sup> The Treaty on Nuclear Non-Proliferation of 1968 (NPT)<sup>26</sup> comprehensively outlined obligations towards multilateral disarmament and non-proliferation and years of difficult negotiations resulted in the ratification of the first major bi-lateral arms agreement between the U.S. and the Soviet Union: The Strategic Arms Limitation Treaty (SALT I), signed in Moscow in 1972 by Brezhnev and Nixon, essentially froze missile development and “included a number of positive aspects from the American perspective such as the cancellation of a costly ABM [Anti-Ballistic Missile] race that would have threatened the stability of nuclear deterrence.”<sup>27</sup> The Limited Test Ban Treaty (1963)

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<sup>23</sup> ‘Vehicle Parked on Silo After Launch Signal’, *Washington Post*, 29 October 1987, p. 7. As cited by Gregory & Edwards, p. 5.

<sup>24</sup> Gregory & Edwards, “The Hidden Cost of Deterrence: Nuclear Weapons Accidents 1950-88,” p. 8.

<sup>25</sup> See: Antarctic Treaty (1959), Limited Test Ban Treaty (1963), Outer Space treaty (1967) and the Seabed Arms Control Treaty (1972). Text of each treaty is available from the U.S. Department of State: <http://www.state.gov>.

<sup>26</sup> Full text of the treaty is available from: The United Nations Department for Disarmament Affairs. The Treaty for the Non-Proliferation of Nuclear Weapons. <http://www.un.org/events/npt2005/npttreaty.html>. (Accessed 5 August 2008).

<sup>27</sup> Lloyd Jensen, “Negotiating Strategic Arms Control: 1969-1979,” *The Journal of Conflict Resolution* 28, no. 3 (1984): 535-559, p. 543. The Anti-Ballistic Missile Treaty was also signed in 1972 despite concerns over the

and the Threshold Test Ban Treaty (1976) regulated nuclear testing, exclusively to beneath-the-surface testing and up to a 150 kiloton limit respectively. Though both the U.S. and Soviet Union acted within the guidelines, the latter was not ratified until 1990 largely due to mutual concerns over unintended breaches, and U.S. government concerns over a perceived inadequacy of the required verification mechanisms contributing to speculations that the Soviets were detonating devices in excess of the 150 kiloton limit. It should be noted that accurate data shows both sides were acting within the Treaty requirements. While effective verification was difficult at the time of the Limited Test Ban Treaty, by the 1970s “yields down to 12 kilotons could be detected and distinguished from earthquakes even if set off in dry alluvium to muffle the seismic effect; in hard rock identification was possible down to 1 ½ kilotons.”<sup>28</sup> While underground testing continued, SALT II talks held between 1972 and 1979 reached a consensus on specified reductions in nuclear arsenals and the prohibition of new missile programs. The SALT talks, though arduous, were the most extensive arms negotiations in history—and were successful largely due to the willingness of both sides to make numerous concessions along the way.<sup>29</sup> By the time the Reagan administration entered office there was a solid foundation from which to build on the success of prior non-proliferation negotiations. Reagan, though an advocate for the maintenance of a credible deterrent (in the form of the Strategic Defense Initiative or ‘Star Wars’), was disturbed by the trend towards nuclear proliferation. He recognised “the need for the world to step back from the nuclear precipice”<sup>30</sup> and his “apprehensions about nuclear weapons [were] reflected in his attempts in 1983-1984 to negotiate with the Russians.”<sup>31</sup> Russian leadership shared similar concerns, believing a less volatile method of competition to be “the preferable alternative to an unrestrained arms race and to recurring high-risk politico-military confrontation; that detente and a relaxation of tensions [was] in the interests of the Soviet Union; and that nuclear war would not be.”<sup>32</sup> A common interest towards disarmament inspired the

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difficulty of verifying the use of Multiple Independently Targetable Re-entry Vehicles or MIRV—essentially multiple warheads on a single delivery device. In "Mutual Deterrence and Strategic Arms Limitation in Soviet Policy," Garthoff cites, as of 1972, the existing 1046 U.S. Poseidon and Minute-man III missiles had 6000-7000 independently targetable warheads posing a considerable counterforce capability. The Vladivostok principles pertaining to SALT II effectively undermined the ban on MIRV by outlining the requirement to verify compliance on a restriction on MIRV instead of a ban. See: Luther J. Carter, "Strategic Weapons: Verification Keeps Ahead of Arms Control," *Science*, 1975, 936-939.

<sup>28</sup> Luther J. Carter, "Strategic Weapons: Verification Keeps Ahead of Arms Control," *Science*, 1975, 936-939. p. 937. For yield data, see: Frode Ringdal, Peter D. Marshall, and Ralph W. Alewine, "Seismic Yield Determination of Soviet Underground Nuclear Explosions at the Shagan River Test Site," *Geophysics Journal International* 109, no. 1 (1992): 65-77, Lynn R. Sykes and Ines L. Cifuentes, "Yields of Soviet Underground Nuclear Explosions From Seismic Surface Waves: Compliance With the Threshold Test Ban Treaty," *Proceedings of the National Academy of Sciences of the United States of America* 81, no. 6 (1984): 1922-1925.

<sup>29</sup> The extensive concessions made during the 23 rounds of talks from 1969-1979 are listed in detail in the appendices to the report: Lloyd Jensen, "Negotiating Strategic Arms Control: 1969-1979," *The Journal of Conflict Resolution* 28, no. 3 (1984): 535-559.

<sup>30</sup> As cited in: Barbara Farnham, "Reagan and the Gorbachev Revolution: Perceiving the End of Threat," *Political Science Quarterly* 116, no. 2 (2001): 225-252. p. 232. Source of citation not given.

<sup>31</sup> *Ibid.*, p. 230.

<sup>32</sup> Raymond L. Garthoff, "Mutual Deterrence and Strategic Arms Limitation in Soviet Policy," *International Security* 3, no. 1 (1978): 112-147. p. 112

ensuing summits in Geneva, Reykjavik and Washington where Gorbachev and Reagan succeeded in negotiating the Intermediate Nuclear Forces (INF) Treaty.<sup>33</sup> Further summits in Moscow and New York finalised the Strategic Arms Reduction Treaty (START—later renamed START I) in place of SALT II which had been painstakingly negotiated by the Ford and Carter administrations but later dropped by Reagan in response to the Soviet invasion of Afghanistan and the discovery of a “Soviet brigade” in Cuba. START was to impose further limitations on the number and type of delivery systems<sup>34</sup> and the size of corresponding nuclear stockpiles. The treaty was eventually ratified in 1991—only months before the collapse of the Soviet Union. In George Bush’s State of the Union address in January the following year, he called for deeper cuts in the nuclear arsenals of the U.S. and the new Russia than was proposed in START and Yeltsin responded in kind by suggesting each side reduce strategic warheads to 2000-2500. The same year, the two sides signed the ‘Joint Understanding on Further Reductions in Strategic Offensive Arms’ which introduced the goal of eliminating MIRVed ICBMs<sup>35</sup> and thus became colloquially known as the ‘De-MIRVing Agreement’. This paved the way for START II, signed in 1993 by Bush and Yeltsin that outlined binding deadlines for phased reductions and included stringent regulations on MIRVing SLBMs in addition to protocols for eliminating MIRVed ICBMs.

During the START II negotiations, Bush initiated a restructuring of the Strategic Defense Initiative Organization (ballistic missile defence) program modifying the area of its focus to a program called the Global Protection Against Limited Strikes (GPALS). This initiative was initially supported by Russian leadership under the context of a jointly created, multilateral Global Protection System (GPS) that would focus “in particular on third-country attacks and also on the possibility of accidental or unauthorized launch from a nuclear power.”<sup>36</sup> GPALS was to utilise between 700 and 1,000 satellites deployed in a close-to-earth orbit (“brilliant pebbles”) that would act as missile interceptors and incorporate a number of higher-altitude satellites (“brilliant eyes”) equipped with infrared sensors and x-ray lasers.<sup>37</sup> Thus, the dissolution of the Soviet Union fostered a move towards a global security partnership and energized U.S.-Russian co-operation on bilateral strategic arms reductions. The peaceful transformation of global polity experienced during this period of time ought to have contributed to the momentum of the disarmament movement; however, that was not the case.

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<sup>33</sup> The INF came into force in 1987—primarily eliminating ballistic missiles and cruise missiles with ranges between 300-3400 miles. After the collapse of the Soviet Union in December 1991, 11 of the 14 new republics also became party to the INF.

<sup>34</sup> To promote more stabilising forms of delivery system—such as strategic bombers which travel considerably slower than ICBMs and can be called off an attack.

<sup>35</sup> Refer to note 28 for further information on MIRVing.

<sup>36</sup> Steven Hadley, "Global Protection System: Concept and Progress," *Comparative Strategy* 12, no. 1 (1993): 2-6, p. 3. The possibility of accidental or unauthorized use was demonstrated the year Bush proposed GPALS by the Soviet coup attempt. Both President Gorbachev (whose leadership was challenged) and the subsequently democratically elected President Yeltsin supported the concept for a GPS against limited ballistic missile attack.

<sup>37</sup> Detlev Wolter, *Common Security in Outer Space and International Law* (Geneva: United Nations, 2005), p. 41. Further information on space-based missile defence systems are provided later in this text.

The purpose of a nuclear deterrent is less defined in the absence of a competing aggressor; though the risks that had motivated the urgent de-escalation of the nuclear arms race still existed, the emergence of the U.S. as a Cold War victor and a weakening post-Soviet Russia undermined any motivation towards a re-evaluation of U.S. force levels. While the reduction in strategic nuclear weapons was inarguably a positive stabilising factor, it did not accurately reflect the climate of relations between the U.S. and Russia who, even after the implementation of START II, would retain thousands of nuclear weapons on alert.<sup>38</sup> Though START II had been signed by both parties, the Duma delayed ratification due to concerns over inequities in the treaty. “The major argument put forward by Russian critics was that the accord required the country to eliminate the main component of its deterrent force—its MIRVed ICBMs, while it allowed the U.S. to retain the principal component of its deterrent force—the Trident SLBMs.”<sup>39</sup> Meanwhile, the U.S. desire for a reprieve from the ABM Treaty antagonised Russian fears of the “costly ABM race” that could “threaten the stability of nuclear deterrence”<sup>40</sup> which the ABM Treaty had been touted as avoiding decades earlier. To compound concerns, President Clinton later dropped Bush’s SDIO plans in favour of a National Missile Defence (NMD) program<sup>41</sup> and despite Clinton’s attempt to appease Yeltsin at the Helsinki Summit in 1997<sup>42</sup> U.S. intentions were palpably anti-ABM Treaty. This hampered progress on the START III treaty that was concurrently being negotiated as Russia asserted its acceptance would be subject to U.S. development of its NMD program.<sup>43</sup> Furthermore, tensions were high regarding NATO’s expansion into Eastern Europe: “Russian critics and analysts feared that NATO’s expansion would produce a new fault line between the East and the West”<sup>44</sup> and Russia’s Defence Minister stated that “Russia might have to point its nuclear missiles at Eastern European countries if they joined NATO.”<sup>45</sup> After Vladimir Putin took over as President of Russia he assumed the position that the U.S. must take the initiative and Ambassador Graham concurred—stating, with regards to START II, “if the treaty is not able to move forward to bring it into force, the U.S. will be on the wrong side of the issue, as the U.S. already is in respect to the Comprehensive Test Ban Treaty (CTBT), as well as the ABM/NMD issue and the NATO nuclear doctrine.”<sup>46</sup> START II never did enter into force. Instead, in 2002 the new Administration led by George W. Bush

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<sup>38</sup> Kalpana Chittaranjan, "START II Moves--Does It Really?" *Strategic Analysis* 24, no. 8 (2000): 1455-1465, p. 1463.

<sup>39</sup> *Ibid.*, p. 1458.

<sup>40</sup> Refer to p. 8 and n 28.

<sup>41</sup> This was, at least in part, as a result of North Korea’s three stage rocket test (Taepo Dong I) in 1998. The proposed NMD would involve (among other measures) Exoatmospheric Kill Interceptors to be deployed in Alaska and North Dakota by 2007 and 2010 respectively. Refer to page 34, n. 156 for more information on NMD and Exoatmospheric Kill Interceptors.

<sup>42</sup> Clinton and Yeltsin discussed the principles of Theatre Missile Defence (TMD) systems and reaffirmed the distinction between TMD and ABM systems.

<sup>43</sup> START III included the requirement to reduce stockpiles to 2000-2500 warheads. Russia had proposed a more significant reduction to 1000-1500 warheads which the U.S. Joint Chiefs of Staff opposed.

<sup>44</sup> Kalpana Chittaranjan, p. 1459.

<sup>45</sup> *Ibid.*

<sup>46</sup> *Ibid.*, p. 1464.

withdrew from the ABM Treaty in order to pursue its Ballistic Missile Defence program. Russia, feeling threatened once more, responded by withdrawing from START II—with the added effect of removing START III from the agenda. This left in force only START, which expired on December 5, 2009 (on whose replacement Obama and Medvedev have recently concluded negotiations) and the Strategic Offensive Reductions Treaty (SORT also known as the Moscow Treaty)<sup>47</sup> that was signed by Putin and George W. Bush in 2003 and is due to expire in 2012.

## The Current Climate

In spite of the significant progress in diffusing the perilous circumstances that had generated decades of proliferation and posturing, the end of the Cold War did not bring about a change in nuclear doctrine. As of 2005, the U.S. was “still deploying 480 nuclear weapons in Europe . . . stored at eight air bases in six NATO countries—a formidable arsenal larger than the entire Chinese nuclear stockpile [whilst] the military and political justifications given by the United States and NATO for U.S. nuclear weapons in Europe are both obsolete and vague.”<sup>48</sup> NATO security policy condones its reliance on nuclear weapons and maintains first-strike<sup>49</sup> and launch-on-warning policies. A considerable proportion of the U.S., Russian and NATO nuclear weapons remain on high-alert and modernisation programs bleed funds that could be utilised in other branches of the military. The U.S. in particular has devoted billions of dollars since the end of the Cold War to upgrade its nuclear arsenal—any concerns the U.S. Department of Energy (DOE) once had about the preservation of a nuclear weapons program in a post-Cold War era have been laid to rest:

*To . . . set a course for the nuclear weapons enterprise, Congress, in the FY1994 National Defense Authorization Act (P.L. 103-160), Section 3138, directed the Secretary of Energy to “establish a stewardship program to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons, including weapons design, system integration, manufacturing, security, use control, reliability assessment, and certification.” Since then, the Clinton and Bush Administrations have requested, and Congress has approved, tens of billions of*

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<sup>47</sup> SORT does not include verification mechanisms, nor are its reduction targets permanent. Moreover, either side can withdraw from the treaty as long as three months notice is given—presumably the length of time required for stockpiled reserve warheads to be brought into operational service.

<sup>48</sup> Kristensen, Hans M. U.S. Nuclear Weapons in Europe; A Review of Post Cold-War Policy, Force Levels and War Planning. 2008. New York, Hans M. Kristensen; Natural Resources Defense Council, p. 5.

<sup>49</sup> This is despite the rising significance of Negative Security Assurances that were developed to ensure NNWS will not be attacked by a first strike, and is in contradiction to the recent ICJ ruling on the circumstances under which a nuclear strike would be contrary to international law. It should be noted that while NATO still maintains a first-use policy, the Soviet Union under the leadership of Brezhnev formally declared an unconditional no first-use policy to the UN General Assembly in 1982.

*dollars for this Stockpile Stewardship Program (SSP), which is presented in NNSA's budget as "Weapons Activities."*<sup>50</sup>

Developments in the current Stockpile Stewardship Program have largely been the result of the U.S. Defence Department's Nuclear Posture Review submitted to Congress on 31 December 2001. U.S. Secretary of Defense Donald Rumsfeld heralded the Nuclear Posture Review as building on the Quadrennial Defense Review that had "established the foundation for America's post-Cold War defense strategy . . . the Nuclear Posture Review [NPR] will transform the Cold War era offensive nuclear triad into a New Triad designed for decades to come."<sup>51</sup> This 'New Triad', while optimistically proposing "a credible deterrent at the lowest level of nuclear weapons consistent with U.S. and allied security"<sup>52</sup> is not completely forthright. The New Triad is comprised of: Nuclear and non-nuclear offensive strike systems; active and passive defences; and a "revitalised defense infrastructure that will provide new capabilities in a timely fashion to meet emerging threats."<sup>53</sup> Implicit in the revitalised infrastructure is the requirement for a restructuring of the nuclear weapons complex (the Complex)<sup>54</sup> to address safety concerns over the longevity of the current stockpile and to maintain the ability to "design, develop, manufacture and certify new warheads in response to new national requirements; and maintain readiness to resume underground testing if required."<sup>55</sup> Subsequently, in 2005, a report entitled *Recommendations for the Nuclear Weapons Complex of the Future* presented a vision for the creation of "Complex 2030" as the necessary evolution of the U.S. nuclear weapons program. The report<sup>56</sup> was thoroughly reviewed in a CRS report for Congress the following year that indicated the "Task Force recommendations may be at odds with U.S. nuclear non-proliferation policy."<sup>57</sup>

This highlights a moot point: Can stockpiles be safely maintained without testing? It is imperative that existing stockpiles be as safe as possible; that stringent protocols exist to ensure nuclear weapons technology remains failsafe as long as it remains in a portfolio of capabilities—however, is this conceivable without some form of testing? The technology proposed by the

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<sup>50</sup> Medalia, Jonathan. CRS Report for Congress. *The Reliable Replacement Warhead Program: Background and Current Developments*. RL32929. 18-9-2007. Congressional Research Service, p. 10.

<sup>51</sup> Rumsfeld, Donald. U.S. Secretary of Defense, Foreword to the Nuclear Posture Review: Kristensen, Hans M. *Nuclear Posture Review Report [Reconstructed]*. 8-1-2002. Nuclear Information Project, Federation of American Scientists. Note: While much of the NPR still remains classified, excerpts of the Report submitted to Congress on 31 December 2001 were first made available at <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>. This version is a reconstruction which reinstates the leaked material to their original pages.

<sup>52</sup> *Ibid.*

<sup>53</sup> *Ibid.*

<sup>54</sup> The Complex refers to the eight government-owned sites responsible for the development, maintenance and deactivation of U.S. nuclear weapons.

<sup>55</sup> Nuclear Posture Review Report, p. 30.

<sup>56</sup> Secretary of Energy Advisory Board Nuclear Weapons Complex Infrastructure Task Force. *Recommendations for the Nuclear Weapons Complex of the Future*. 13-7-2005. US Department of Energy

<sup>57</sup> Medalia, Jonathan. CRS Report for Congress. *Nuclear Weapons Complex Reconfiguration: Analysis of an Energy Department Task Force Report*. RL33256. 1-2-2006. Congressional Research Service. 11-8-2008.

Reliable Replacement Warhead Program (RRW) aimed to replace warheads safely without testing; and apprehension regarding the life expectancy of Plutonium Pits under the U.S. Life Extension Program (LEP—a pre-cursor to the RRW Program<sup>58</sup>) were debated at length. The MITRE Corporation of the JASON program issued the following findings:

*[L]aboratories have also made significant progress in prioritizing the unresolved questions regarding the aging of stockpile weapons. The labs have also identified key metrics to assess the effects of aging . . . The Level 1 Milestone Report should indicate that the primaries of most weapons system types in the stockpile have credible minimum lifetimes in excess of 100 years and that the intrinsic lifetime of Pu in the pits is greater than a century.*<sup>59</sup>

The most recent spending associated with the maintenance of U.S. stockpiles was signed into law by Obama in October 2009. The fiscal year 2010 Energy and Water Development Appropriations Bill budgets \$1.51 billion for “work directly related to maintaining the U.S. nuclear weapons stockpile. The legislation provides \$223.2 million for the Life Extension Program (LEP) for the W76 warhead, the only LEP currently being undertaken by the NNSA. The LEP is intended to allow the 1970s-era W76 to remain in service for another 30 years without conducting nuclear tests.”<sup>60</sup>

This, it seems, may remain a contentious issue since the current NPR goes on to state (with respect to the Comprehensive Nuclear-Test Ban Treaty), that “while the United States is making every effort to maintain the stockpile without additional nuclear testing, this may not be possible for the indefinite future.”<sup>61</sup> While technological shortcomings may be the limiting factor in an argument for stockpile safety vs. testing, it is political will that determines the alert status of warheads. In a 2005 article for *Foreign Policy*, ex-U.S. Secretary of Defense Robert McNamara explained that of “the 8,000 active or operational U.S. warheads, 2,000 are on hair-trigger alert, ready to be launched on 15 minutes’ warning. . . . We have been and remain prepared to initiate the use of nuclear weapons—by the decision of one person, the president—against either a nuclear or nonnuclear enemy whenever we believe it is in our interest to do so.”<sup>62</sup> The NPR contradictorily claims “U.S. forces are not on ‘hair-trigger’ alert and rigorous safeguards exist to

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<sup>58</sup> Congress recently halted funding for the RRW Program.

<sup>59</sup> Hemley, R. J., Meiron, D., Bildsten, L., Cornwall, J., Dyson, F., Drell, S., Eardley, D., Hammer, D., Jeanloz, R., Katz, J., Ruderman, M., Schwitters, R., and Sullivan, J. Pit Lifetime. 2007. Note: Performing Organisation: The MITRE Corporation, JASON Program Office. Sponsoring Organisation/Monitoring Agency: National Nuclear Security, US Department of Energy.

<sup>60</sup> Carl Harvey and Daniel Horner, “Congress Funds Non-proliferation Work,” *Arms Control Association*, November 2009. <http://www.armscontrol.org/print/3938>

<sup>61</sup> Nuclear Posture Review Report, p. 54.

<sup>62</sup> Robert S. McNamara, “Apocalypse Soon,” *Foreign Policy*, 2005, 28-35, p. 29.

ensure the highest levels of nuclear weapons safety”<sup>63</sup> but then goes on to state, with respect to phased reductions in Peacekeeper ICBMs, that “those Peacekeeper missiles remaining during the elimination process will be kept on alert to provide a necessary contribution to the U.S. portfolio of capabilities.”<sup>64</sup> Conventional weapons are legitimately outlined as a necessary supplementation of a smaller nuclear stockpile whilst the FY03-07 Future Years Defense Plan (FYDP) outline a number of new projects to be undertaken to address new and emerging threats such as Hard and Deeply Buried Targets (HDBT) and mobile and re-locatable targets; to be addressed by “Follow-on ICBM”, “Follow-on Strategic bombers” and a variety of adaptations to the nuclear missile arsenal.<sup>65</sup>

The NPR claims to address post-Cold War security challenges in a manner that both reduces reliance on nuclear weapons and increases U.S. military flexibility and effectiveness. To this end, it appears to fall short. The report sanguinely cites a lack of ‘ideological sources of conflict’ between the U.S. and Russia to motivate “a more cooperative relationship with Russia and a move away from the balance-of-terror policy framework, which by definition is an expression of mutual distrust and hostility;”<sup>66</sup> but then goes on to say “Russia’s nuclear forces and programs, nevertheless remain a concern . . . In the event that U.S. relations with Russia significantly worsen in the future, the U.S. may need to revise its nuclear force levels and posture.”<sup>67</sup> This may be prudent, but a reduced arsenal—with greater safeguards<sup>68</sup>—can still afford a credible deterrent while allowing more funds to be spent on military intelligence and counterinsurgency operations which are quickly becoming far more relevant than a large nuclear arsenal. The current administration, it seems, has recognized this with Obama publicly stating on numerous occasions his desire for a nuclear free world. While admitting that this is unlikely to be achieved in this generation, it provides a backdrop for evaluating the progress of many disarmament initiatives and it sets a tone for the current negotiations on a replacement for START—expected to enter into force sometime in 2010. Furthermore, Obama has iterated a desire to move away from tactical nuclear weapons and is modifying the current plans for a ballistic missile shield in Europe—a move that has been met with some scepticism in the U.S. and in some NATO nations—but which has nevertheless provided a platform for invigorated and substantive negotiation with Russia.

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<sup>63</sup> Nuclear Posture Review Report, p. 54. Note that by 2007, the U.S. had made reductions in the number of operationally deployed warheads and to the number of warheads on alert. Canadian Pugwash Group cited the number of weapons on alert status belonging to the U.S. and Russia were 1,600 and 1,000 respectively in July 2007. See: Canadian Pugwash Group. *The Imperative of Revitalising Nuclear Disarmament*. 2007. Nova Scotia, p. 3. Note: Document based on the workshop convened by the Pugwash Conferences on Science and World Affairs and the Middle Powers Initiative on the 50th Anniversary of the Pugwash Conferences.

<sup>64</sup> Ibid.

<sup>65</sup> Addressing a number of ‘needs’ such as extended range, trajectory shaping and improved accuracy.

<sup>66</sup> Nuclear Posture Review Report, p. 17.

<sup>67</sup> Ibid.

<sup>68</sup> Suggestions will be given in Part II.

## Horizontal Proliferation

The counter-productive nature of the horizontal proliferation of nuclear weapons technologies and the continued reliance upon a doctrine of nuclear deterrence by the NWS are, paradoxically, intrinsically linked. Advocates for the vertical proliferation of the five NPT-bound NWS (China, France, Russia, the U.K. and the U.S.) argue that the belligerence of non-democratic states requires the constant presence of a deterrence mechanism, that nuclear weapons technologies are an inescapable reality of the twenty-first century. That “[n]ew arms control arrangements need to be developed that reflect the reality that nuclear proliferation cannot be prevented, only managed. Before reaching this point, however, the international community must lay to rest the myth that nuclear disarmament is achievable and begin to explore the prospects for a multi-polar system of nuclear deterrence in the years ahead.”<sup>69</sup> As a result, state parties not in possession of nuclear weapons see the reliance upon nuclear weapons as a prerequisite for meaningful inter-state politics and a guarantor of national security. Furthermore, many Non-Nuclear Weapon States (NNWS) are frustrated at the inequality of a system that condones the possession of nuclear weapons by some states while simultaneously prohibiting other states from acquiring them. At the 1995 NPT Review Conference “many NNWS were extremely dissatisfied with the progress on the disarmament of the nuclear weapon states . . . and argued that they would not continue to accept the inequality of a dual global system of nuclear haves and have-nots.”<sup>70</sup>

The adherence to current nuclear deterrence policies—and faith that a multi-polar system of deterrence can be rationally administered—is fundamentally flawed. In the first instance, the peril that necessarily accompanied MAD during the Cold War was arguably justified by the rationale behind the threat-of-use of a nuclear weapon preventing an attack by another rational (and aggressive), nuclear armed state-actor. In the current context, the primary security threats faced by nation-states most frequently come not from other rational state-actors, but from internal strife threatening the stability of developing nations, borderline failed states (that may or may not acquire nuclear weapons technology) and non-state and rogue-state (or “states-of-concern”) actors to whom a nuclear deterrent is unlikely to be effective. Unlike a rational government that relies on the cohesiveness of its people in order to derive its influence in the international arena, an extremist minority, if it gains control over a state, may be less concerned with the possible consequences on the majority of the population (whom will inevitably be the target of a reprisal). A nuclear deterrent would not work at all in the case of a non-state terrorist organisation which may share a border with people to whom it has no connection whatsoever. The second case—rationally administering a multi-polar system of deterrents—is implausible. There can be no assurances of the logical application of the principles of war that govern military interactions between states when dealing with a large number of unstable nations—as is the case

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<sup>69</sup> Andrew O’Neil, “Nuclear Proliferation and Global Security: Laying the Groundwork for a New Policy Agenda,” *Comparative Strategy* 24 (2005): 343-359. p. 343.

<sup>70</sup> Jonathan Granoff, “The Nuclear Nonproliferation Treaty and Its 2005 Review Conference: A Legal and Political Analysis,” *Journal of International Law And Politics* 39, no. 4 (2007): 995-1006.

in many regions of the world that would likely acquire nuclear weapons technologies if the current trends towards the diffusion of technology and information is not reversed. The declining significance of a nuclear deterrent and the limited military usefulness of nuclear weapons against the current security threats (despite the NPR's attempts to address modern security challenges with new nuclear weapon technologies) emphasize the asymmetrical nature of contemporary nuclear doctrine: Current stockpiles have become a far greater challenge to international security than a contributor to it. As Canadian Ambassador Paul Meyer somewhat optimistically asserted;

*Once the mature nuclear powers stop treating these weapons as crucial to their security or standing in the world, a potent motivation for others to acquire or retain them will disappear. Once the leading powers stop attributing political status to those possessing nuclear weapons, when they are viewed as liabilities rather than assets in a country's international standing and level of development, then we will witness a sea-change in global security and the creation of a new nuclear disarmament imperative.<sup>71</sup>*

Instead, we are witnessing the fall-out from squandered opportunities to advance disarmament objectives. There are now nine states that have detonated nuclear devices; the five declared NWS, along with; India, Pakistan, North Korea and Israel, with the potential for another NWS to emerge in the Middle East (namely, Iran). The motivation behind each state's development of nuclear weapons technology has differed, however, in every case the perceived benefits of wielding nuclear weapons were (are) considered by the protagonists to be far greater than the costs. In 1995, Abdul Sattar—Pakistan's former Ambassador to India—warned that “India's stockpile of weapons-grade uranium continues to mount, and its build-up of missiles threatens to destabilize the security situation in the region.”<sup>72</sup> Pakistan's concerns over the militarisation of its neighbour—with whom tension has resulted in intermittent conflict, particularly over the territory of Kashmir, for the better part of half a century—were a significant motivating factor in its bid to acquire nuclear weapons. “Pakistan's nuclear policy has been India-centric, revolving around perceptions of threat from and hostility towards India. The issue of prestige, evident in Pakistan's desire to acquire equal standing with India in nuclear weapons development, also looms large.”<sup>73</sup> Whereas India's motivation is popularly attributed to a distinct rivalry with China in the bid to become a regional power, in conjunction with ideological aspirations of the

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<sup>71</sup> Ambassador Paul Meyer, “Canada's Role in Nuclear Disarmament,” Presentation to CPG-MPI Roundtable, 27 February 2004. As cited in: Canadian Pugwash Group and Middle Powers Initiative. Building Bridges: The Non-Proliferation Treaty and Canada's Nuclear Weapons Policies; A Policy Paper for the Canadian Government. 2004.

<sup>72</sup> Abdul Sattar, "Reducing Nuclear Dangers in South Asia: A Pakistani Perspective," *The Nonproliferation Review* 2, no. 2 (1995): 40-54, p. 40.

<sup>73</sup> Samina Ahmed, "Pakistan's Nuclear Weapons Program: Turning Points and Nuclear Choices," *International Security* 23, no. 4 (1999): 178-204, p. 179.

Bharatiya Janata Party<sup>74</sup>; “It [India] considered nuclear weapons a means for attaining great power status; rivalry with China spurred its program.”<sup>75</sup>

Both nations received sporadic assistance and condemnation from the West; Canada assisted in the creation of a Pakistan’s research reactor in Karachi and also contributed the reactor design that would be used in India’s Operation Shakti tests. Following the tests, Canada ceased cooperation. However, by 1995 India would have an “estimated 100-plus Hiroshima-size bombs. The Canadian 40 megawatt thermal (MWt) reactor alone accounts for 400 of the over 500 kilograms of weapons grade plutonium needed for that purpose.”<sup>76</sup> Cold War posturing also played a significant role. The U.S. identified Pakistan’s strategic significance in the wake of the Soviet invasion of Afghanistan and sanctions imposed by the Carter administration that were designed to curtail Pakistan’s nuclear program were waived:

*Unwilling to alienate the Zia regime, the Reagan administration intentionally ignored the rapid growth of Pakistan’s nuclear weapons infrastructure . . . even . . . U.S. intelligence reports in 1983 and 1984 that China provided Pakistan the design for a low-yield uranium device, based on data China had obtained during its fourth series of tests in 1964.*<sup>77</sup>

When the Soviet threat diminished, the U.S. ceased military and economic support of Pakistan and reinstated sanctions in an attempt to reverse the trend of proliferation. Though damaging to Pakistan’s economy, this would have little effect on its nuclear posture, to which the leadership now attributed the averting of further conflict with India<sup>78</sup> while the subsequent Pakistani faith in the newly developed nuclear deterrent<sup>79</sup> had the effect of subordinating discourse on non-proliferation and the CTBT. Developments in the Middle East involving the war on terror have led once again to Pakistan’s increased strategic significance. However, Pakistan’s unstable government (and economy) and an escalation in terrorist activity within its own borders signal a major threat to the security of its nuclear weapons.

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<sup>74</sup> The Bharatiya Janata Party’s (BJP’s) ideological goals included “the revival of Hinduism as a basis for nationhood, and the construction of a more assertive and strong India on the world stage. In this context, nuclear weapons are perceived as necessary to win respect in a world dominated by nuclear power.” Jyotika Saksena, “Regime Design Matters: The CTBT and India’s Nuclear Dilemma,” *Comparative Strategy* 25 (2006): 209-229, p. 217.

<sup>75</sup> Sattar, p. 41.

<sup>76</sup> *Ibid.*, p 42.

<sup>77</sup> Samina Ahmed, p. 187.

<sup>78</sup> The diffusion of tensions between India and Pakistan surrounding India’s “Brass Tacks” exercise (1986-1987) and the uprising in India-held Kashmir (1990) were partially attributed to the nuclear deterrent.

<sup>79</sup> The 1998 Ghauri ballistic missile test demonstrated Pakistani ability to strike any city in India. With an alleged range of 1500kms and the ability to carry a nuclear payload, it was a major development in Pakistan’s capabilities.

## The Middle East

In the Middle East, another NWS—albeit undeclared—maintains a fragile monopoly on nuclear weapons. Israel, though neither supporting nor refuting claims, is recognised as possessing the most advanced nuclear weapons program outside of the five declared NWS. Despite already having a well developed program by the mid-sixties former Prime Minister Levi Eshkol claimed that Israel would not be the first nation to introduce nuclear weapons in the Middle East,<sup>80</sup> insisting instead that the program was for peaceful purposes. The statements by renowned whistleblower Mordechai Vanunu to the contrary were quickly addressed—Vanunu spent 18 years in prison for releasing information regarding Israel’s weapons program at Dimona. His account, published in the New York Times, outlined a growing nuclear capability that was augmented by contemporary developments in Israel’s delivery systems. The Jericho II Intermediate Range Ballistic Missile (IRBM)<sup>81</sup>, of the same era, is capable of carrying a 1000kg nuclear warhead and striking targets as far away as Tehran or Benghazi.

Israel’s position amongst the contemporary nuclear weapon states is unique. It is reasonable to suggest that Israel has pressing and enduring security concerns stemming from the hostile actions of nations that have expressed desire to destroy the Jewish State. Subsequently, the nuclear program has become a cornerstone of Israel’s strategic posture—an important political tool for the avoidance or moderation of armed confrontation. There are many similarities between Israel’s current situation and NATO’s pursuit of a nuclear counter to soviet conventional forces during the Cold War. It is speculated that Iraq’s decision not to employ Chemical Biological Warfare (CBW) tactics against Israel in the Gulf War (despite launching hundreds of Scud missiles at Israeli cities) was due to the perceived threat of a possible nuclear reprisal. Though Israeli leadership has prudently maintained secrecy over its capabilities (minimising the political tension and potential for arms racing), it has articulated ruminations of its ability to inflict devastation on its enemies whenever threats to its security become overtly antagonistic. Israel also possesses the only operational ballistic missile defence shield<sup>82</sup> in the world and is planning on expanding its capability to a three stage system that addresses short, medium and long-range threats. Though accidental or deliberate use is unlikely, the possibility for another state or non-state actor in the region to develop or acquire a nuclear weapon significantly complicates the maintenance of Israel’s nuclear arsenal. It would be foolish to assume in the absence of a forthcoming nuclear disarmament initiative in the Middle East that the surrounding states would

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<sup>80</sup> The inconsistency of this statement with the capability Israel obviously possessed might be addressed by assuming the PM was using the word ‘introduce’ in the context of an aggressive reaction. That is; the introduction of nuclear weapons into previously conventional warfare.

<sup>81</sup> Also known as MD 660. The missiles were the result of an indigenous program that aimed to produce a longer range version of the MD 620 or “Jericho I” which were supplied by French firm Marcel Dassault. The MD 660 also has a considerably greater payload capability than the MD 620.

<sup>82</sup> The first Arrow missile defence battery was installed in 2000 with 80% of the costs being fronted by the U.S. there are now two and a third is under consideration. Source: [http://www.nti.org/e\\_research/profiles/Israel/Missile/index\\_3563.html](http://www.nti.org/e_research/profiles/Israel/Missile/index_3563.html). (Accessed 17 August 2008).

remain nuclear-weapon free in perpetuity, particularly given recent developments in Iran's nuclear program. Thus, Israel will have to consider the possible consequences of a multi-polar nuclear Middle East if a long-term target of nuclear disarmament is not approached in earnest.

In the recent past, the band-aid solution has been to prevent the surrounding Arab nations from reaching a level of development in their peaceful programs that would contribute to weapons capabilities—the bombing of Iraq's Osiraq reactor in 1981 and of a Syrian facility in 2007 are a testament to Israeli pre-emptive and preventative strategy. Israel appears bound to this doctrine, refusing to instigate disarmament (it remains outside of the NPT) until a regional peace accord is ratified in the Middle East. In recognising Israel's predicament, the creation of a Nuclear Weapons Free Zone in the Middle East is a high priority for the disarmament movement and a necessary step in fostering Israeli confidence in the ability of international law to assist in the maintenance of stability. Jonathan Granoff, President of the Global Security Institute, spoke at the *International Conference on Iran's Peaceful Nuclear Program and Activities*<sup>83</sup> in Tehran, suggesting several initiatives that would contribute to the stabilization of the Middle East's precarious nuclear situation. These included, the honouring of Security Council resolutions by Iran (whilst simultaneously bringing these decisions before the International Court of Justice for review), the multi-nationalization of the nuclear fuel-cycle (specifically with respect to Iran, although this suggestion could be extended to the whole of the Middle East) and the “commencement of negotiations regarding a nuclear weapon-free Middle East amongst all relevant states, including non-NPT members.”<sup>84</sup> By employing international law as a vehicle for achieving successful civilian nuclear programs, states-of-concern can exercise their “inalienable right . . . to develop research, production and use of nuclear energy for peaceful purposes without discrimination”<sup>85</sup> whilst the subsequent intrusive verification mechanisms would provide some security guarantees for NWS (such as Israel), increasing the much-needed confidence required for a move towards non-proliferation.

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<sup>83</sup> Jonathan Granoff, *Go Up to Go Over: Iran Conference Report*. Paper presented at International Conference on Iran's Peaceful Nuclear Program and Activities: Modality of Cooperation with the IAEA, Tehran, Iran. March 9, 2008.

<sup>84</sup> Ibid.

<sup>85</sup> The United Nations Department for Disarmament Affairs. *The Treaty for the Non-Proliferation of Nuclear Weapons*. 1968, Art. IV.

Notes: Text can be found at: <http://www.un.org/events/npt2005/npttreaty.html> (Accessed 5 August 2008)

## Part II

### A Course of Action

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#### Overview

The current situation, though unsatisfactory, is not irreversible. Libya announced its nuclear program in 2003<sup>86</sup> followed quickly by Col. Qadhafi's assertion that the program would be disarmed. The same year, the IAEA was invited to verify the claim and Qadhafi pledged support to the NPT (ratified by Libya in 1975) while the program transitioned to peaceful purposes. South Africa too demonstrated unilateral disarmament by voluntarily dismantling its nuclear weapons program. Pretoria's program, developed during a period of domestic unrest was renounced by the post-apartheid South African leadership demonstrating "that at least under some conditions, unilateral disarmament is not only possible, but can improve a nation's security."<sup>87</sup> The case in The Democratic People's Republic of Korea (DPRK/North Korea) has been somewhat more tedious, but nevertheless underscores the importance of reversing trends towards proliferation. Pyongyang withdrew from the NPT in January 2003 and, following a break-down in Six Nations<sup>88</sup> talks over the next three years, successfully tested a nuclear device in October 2006<sup>89</sup>. The same year, DPRK tested an ICBM—though the test was unsuccessful. Tenuous politico-military posturing resulted, in 2007, in an agreement whereby the Yŏngbyŏn nuclear facility was shut-down (confirmed by the IAEA) in return for 1 million tons of heavy fuel oil. In June of 2008 DPRK handed over its nuclear declaration and the Six Nations resumed talks to move towards verification. However, antagonistic posturing by DPRK led to a further nuclear test in May of 2009 and, in October a news release stated that the program had

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<sup>86</sup> Libya had received warhead plans, uranium and centrifuges from Pakistan's notorious Abdul Qadeer Khan. A.Q. Khan also supplied Iran and North Korea with nuclear materials and intelligence also indicated an attempt to peddle nuclear technology to Syria.

<sup>87</sup> Nuclear Threat Initiative, South Africa Profile. [http://www.nti.org/e\\_research/profiles/SAfrica/index.html](http://www.nti.org/e_research/profiles/SAfrica/index.html). (Accessed 16 August 2008).

<sup>88</sup> Six Nations include: DPRK/North Korea, South Korea, Japan, China, Russia and the U.S.

<sup>89</sup> The device was successfully detected and estimated to be less than 1 kiloton. The detection of such a small yield weapon underscored the advances in technology in recent years and addressed concerns over the verification mechanisms for a CTBT.

reprocessed 8,000 spent nuclear fuel rods—providing enough plutonium for another nuclear bomb. The U.S. Congressional Research Service estimates that DPRK possesses up to 50kg of additional plutonium<sup>90</sup>. While the Yŏngbyŏn facility appears to not have been re-built, the DPRK have also issued warnings that they have the capacity to begin enriching uranium. None of the recent developments in DPRK are confidence inspiring. Recommendations for military intervention are beyond the scope of this report; however, it is evident that the weight of a nuclear arsenal has already proved sufficient to leverage recent negotiations at least partly in favour of DPRK. The current situation complicates for the rest of the NWS the methodology through which certain disarmament goals must be pursued. A certain minimum presence of a deterrence mechanism may still be a requirement for the foreseeable future while stockpiles are reduced and weapons are phased out of current alert status. Nevertheless, reductions and positive work can still be achieved in the non-proliferation regime while the international community searches for a solution to belligerent state-actors.

Many countries have adopted legislation to renounce the proliferation of nuclear weapons and in doing so reinforced sentiments felt by the majority of people the world over; that the global community must move towards nuclear non-proliferation and disarmament. The creation of Nuclear Weapons Free Zones (NWFZs)<sup>91</sup> that include 111 countries<sup>92</sup> to bolster the Antarctic Treaty (1959), Outer Space treaty (1967) and the Seabed Arms Control Treaty (1972) have provided a considerable platform from which NNWS can pressure other states to adopt similar protocol. New Zealand, under the *New Zealand Nuclear Free Zone, Disarmament, and Arms Control Act 1987* preserved in its national legislation its commitment to ensure its land and territorial waters remain free of all forms of nuclear energy—going so far as barring nuclear powered (or armed) ships from entering its waters.<sup>93</sup> Austria and Mongolia also enacted domestic legislation to create national nuclear free zones. In 1996 the United Nations General Assembly adopted a resolution that called upon the creation of a consolidated *Nuclear-Weapon-Free Southern Hemisphere and Adjacent Areas* that would make the entire southern hemisphere a NWFZ (extending into the northern hemisphere where regional NWFZ exist). However, there are still obstacles to the implementation of such a treaty (such as NWS concerns over the right to transport nuclear weapons in international waters) and many parties to existing NWFZ have yet to

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<sup>90</sup> Peter Grier, “Has North Korea Just Become a Bigger Nuclear Threat,” *The Christian Science Monitor*, November 2009. <http://www.csmonitor.com/2009/1104/p02s07-usfp.html>

<sup>91</sup> Regional Treaties: Treaty of Tlatelolco for Latin America and the Caribbean (33 members), the South Pacific or Rarotonga Treaty (12 members), The Southeast Asian NWFZ Treaty or Bangkok Treaty (10 members) and The Pelindaba Treaty (49 members), Central Asian NWFZ (5 members). Single State treaties (2 members: Mongolia and Austria). Note that some of these treaties are yet to come into force.

<sup>92</sup> As of 2007.

<sup>93</sup> This resulted in considerable damage to the Australia New Zealand United States (ANZUS) Treaty, due to NZ prohibiting US vessels from entering its ports. NZ’s refusal to cooperate with the US on this issue further damaged long standing defence arrangements and (along with New Zealand’s refusal to participate in the invasion of Iraq in 2001) contributed to a possible free trade agreement between the two countries being removed from the agenda and destroyed military agreements between the two countries—particularly regarding the purchase of U.S. F-16s and the sale of the RNZAF A-4Ks and Mb-339s.

ratify their respective regional treaties. Overall, there is still cause for optimism; although there are a number of substantive measures that must be taken immediately to ensure the tiny-triumphs of the non-proliferation regime are not invalidated by the inaction of NWS.

The 13 Practical Steps<sup>94</sup> outlined by the United Nations in the Final Document of the 2000 NPT Review Conference still provide a basis for achieving effective measures relating to “cessation of the nuclear arms race at an early date and to nuclear disarmament”<sup>95</sup> although, some of the proposed steps are more achievable in the current context, than others. Among these measures, it calls for the entry into force and implementation of START II and START III and for measures to be taken by all NWS to move towards disarmament pursuant to obligations directed by Article VI and by paragraph 4 (c) of the Principles and Objectives for Nuclear Non-proliferation and Disarmament.<sup>96</sup> Such measures have been laboriously outlined by various think-tanks and policy advisory groups diligently working towards solutions to the nuclear debacle. The Canadian Pugwash Group (CPG) has advocated for middle powers, such as Canada, to adopt a more assertive approach in the pursuit of disarmament objectives and utilise multilateral fora and organisations (particularly NATO) to exercise greater influence on the policies of NWS. In a policy paper for the Government of Canada,<sup>97</sup> the Middle Powers Initiative (MPI) and CPG illuminate the inconsistent relationship between Canadian and NATO policy, citing that while Canada’s official stance is that nuclear disarmament is the “only sustainable strategy for the future,”<sup>98</sup> NATO views the possession of nuclear weapons to be a requirement for “the foreseeable future.”<sup>99</sup> Therefore, as a member of NATO, Canada must work towards the implementation of a variety of recommendations made by the report, including; the adoption by NATO of no first-use and no launch-on-warning policies, the de-alerting of operationally deployed nuclear missiles, the cessation of NATO nuclear-sharing and subsequent removal of nuclear weapons to national territories and the elimination of tactical nuclear weapons (a goal shared, at present, by the current U.S. administration). In terms of national voice, Canada’s will be loudest as long as it is deployed in Afghanistan. The sacrifice that Canada has made throughout the Canadian Forces’ deployment in Kandahar reinforces Canada’s relevance to NATO and affords an opportunity for Canada to exert some influence on the shaping of NATO policy. However, the robustness of diplomatic influence is in perpetual flux and Canada’s may not necessarily be guaranteed after the Harper government’s planned withdrawal from combat operations in 2011. In politics, as in combat, timing is everything and Canada’s stance is

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<sup>94</sup> Full text of the 13 Practical steps can be found in the Appendix of this report.

<sup>95</sup> The United Nations. The Treaty for the Non-Proliferation of Nuclear Weapons, Article VI.

<sup>96</sup> “The determined pursuit by the nuclear-weapon States of systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goals of eliminating those weapons, and by all States of general and complete disarmament under strict and effective international control.” United Nations. Principles and Objectives for Nuclear Non-proliferation and Disarmament. NPT/CONF.1995/32/DEC.2. 1995.

<sup>97</sup> Canadian Pugwash Group and Middle Powers Initiative. Building Bridges: The Non-Proliferation Treaty and Canada's Nuclear Weapons Policies; A Policy Paper for the Canadian Government. 2004.

<sup>98</sup> Ibid., Executive Summary, p. iv.

<sup>99</sup> Ibid.

seemingly supported at present by the current U.S. president—affording perhaps the best opportunity in recent history for Canada to generate a change in NATO nuclear doctrine. We should not squander this opportunity in the same manner as we have our contribution to the shaping of U.S. BMD plans in North America. Canadians should be aware that both the protection of sovereignty *and* the projection of Canadian values are often best achieved through a hard-line stance in multilateral organisations within which we can affect policy and outside of which we have little recourse for debate.

## **Non-strategic Nuclear Weapons**

In a briefing paper for the 2007 NPT Preparatory Committee in Vienna, the Middle Powers Initiative (MPI) identified seven priorities to be implemented by the 2010 Review Conference. They were: verified reduction of nuclear forces; standing down of nuclear forces (de-alerting); negotiation of a Fissile Materials Cut-off Treaty; bringing the CTBT into force; strengthened negative security assurances; regulation of nuclear fuel production and supply, and improved NPT governance.<sup>100</sup> These priorities concern us all—there are clearly a number of requirements that can only be met multilaterally—however, there is substantial responsibility on the part of the NWS to set a tone for nuclear disarmament in the 21<sup>st</sup> Century. In their seven priorities, MPI emphasize the importance of extending START (the de-MIRVing agreement) which expired in December 2009 and state that in order to “have the confidence needed to move to low levels of nuclear forces and a nuclear-weapons free world, verification and transparency measures need to be implemented beginning now, above all regarding U.S.-Russian stocks and reductions.”<sup>101</sup> An important component of these reductions would be the elimination of non-strategic nuclear weapons. The global community of NNWS has long argued that non-strategic weapons breach humanitarian principles and cannot be justified under a doctrine of deterrence in the same way the strategic weapons are. Despite debates in U.S. Congress about the role of nuclear weapons in the 21<sup>st</sup> Century, there has been no focus “on the difference between strategic and nonstrategic nuclear weapons or on the particular concerns that have been raised about nonstrategic nuclear weapons in the past decade. Instead, they have explored, in greater detail, administration requests for funding for research into new types of nuclear weapons.”<sup>102</sup> Reassuringly, the current U.S. administration appears willing to re-evaluate its policies on tactical nuclear weapons but Russian policy still presently relies on a contribution of tactical nuclear weapons to its arsenal. The current negotiations between Medvedev and Obama will be of immeasurable significance and will have far-reaching consequences if they do not proceed positively. In light of the renewed debate on the relevance of tactical nuclear weapons Canada, again, should partner with the U.S.

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<sup>100</sup> Middle Powers Initiative. *Towards 2010: Priorities for NPT Consensus*. Middle Powers Initiative Paper for the 2007 NPT Preparatory Committee, Vienna, 2007, p. 3.

Note: The MPI is a Program of the Global Security Institute. [www.middlepowers.org](http://www.middlepowers.org).

<sup>101</sup> *Ibid.*, p. 4.

<sup>102</sup> Woolf, Amy F. CRS Report for Congress: *Nonstrategic Nuclear Weapons*. RL32572. 9-9-2004. Congressional Research Service, p. 6.

in leading NATO discussions over the reconsideration of policies on non-strategic nuclear weapons.

## De-alerting

A prerequisite for ensuring security while stockpiles are reduced is the immediate de-alerting of nuclear arsenals. Policy recommendations from sources worldwide have long urged the U.S. and Russia to stand-down their nuclear weapons. “Back from the Brink” was a campaign that aimed to bring de-alerting to the fore during the 2000 U.S. presidential campaign. It outlined a number of ways of de-alerting nuclear weapons including; storing warheads separately from their delivery systems; pinning open the switches used to fire missile motors; removing the pneumatic mechanisms that open missile silo covers; and removing the tritium bottles from warheads.<sup>103</sup> An interesting extension of the call to de-alert nuclear forces is the concept of “virtual nuclear arsenals.” In a 1995 article in *Survival*, Michael Mazarr cites Sweden as an example, who despite closing its sole nuclear facility in Agesta, maintains the ability to construct a nuclear weapon if required. He argues that Sweden never dismantled the Agesta facility after closing it down, and maintains a core group of physicists devoted to the study of nuclear technology to supplement the decades of experience Sweden gained while the facility was operational. “The relevant question about Sweden's nuclear capacity therefore is not *whether* it could build nuclear weapons, but rather *how quickly* it could build them.”<sup>104</sup> He posits that if this rationale could be applied, albeit in a more comprehensive fashion, to the current NWS then we could approach a “weapon-less deterrence” based “virtual arsenals”—that is, de-activated or partially dismantled weapons held in reserve rather than the current situation of high-alert. This may also engender more faith on the part of NNWS as to their safety in the event of accidents, miscalculations or the rapid degeneration of relationships with the NWS who at present cannot guarantee nuclear weapons will not be used against NNWS whether intentionally or otherwise. These concerns have frequently been voiced by calls for strengthened negative security assurances underscoring the responsibility NWS have in alleviating security concerns as a result of their nuclear posture.

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<sup>103</sup> Nuclear Weapons Convention Monitor: Updating the Debate on the Prohibition and Elimination of Nuclear Weapons. Datan, Merav. 2000. International Physicians for the Prevention of Nuclear War. Waheguru Pal Singh Sidhu, “De-alert Nuclear Weapons,” p. 6.

Note: This is the first in a series of periodic bulletins on the progress of a Nuclear Weapons Convention. The NWC Monitor is a continuation of the discussion regarding the Model NWC submitted to the UN as a discussion document in 1997.

<sup>104</sup> Michael J. Mazarr, “Virtual Nuclear Arsenals,” *Survival* 37, no. 3 (1995): 7-26, p. 8.

## Negative Security Assurances

Negative security assurances are declarations by NWS that nuclear forces will not be used against NNWS party to the NPT that have forsworn the acquisition or use of nuclear weapons. While China has pledged unconditional negative security assurances, the U.S. and other NWS have been reluctant to forego the prerogative to use whatever force is deemed necessary to maintain their security. The U.S. emphasized that unexpected contingencies and an unpredictable security climate could produce a sudden regime change or the acquisition of nuclear weapons by a declared NNWS; that this situation mitigates the requirement for absolute security assurances.<sup>105</sup> The heightened concerns of NNWS regarding the validity of security assurances prompted debate at the 2007 NPT Preparatory Committee. Ratification by the NWS of protocols pertaining to security assurances for the Treaties of Tlatelolco, Rarotonga, Bangkok and Pelindaba was insufficient to quell distrust as “States parties stressed that efforts to conclude a universal, unconditional and legally binding instrument on negative security assurances to non-nuclear-weapon States should be pursued as a matter of priority.”<sup>106</sup> Concerns were also voiced that the revised nuclear posture of some NWS may undermine commitments to politically binding negative security assurances as described in Security Council Resolution 984.<sup>107</sup>

In addition to negative security assurances binding NWS to a policy of non-use, the International Court of Justice (ICJ) ruled in 1996 “that the threat or use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law.”<sup>108</sup> Though this statement is somewhat ambiguous, it is generally accepted that the circumstances under which a nuclear weapon could legally be employed are so rare as to not exist. Richard Falk pointedly asserted “the United States Government position has rested mainly on a facile and unpersuasive application of *Lotus* reasoning, namely, that states are permitted to do anything not expressly prohibited by rules resting on consent, and that in the absence of express treaty prohibition, joined by the United States, nuclear weapons may be legally employed.”<sup>109</sup> Such rhetoric is hardly acceptable from a state that firmly promotes democracy as a vehicle for liberty, freedom and humanity. As a

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<sup>105</sup> In the 2001 NPR the U.S. identify North Korea, Iraq, Iran, Syria and Libya as factors in the sizing of U.S. nuclear forces—yet none had achieved the ability to use a nuclear weapon. Note that the operationally deployed and responsive nuclear forces are sized “in the context of immediate, and unexpected contingencies.” NPR, p. 16. Refer also to note 59 (Robert Mc Namara, “Apocalypse Soon”) for a commentary on U.S. first-strike policy.

<sup>106</sup> Chairman's Working Paper. 2007 NPT PrepCom Chair's Factual Summary. NPT/CONF2010/PC.1/WP.78. 2007, Section 26.

<sup>107</sup> Politically binding agreements are not subject to the same requirements for adherence as legally binding agreements. As such, there is little faith in the conditional nature of four of the five NWS negative security assurances. Full text of UN Security Council Resolution 984 (on negative security assurances) can be found at: <http://www.un.org/Docs/scres/1995/scres95.htm>.

<sup>108</sup> President Bedjaoui et al., International Court of Justice Communiqué: Legality of the Use by a State of Nuclear Weapons in Armed Conflict, 8 July 1996.

Note: The Communiqué was a response to the request for an advisory opinion by the World Health Organisation.

<sup>109</sup> Richard Falk, “Toward a Legal Regime for Nuclear Weapons,” *Revue De Droit De McGill* 28 (1983): 519-541, p. 527.

counter-argument Falk provides the “Martens Clause”<sup>110</sup> of The Hague Convention which requires the adoption by states of humanitarian law or domestic customs in the case where sufficient rules regarding conduct on a certain issue are absent or ambiguous. He also uses the example of a RAND study, published in 1982 that states “[d]estruction of societies, destruction as an end in itself, would appear to be directly opposed to the most fundamental principles of international law governing armed conflict.”<sup>111</sup> The authors of the study proclaim their motive was “to help close the chasm that now yawns between international law and U.S. strategic nuclear policies.”<sup>112</sup> Yet a quarter of a century later, after the end of the Cold War and the demise of the Soviet Union, we face the same conundrum.

## **Fissile Materials Cut-off Treaty**

Hastening progress by NWS towards posture review requires a number of measures to be taken by the global community. Included in the 13 Practical Steps was the call for the Conference on Disarmament to adopt a program of work to move expediently towards the creation of a Fissile Materials Cut-off Treaty (FMCT). The concept of a FMCT has received substantial support from the international community. In essence, it would halt the reprocessing of plutonium and the production of weapons grade uranium thereby freezing current stockpile levels and preventing further horizontal proliferation. This would in turn serve “important non-proliferation and counter-terrorist goals by limiting the size of nuclear arsenals and by reducing the risk that fissile material for weapons could be diverted or stolen.”<sup>113</sup> The primary challenges to the introduction of a FMCT are the difficulty of effective verification and the strain of implementing IAEA safeguards in enrichment plants in NNWS—particularly given the expected increase in demand for nuclear energy as the global community explores alternative sources of energy. Neither of these is insurmountable; but a lack of progress by the Conference on Disarmament has hampered progress. In the Conference Report from the Workshop on the Nuclear Non-Proliferation Treaty in March 2008, concerns were raised over the prospects of negotiating a FMCT at the Conference on Disarmament: “While all participants agreed on the need to begin negotiations, views varied on the likelihood of this occurring at the Conference on Disarmament (CD) in the near future.”<sup>114</sup> Some promise has been shown recently with the U.S., as new revolving president of the CD, placing informal meetings to discuss a range of concerns back on the agenda. A plan

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<sup>110</sup> Hague Convention [No. IV]: Respecting the Laws and Customs of War on Land. 36 Stat 2277. 18-10-1907, Preamble.

<sup>111</sup> Builder, C. and Graubard, M. *The International Law of Armed Conflict: Implications for the Concept of Assured Destruction*. 1982. RAND Publication Series R-2804-FF, p. vii.

<sup>112</sup> Builder, C. and Graubard, M., p. xiii. As cited in: Richard Falk, "Toward a Legal Regime for Nuclear Weapons," p. 525.

<sup>113</sup> The Weapons of Mass Destruction Commission, *Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms* (Stockholm: EO Grafiska, 2006), p. 103.

<sup>114</sup> Preparing for 2010: Striking a Balance Between Disarmament and Nuclear Non-proliferation. 7-3-2008. James Martin Center for Non-proliferation Studies. Note: The text is the Conference Report from the Workshop on the Nuclear Non-proliferation Treaty. L'Impérial Palace Hotel, Annecy, France.

of work was finally agreed upon in 2009 (after over a decade) that follows a period of discontent with proceedings during which many Ambassadors expressed faltering confidence in the ability of the CD to achieve anything substantial. If the plan of work does not allow for significant progress to be made towards the implementation of a FMCT by the end of 2010, the global community may have to heed Canadian Ambassador Paul Martin's recommendation to pursue other fora; "If States are serious about accomplishing something in the field of multilateral arms control, they will find the appropriate diplomatic vehicle for doing so."<sup>115</sup>

## Multilateralism of the Fuel Cycle

While progress continues on negotiations for a FMCT, proponents for the multi-lateralisation of the nuclear fuel cycle expound on the benefits of such an initiative. "From the beginning of the nuclear age, the multi-lateralisation of the fuel cycle was seen as a way to harvest the fruits of the peaceful uses of nuclear energy without running the risk of the proliferation of nuclear weapons."<sup>116</sup> The fuel cycle is widely recognised as the most technically difficult component of the creation of a nuclear weapon. It is also a critical component of the production of nuclear energy for peaceful purposes. The primary complication is that uranium enrichment plants designed to produce fuel for use in civilian reactors can potentially also enrich uranium beyond the average 4% useful for fuel to levels suitable for weapons. At the other end of the cycle, spent fuel is largely relegated to storage, although it is possible to extract plutonium for use in weapons from reprocessed spent uranium fuel (through an expensive and demanding process). In both cases (the enrichment of uranium and the separation of plutonium) the multi-lateralisation of the fuel cycle would minimise the risks posed by indigenous nuclear programs in states like DPRK and Iran. Furthermore, the anticipated rise in demand for nuclear energy in the coming years harbours concerns "that an increase in the number of enrichment and reprocessing plants and an increased flow of fissile material may increase the risk of misuse and diversion."<sup>117</sup>

Various initiatives for multi-lateralisation have been explored; the Weapons of Mass Destruction Commission proposed the establishment of "fuel-cycle states" that would be providers of the global supply of nuclear fuel; and/or a private consortium where members are granted certain 'drawing rights' to meet fuel demands. The Global Nuclear Energy Partnership (GNEP), created by the U.S., is addressing the proliferation risks associated with the reprocessing of plutonium and aims to provide a means of recycling spent fuel; thereby providing a cleaner, safer nuclear

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<sup>115</sup> Ambassador Paul Martin, Farewell Address to the Conference on Disarmament, August 2007. For up-to-date reports on the CD and other disarmament issues see [www.reachingcriticalwill.org](http://www.reachingcriticalwill.org). The website, an arm of Women's International League for Peace and Freedom (WILPF), maintains an 'electronic repository' of reliable information on disarmament fora—especially those at the UN.

<sup>116</sup> Müller, Harald. *Multilateral Nuclear Fuel-Cycle Arrangements*. 2005. Sweden, Weapons of Mass Destruction Commission.

<sup>117</sup> The Weapons of Mass Destruction Commission, *Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms* (Stockholm: EO Grafiska, 2006), p. 74.

industry—and less risk of horizontal proliferation.<sup>118</sup> Under a proposal by the GNEP a “small number of states” would produce fuel, lease it to the states that will require it as energy demands increase and then take control of the spent fuel at the other end of the cycle.<sup>119</sup> The GNEP explain in their Strategic Plan (January 2007) that “advances have been made in developing processes that are easier to safeguard, allow improved materials accountability, are more resistant to terrorist threat, and offer the possibility of placing a much reduced burden on our waste disposal facilities.”<sup>120</sup> However, the Strategic Plan is also very candid in asserting that there is no “silver bullet” in terms of technology that would prohibit states from “diverting these commercial fuel cycle facilities to non-peaceful uses.”<sup>121</sup>

Another hurdle to surmount is the resistance from some states to multi-national nuclear arrangements (MNAs) that threaten autarchy; the supply of fuel would, after all, be dependent upon the behaviour of the beneficiaries. The WMDC suggested that the objective judgement of the IAEA, as arbiter of states’ “good standing,” could address concerns—releasing states like Iran from apprehension over the potential refusal of fuel as a consequence of political friction with the NWS. Despite some states still clinging to hopes of energy independence, there has been significant interest in MNAs—The IAEA Special Event on Assurances of Nuclear Supply and Non-proliferation held in September 2006, attracted 300 participants from 61 countries. It seems that the international community is demonstrating more and more the desire to work together on the issues that concern us all. The ex-Under-Secretary General for Disarmament Affairs at the United Nations, Jayantha Dhanapala, illustrated this sentiment in a piece for the Non-proliferation Review in 2001 stating that “[t]hough one can still find faithful adherents to the creed of isolationism, the collective political, cultural, economic, and technological developments that now fall under the rubric of “globalization” render such an approach increasingly naive, unrealistic, and irrelevant.”<sup>122</sup> This notion is further exemplified by the importance of the CTBT to the non-proliferation regime.

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<sup>118</sup> Office of Fuel Cycle Management, U. S. Department of Energy Office of Nuclear Energy. The Global Nuclear Energy Partnership Strategic Plan. GNEP-167312, Rev. 0. 2007. U.S. Department of Energy. Sec 1.1 “Purpose,” p. 1-10.

<sup>119</sup> The scheme has already been discussed with governments in London, Paris, Moscow, Beijing, New Delhi and Tokyo. See: The Weapons of Mass Destruction Commission, *Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms*, p. 75.

<sup>120</sup> The Global Nuclear Energy Partnership Strategic Plan, p. 3-10.

<sup>121</sup> Ibid.

<sup>122</sup> Jayantha Dhanapala, "Multilateralism and the Future of the Global Nuclear Non-proliferation Regime," *The Nonproliferation Review* 8, no. 3 (2001): 99-106, p. 99.

## Comprehensive Test Ban Treaty

A Comprehensive Test Ban Treaty has been married to the success of the NPT from the outset. In fact, the CTBT is widely considered the most effective method of addressing the requirement to move towards “General and Complete Disarmament” (GCD) as described in Article VI of the NPT.<sup>123</sup> However setbacks due to perceived flaws in the original proposal for a CTBT have hampered progress towards achieving a treaty that includes all nations effectively and equitably. Fundamentally, the purpose of the CTBT is to permanently ban any nuclear test explosion and as such would prohibit underground testing to which the NWS have diligently been maintaining a moratorium. Despite belaboured negotiations since being opened for signature over a decade ago, the CTBT must be signed and ratified by India, Pakistan and DPRK and must be ratified by China, Egypt, Indonesia, Iran, Israel and the U.S. in order to enter into force.<sup>124</sup> The Entry Into Force (EIF) formula that was agreed upon in 1996 after considerable negotiations is itself at odds with the concerns of the threshold states upon whom the successful ratification of the treaty relies. India and Pakistan, each suspicious of the other, argued the CTBT needed to directly address disarmament<sup>125</sup> if either nation was to consider ratification. The CTBT also allows non-explosive tests, such as Hydro-Nuclear Experiments (HNEs)<sup>126</sup> and computer generated simulations, which the major NWS can use to maintain stockpile safety (a concern previously identified in Part I of this report). However, developing nuclear powers such as India and Pakistan will not have sufficient test data to rely on computer generated simulations nor do they possess the technology to ensure stockpile safety to the same level of confidence that the U.S. and other NWS can. These factors, combined with the absence of an opt-out clause (which instead would result in sanctions), were identified as possible incentives for India and Pakistan to resume nuclear testing in 1998 and to remain outside the CTBT.<sup>127</sup>

The United States failed to ratify the CTBT in 1996 and the 2001 NPR appears to still support this action. U.S. concerns in 1996 had changed little since the negotiations began on the CTBT two years earlier. U.S. Ambassador Holum stated: “The dividing line for the negotiations is between development of new weapons, which should be prohibited by a comprehensive test ban, and maintenance of existing weapons, including seeing to their safety and reliability . . . which

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<sup>123</sup> Article VI states: “Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.”

<sup>124</sup> As of August 2008. See the CTBT Organisation Preparatory Committee’s website: <http://www.ctbto.org/member-states/status-of-signature-and-ratification/> (Accessed 21 August 2008).

<sup>125</sup> The U.S. disagreed. While supporting GCD, the U.S. argued that a treaty attempting to include both would accomplish neither.

<sup>126</sup> The U.S. argues HNEs are not “explosions” due to the minute amount of energy released.

<sup>127</sup> For more information refer to: Jyotika Saksena, “Regime Design Matters: The CTBT and India’s Nuclear Dilemma,” *Comparative Strategy* 25 (2006): 209-229.

should be permitted under a comprehensive test ban.”<sup>128</sup> Former Secretary of State George Schultz, during an interview for the World Affairs Council in April 2008, supposed that U.S. concerns over verification mechanisms and stockpile safety had motivated Congress’ decision not to ratify the CTBT and suggested that advances in technology have now addressed both of these concerns.<sup>129</sup> He mused that the United States Congress could be “right both times” in that the U.S. may have been justified in its original concerns and would certainly be right if it chose to ratify the treaty in the current context.<sup>130</sup> Furthermore, if the U.S. ratified the CTBT (rather than continuing to wait for the remaining signatories to demonstrate the initiative), there is a likelihood that China would follow—providing a very different situation in South East Asia, and, perhaps, the requisite stability for renewed participation on the part of India and Pakistan. Dr. Hans Blix, during the same interview, agreed that the U.S. is the “place where the most important battle takes place” stating that the response to the initiative taken by the U.S., if it was to ratify the CTBT, would be very strong indeed; that other nations (China, then India—followed by Pakistan and so on) would ratify as a result creating a “virtuous circle, rather than a vicious circle.” However, the U.S.-India nuclear deal, proposed by Bush in 2003 and still under negotiation, complicates the current situation.

The 2006 “Henry Hyde” Act adopted by U.S. Congress grants conditional exemption of India from U.S. law that bars cooperation with states who do not allow full-scope IAEA safeguards. Increased nuclear cooperation between the U.S. and India has raised concerns over India’s motivation—particularly given its requests for fuel supply guarantees, exemptions from safeguards and from Nuclear Suppliers Group (NSG) guidelines regarding plutonium reprocessing and uranium enrichment facilities being established in states not party to the NPT<sup>131</sup>. The bilateral agreement between the U.S. and India required the IAEA to approve “an unprecedented safeguards agreement”<sup>132</sup> which the IAEA granted at the end of July 2008. While the transfer of civilian technology is subject to IAEA safeguards, the military component of India’s program remains off limits. The deal still required the approval of the 45-nation NSG and ratification from U.S. Congress, but there was already concern that granting such a concession to a nation outside the NPT creates a dangerous precedent. The concern was not that India was looking to expand its facilities for the peaceful uses of nuclear technology as granted by Article

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<sup>128</sup> Remarks of the Honourable John D. Holm, Director, United States Arms Control and Disarmament Agency, to the Conference on Disarmament, Geneva, August 4, 1994, as cited in: Maurice A. Mallin, “CTBT and NPT: Options for US Policy,” *The Nonproliferation Review* 2, no. 2 (1995): 1-11, p. 4.

<sup>129</sup> In addition to on-site verifications, the CTBTO verification system includes 337 monitoring facilities (consisting of; hydroacoustic, radionuclide, seismic and infrasound monitoring) in 89 countries (plus five satellites) capable of detecting a nuclear explosion anywhere on earth and rapidly transferring the data to analysts at the Head Quarters in Vienna who in turn pass the results on to member countries. The system demonstrated its ability with the successful detection of DPRK’s sub-1 kiloton test in 2006. See n. 92.

<sup>130</sup> Footage from this interview is available on the Fora TV website at: [http://fora.tv/2008/04/04/Hans\\_Blix\\_and\\_George\\_Shultz\\_on\\_Nuclear\\_Nonproliferation](http://fora.tv/2008/04/04/Hans_Blix_and_George_Shultz_on_Nuclear_Nonproliferation). (Accessed 29 July 2008).

<sup>131</sup> Daryl G. Kimball, “The U.S.-India Nuclear Deal: Averting a Non-proliferation Disaster,” *Disarmament Times*, Summer 2008, p. 5.

<sup>132</sup> *Ibid.*

IV of the NPT, but rather that the conditions of the bilateral agreement were not conducive to achieving the ratification of a CTBT, particularly by Pakistan who uneasy about its neighbours intentions. In early 2008 Jonathan Granoff, President of the Global Security Institute, implored India to move towards disarmament—explaining at an International Conference in New Delhi; “India has highlighted that nuclear apartheid is practically and morally unacceptable and unsustainable. Gaining the status of the privileged does not change the correctness of the analysis, but it helps provide India with the credibility to lead in a movement for a nuclear weapon free world.”<sup>133</sup>

## **Nuclear Weapons Convention**

With so much responsibility resting on the actions of the NWS and threshold states it would be a mistake to avow the actions of the rest of the world as inconsequential. The possible consequences of a failure of the nuclear disarmament movement concern us all equally and thus we all have a responsibility to further the goals of the non-proliferation regime; through multi-national fora—to put in place measures that will be conducive to disarmament whilst simultaneously increasing security; through international law—to exert direct pressure on states in breach of the NPT and other international codes; and through domestic initiatives that demonstrate the necessary willingness on the part of each nation to ensure the strength and sustainability of global nuclear disarmament. Carlos Vargas, the Vice-Chairman of the International Association of Lawyers Against Nuclear Arms (IALANA), embraces multilateralism and the sentiment that accountability is beholden by all. The dichotomy of Costa Rica—a nation without a defence force, much less a nuclear power—contributing so relentlessly and successfully to the disarmament movement is demonstrative of the nation’s unreserved faith in the rule of international law. Dr. Vargas attributes the success of his nation’s contribution to global disarmament imperatives (such as the successful 1987 peace accord forged by Costa Rican President Oscar Arias amid fierce turmoil in the Americas) to comprehensive disarmament education<sup>134</sup>, to upholding basic human rights and through resolving to conciliate disputes peacefully. During an interview with Dr. Vargas in 2008, he insisted “we [Costa Ricans] know peace. We know democracy. We understand the reason why we need to abolish nuclear weapons.”<sup>135</sup> Vargas explained that a strong obligation to protect the environment coupled with the voice that Costa Rica gains by participating in the development of international law contributed to the creation of a Model Nuclear Weapons Convention (MNWC)—a joint effort by

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<sup>133</sup> Jonathan Granoff, President, Global Security Institute, *Beyond Deterrence*. Paper presented at Towards a World Free of Nuclear Weapons, 2008.

<sup>134</sup> This is a sentiment shared by many, including Kathleen Sullivan (a Disarmament Educator and Consultant to the United Nations Office of Disarmament Affairs) who helped create the UN website <http://cyberschoolbus.un.org>; a global education project incorporating disarmament education for students aged 5-18 yrs.

<sup>135</sup> The interview was conducted in Costa Rica during a research trip in conjunction with the United Nations Association in Canada and the University of Northern British Columbia. Video footage of the interview (along with footage of interviews from numerous NGOs in New York) will be published on the internet later this year.

IALANA, the Lawyers' Committee on Nuclear Policy (LCNP), International Physicians for the Prevention of Nuclear War, and International Network of Engineers and Scientists Against Proliferation. The MNWC was submitted by Costa Rica to the United Nations in 1997 as a discussion document (A/C.1/52/7)<sup>136</sup> in response to the United Nations resolutions calling for the implementation of disarmament obligations<sup>137</sup>, in particular the requirement for "multilateral negotiations leading to an early conclusion of a nuclear-weapons convention prohibiting the development, production, testing, deployment, stockpiling, transfer, threat or use of nuclear weapons and providing for their elimination".<sup>138</sup> Like the 1972 Biological and Toxin Weapons Convention (BTCW) and the 1992 Chemical Weapons Convention (CWC), the MNWC seeks to enshrine in international law the rules and procedures for the management of disarmament objectives. The MNWC has received considerable international interest and in 1999 a workshop, convened by Dr. Vargas at the University of Costa Rica, explored the prospects for achieving an actual Nuclear Weapons Convention. Meanwhile, in New Zealand, Alyn Ware and Merav Detan co-authors of the book *Security and Survival: The Case for a Nuclear Weapons Convention*, discussed the necessary steps to achieve a NWC with parliamentarians, lawyers and the media; exercising considerable influence and garnering public and governmental support—New Zealand's then-governing party (Labour) subsequently included specific support for a NWC in its policy. Support continued to grow across the globe. The Global Resource Action Centre for the Environment (GRACE) released results from opinion polls conducted in the U.S., Russia, the U.K., Canada, Norway, Germany, Belgium, Australia and Japan that show tremendous support for a NWC.<sup>139</sup> In 2006, the United States 109<sup>th</sup> Congress adoption of Resolution 950<sup>140</sup> resolved "[t]hat the House of Representatives calls upon the President to initiate multilateral negotiations for the abolition of nuclear weapons."<sup>141</sup> This too seems to support the viability of a NWC sooner rather than later.

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<sup>136</sup> A recent version, resubmitted to the UN in April 2007 can be found through the Lawyer's Committee on Nuclear Policy website: <http://www.lcnp.org/mnwc/index.htm>, or directly at:

[http://www.2020visioncampaign.org/filestorage/337/File/1/A\\_62\\_650\\_CostaRica.pdf](http://www.2020visioncampaign.org/filestorage/337/File/1/A_62_650_CostaRica.pdf). (Accessed 21 August 2008).

<sup>137</sup> As given by the 1996 ICJ ruling on the pursuit of a conclusion to nuclear disarmament negotiations.

<sup>138</sup> UNGA Resolution 54/54 (L.43), as cited by Jorge Urbina, Ambassador, Permanent Representative of Costa Rica to the United Nations, Hamidon Ali, Ambassador, Permanent Representative of Malaysia to the United Nations, "Letter dated 17 December 2007 from the Permanent Representatives of Costa Rica and Malaysia to the United Nations addressed to the Secretary-General", International Association of Lawyers Against Nuclear Arms, Lawyer's Committee on Nuclear Policy, International Physicians for the Prevention of Nuclear War, and International Network of Engineers and Scientists Against Proliferation. Model Nuclear Weapons Convention. A/62/650. 2007.

<sup>139</sup> Nuclear Weapons Convention Monitor: Updating the Debate on the Prohibition and Elimination of Nuclear Weapons. Ware, Alyn, "Public and Political Profile for a Nuclear Weapons Convention," 20-24, p. 24.

<sup>140</sup> Available from the Library of Congress website: <http://www.congress.gov/cgi-bin/query/z?c109:H.RES.950>. (Accessed 21 August 2008).

<sup>141</sup> Kucinich, Mr., McGovern, Mr., Stark, Mr., Norton, Ms., Woolsey, Ms., Baldwin, Ms., Conyers, Mr., Lee, Ms., Moore, Ms., Hinchey, Mr., and Moran, Mr. Resolution Calling for the Abolition of all Nuclear Weapons, 109th Congress 2d Session. H. Res. 950. p. 2.

## Ballistic Missile Defence and the Weaponization of Space

Individuals and organisations around the world continue to address the Cold War legacy. As the international demand for energy increases and more states investigate their right to the peaceful benefits of nuclear technology more attention and effort will be required to successfully maintain the necessary and complex multinational systems that must ensure security of the fuel cycle. We still must achieve the signatures and ratifications of the states remaining outside the CTBT. The CD must make progress on the creation of a FMCT. There is a grave requirement for substantial progress in reconciling concerns with Iran's nuclear program and in establishing regional negotiations on the steps to achieving a comprehensive nuclear weapons agreement in the Middle East. Amidst these difficult conditions faced by the advocates of nuclear disarmament there is also a newly developing concern; due to advances in BMD technology, the principles that guided the creation of the 1967 Outer Space Treaty (OST) are under increasing strain. In the development of an OST, negotiations were largely prompted by concerns over a U.S.-Soviet arms race extending to outer space. In the late 1950s U.S. and Russian leadership had identified the outcome of such an event to be contrary to the interests of either nation and through lengthy deliberations reached a consensus that "activities in space should be devoted to peaceful purposes for the benefit of all mankind"<sup>142</sup> In 1958, The United Nations, acting on a U.S. proposal, formed an *ad hoc* committee that would one year later become the permanent Committee on the Peaceful Uses of Outer Space (COPUOS) of the General Assembly.

*During the negotiations that took place in COPUOS and the First Committee of the General Assembly, both space powers [the U.S. and the Soviet Union] announced their primary objective was to prevent the extension of the arms race into outer space. The United States and the Soviet Union submitted in COPUOS on 7 May and 30 May 1966, respectively, draft treaties providing for a complete demilitarization of the moon and other celestial bodies as well as a partial demilitarization of outer space through a ban on the deployment of nuclear and other WMD in orbit.*<sup>143</sup>

These provisions were incorporated in the 1967 OST and would guide the development of new technologies to peacefully take advantage of the "province of all mankind."<sup>144</sup> The benefits that

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<sup>142</sup> 85th U.S. Congress, First Session. National Aeronautics and Space Act, House Resolution. H.R. 12575, Public Law 86-568, Section 102 (a). 29-7-1958, p. 5.

<sup>143</sup> Detlev Wolter, *Common Security in Outer Space and International Law* (Geneva: United Nations, 2005), p. 17. Wolter cites the submissions by the U.S. and the Soviet Union as: UN Doc. A/AC.105/32, 17 June 1966, and; UN Doc. A/6352, 16 June 1966, respectively.

<sup>144</sup> United Nations General Assembly. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. 2222 (XXI) Annex. 10-10-1967, Art I, Para 1. Full text of the Outer Space Treaty and all other United Nations Treaties and Principles on outer space from 1966-2002 can be found in the report: United Nations Office for Outer Space Affairs. United Nations Treaties and Principles on Outer Space. ST/SPACE/11. 2008. New York, United Nations. Available through the United Nations website: <http://www.unoosa.org/pdf/publications/STSPACE11E.pdf>.

we have since enjoyed as a result of international cooperation and competition over the development in space based technologies have themselves contributed to a more interconnected and interdependent global commons. New and emerging security threats that have developed as a result of the hastened rate of information transfer and the closer relationships between historically distant societies have also been addressed, at least in part, by space based security and surveillance systems, effective military communications and satellite guided weapons systems. However, once a capability is developed (as we have witnessed through the advances in nuclear weapons technology) it becomes exponentially more difficult to regulate its use and diffusion. The evolution of civilian technology and the security that effective space-based assets will continue to provide will be jeopardised if such assets are weaponized.

The U.S., Russia and China have all been involved in testing and development of space weapons technologies. During the 1980s, Russian development of space-based laser<sup>145</sup> technologies mirrored similar ambitions of the U.S. during the same period of time, while Russia's planned co-orbital<sup>146</sup> system was superseded by U.S. plans for sensor satellites, space-based lasers and impact weapons<sup>147</sup>. "At present, no country has yet deployed space weapons. In the 1980s, the U.S. and U.S.S.R. tested several different ASAT [Anti-Satellite] weapons, but, recognising the grave threat that such testing posed to outer space assets, both superpowers ceased such tests well before the end of the Cold War. China broke this moratorium when it tested its first ASAT weapon on January 11, 2007."<sup>148</sup> The U.S. and the U.S.S.R. recognised the inherent instability that would be caused by pursuing space weapons as a method of ballistic missile defence and subsequently desisted space arms development but a new motivation for space weapons was later borne from the GPALS concept that aimed to address the threat posed by "states of concern" obtaining nuclear weapons. Russia and the U.S. briefly considered a multilateral approach to missile defence as a possible solution. However, it quickly became apparent that the U.S. was more interested in a unilateral approach. In *Cooperative Security in Outer Space and International Law*, Detlev Wolter explains the strategic importance of military domination of outer space supported by U.S. space power theory, citing U.S. Space Command's "Vision for 2020": "Space forces will emerge to protect military and commercial national interests and

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<sup>145</sup> With respect to concerns over Soviet research into "exotic technologies" during the Cold War, Wolter Detlev explains that "[g]iven the emphasis of the Soviet and later of Russian space policy on manned space flight, it cannot be excluded that manned Russian space stations would be equipped with space-based laser ASAT systems." See: Wolter, p. 38.

<sup>146</sup> The system essentially aimed to utilise conventional missiles to launch offensive satellites into space that would then target low orbital enemy satellites with the purpose of destroying them. The system was touted as inferior to the U.S. air-based ASAT. See: Detlev Wolter, p. 37.

<sup>147</sup> Research into military applications of lasers and other esoteric technologies has yielded several possibilities for ASAT and/or BMD systems. X-ray laser, particle beam and radio frequency weapons, interceptor missiles and mini-projectiles (such as the "rail gun" currently under development by the U.S. military) are all examples of developmental technologies affording unique capabilities that make them attractive possibilities for missile defence.

<sup>148</sup> Tyson, Rhianna. Policy Brief: Advancing a Cooperative Security Regime in Outer Space. 2007. New York, Global Security Institute, p. 3. Rhianna notes that China's ASAT test generated over 2 million pieces of debris of varying size that, according to a NASA model of calculation, will remain in orbit for up to 20 years.

investments in the space medium . . . the U.S. may evolve into the guardian of space commerce.”<sup>149</sup> Despite international condemnation of the pursuit of space weapons and widespread recognition of the instability that would follow if the weaponization of space was to be achieved, the U.S. is as reluctant to engage in substantive negotiations on a treaty to ensure security in outer space as it was eager for a reprieve from the ABM treaty.

The benefits that would arguably come as a result of the weaponization of space (namely; the extension of military reach, decreased response time and the provision of a less fallible missile defence) are far outweighed by the destabilization that would follow. The vulnerability of civilian space assets would make investing in the peaceful uses of outer space riskier, and could result in the stifling of scientific and economic development whilst the debris caused by weapons tests poses further risks to space traffic.<sup>150</sup> In the extreme, “the overwhelming position in the arms control literature assumes that the deployment of weapons systems in outer space would have serious destabilizing effects, and, hence, would fuel both the global and regional nuclear arms race on earth.”<sup>151</sup> While the intended NMD program proposes to increase security through the provision of new missile defence technologies, it will simultaneously invite corresponding programs from competing states. The weaponization of space cannot guarantee security from the threat of WMD and instead it will foster the emergence of new threats as a result of arms racing; threats to the very technology upon which militaries rely for the maintenance of stability in the current system. To “encourage a renewed arms race in pursuit of a still dubious technological fix to a largely non-existent threat would . . . undermine many of the benefits we have gained from the end of the Cold War and leave the American people significantly less secure than they are today.”<sup>152</sup> Of course, it is not solely the U.S. whose security would be undermined by the weaponization of space.

There have been a number of proposals put forth to achieve a solution that will benefit all parties equally. Confidence Building Measures (CBMs) can facilitate negotiations on contentious issues as they are generally not legally binding, while a more rigorous code of conduct would provide a legislative agreement regarding the uses of outer space. In the policy brief *Advancing a Cooperative Security Regime in Outer Space*, Rhianna Tyson of the Global Security Institute cites the Stimson Centre’s Code of Conduct that seeks, amongst other things, to: avoid collisions and dangerous manoeuvres in space; create special “caution and safety areas” around satellites; prohibit simulated attacks and anti-satellite tests in outer space; facilitate information exchanges, transparency and launch notification measures; and encourage more stringent space debris mitigation measures.<sup>153</sup> There have also been calls for a review conference for the universal

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<sup>149</sup> Wolter, p. 37.

<sup>150</sup> See note 142.

<sup>151</sup> Wolter, p. 75.

<sup>152</sup> J. F. Matlock, "Security: The Bottom Line," *Arms Control Today*, 2000, p. 17.

<sup>153</sup> Stimson Centre, Draft Code of Conduct: <http://www.stimson.org/space/?SN=WS200702131213>. As cited by Tyson, Rhianna, p. 4.

ratification of the Outer Space Treaty while Russia has called for a Prevention of Placement of Weapons in Outer Space Treaty (PPWT). Wolter implored that “a multilateral Treaty on Common Security in Outer Space, in short a CSO Treaty, should be negotiated as soon as possible.”<sup>154</sup> He elaborates on the importance of ensuring a common heritage of mankind (CHOM) clause as central to the treaty’s legal foundation and outlines the importance of moving away from MAD and towards “mutually assured security” by way of Cooperative Threat Reduction (CTR) and other measures, such as a ban on active military uses of outer space,<sup>155</sup> the destruction of existing ASAT and a range of detailed provisions that would be monitored by an institutional safeguarding mechanism for the CSO.<sup>156</sup>

At present, all states are in consensus that there is an immediate requirement to address the expansion of weapons proliferation into outer space—the only exception being the United States. China and Russia have called for a moratorium on testing and development of space based weapons until an agreement can be reached on the prohibition of such technology. However, such an agreement may be slow to achieve. Negotiations on the subject of space weapons at the CD have been fraught with an inertia that mirrors the abysmal FMCT discussions. The inability of the CD to enter into substantive negotiations on the Prevention of an Arms Race in Outer Space (PAROS) has largely been a result of U.S. failure to cooperate:

*Thus, the U.S. refusal to enter into substantive talks, let alone multilateral negotiations on the prevention of an arms race in outer space, to the discontent of the overwhelming majority of the international community, not only represents a disregard of Art. VI of the NPT, but in fact is producing the opposite effect given the close link between an arms race in outer space and the spiralling of an offensive arms race on Earth.*<sup>157</sup>

A proposed solution to U.S. concerns over missile defence has been offered in several instances by its old Cold War rival. The revival of talks on the viability of an international missile defence program (a revival of the GPALS concept) may assuage the concerns of the global community whilst still providing security against third country strikes. Russian support of the early 1990s GPALS concept extended to its proposal that such a system should eventually come under international control, and should not include space-based weapons. This would not adversely affect the current U.S. Ground-based Midcourse Defense (GMD) system that already has “about 25 three-stage interceptors fielded in Alaska and California meant to defend the United States

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<sup>154</sup> Wolter, p. 147.

<sup>155</sup> Active military uses refers to space-based weapons systems designed to interfere with other bodies in outer space. As opposed to passive uses which includes dual-use technology that aren’t weapons themselves but that “may enhance military systems below.” See: G. Steinberg, “The Militarization of Space: From Passive Support to Active Weapons Systems,” *Futures*, 1982, p. 379.

<sup>156</sup> Wolter, p. 147-170.

<sup>157</sup> *Ibid.*, p. 75.

against a North Korean ICBM attack.”<sup>158</sup> Nor would such an initiative necessarily preclude the U.S. from proceeding with its unpopular missile defence in continental Europe<sup>159</sup>—provided that it drops its unilateralist approach and invites Russia to participate (and that any weapons platforms remained intra-atmospheric). Evidently, the internationalization of missile defence will remain as litigious as the multi-lateralisation of the nuclear fuel cycle and just as significant.

## Multi-lateralism as a Tool

While over \$110 billion dollars (U.S.) has been spent on missile defence over the last quarter of a century<sup>160</sup> and hundreds of billions more have been spent on nuclear weapons programs we are not seeing an adequate return on the investment. In the renowned commentary for the *Wall Street Journal*, Henry Kissinger, Sam Nunn, William Perry and George Schultz agreed that “deterrence continues to be a relevant consideration for many states with regard to threats from other states. But reliance on nuclear weapons for this purpose is becoming increasingly hazardous and decreasingly effective.”<sup>161</sup> It should be evident that present nuclear arsenals, even in the hands of responsible actors, are undermining the stability of the international system and cannot be relied upon as tools for the maintenance of security. Instead, this paper has suggested ways of reducing these arsenals and outlined necessary protocols to move towards disarmament without jeopardising the safety of the international community—particularly in the face of 21<sup>st</sup> century security considerations; such as the ubiquitous terrorist threat that now permeates most facets of industrialized society. José Manuel Barroso, President of the European Commission embraced multilateralism as a methodology for progress on anti-terrorist initiatives, insisting that “[i]f you look at the challenges ahead—like terrorism, poverty—one thing is certain: These are not challenges that any nation can tackle alone. The world is safer and more prosperous when Europe and America work together as global partners.”<sup>162</sup> Perhaps he should have included in this the challenge of nuclear disarmament, which certainly cannot be achieved without global cooperation. The multi-lateralisation of the nuclear fuel cycle; the creation of a Fissile Materials Cut-off Treaty, Common Security in Outer Space Treaty and Nuclear Weapons Convention; the ratification of the Comprehensive Test Ban Treaty; the internationalization of a missile defence system (assuming no space-based technologies are incorporated); the formal declaration of

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<sup>158</sup> Victoria Samson, "Missile Defense Madness," *Disarmament Times*, Winter 2007, p. 1.

<sup>159</sup> The interceptors use Exoatmospheric Kill Vehicles (essentially an interceptor missile that uses kinetic energy rather than a warhead) to destroy missiles in the midcourse phase of their flight (before they re-enter the Earth's atmosphere). The Pentagon is also planning to establish up to 10 interceptors in Poland, using X-band radar from a site in the Czech Republic, to allegedly address a potential Iranian threat. This, coupled with NATO's own plans for an Active Layered Theatre Ballistic Missile Defense (ALTBMD), is doing nothing to reconcile residual suspicions between Russia and the U.S./Western Europe.

<sup>160</sup> Samson, p. 1.

<sup>161</sup> Henry A. Kissinger et al., "A World Free of Nuclear Weapons," *The Wall Street Journal*, 4 January 2007, p. A15.

<sup>162</sup> Manuel Barroso, President of the European Commission, "The EU, the U.S., and the Fight Against Global Terrorism," *EU Focus*, 2005, p. 1.

legally binding Negative Security Assurances; and the creation of a Nuclear Weapon Free Southern Hemisphere and Adjacent Areas are just a few examples of the requirement of the global community to work together towards achieving a more stable and secure international order. While middle powers must accept the burden of exerting pressure on the NWS, ultimately, it remains the responsibility of NWS to move away from a policy of maintaining high alert; it remains the responsibility of the U.S. and Canada to influence NATO policy on first-use and launch on warning, to cease third party nuclear sharing agreements and to relocate deployed nuclear weapons to national borders; fundamentally, it remains the responsibility of the NWS to set a tone for nuclear disarmament in the 21<sup>st</sup> Century.

The organization ‘Global Zero’, formed in December 2008 by a hundred leaders from around the world aims to affect such action on the part of the NWS. Working through several channels, Global Zero is optimistic about achieving general and complete disarmament (as per Art, VI of the NPT) by 2030<sup>163</sup> a cornerstone of its plan for phased reductions is the negotiation and ratification of a multinational accord, following a global freeze on weapons production and, more specifically, verified reductions in U.S.-Russian arsenals. At a Global Zero conference in Paris, Obama called for the securing of nuclear arsenals and his administrations’ arms-control negotiators have since reached an “agreement in principle” with Russia with respect to reductions in arsenals and delivery systems—the first in nearly twenty years—evidencing a stronger relationship between the two nations under Medvedev and Obama than was witnessed under the previous two U.S. administrations’ relationships with Putin<sup>164</sup>. The apparent present support for a move towards disarmament by two of the pivotal NWS is heartening and demonstrates the kind of momentum that non-proliferationists have eagerly anticipated since the last great opportunity, at the conclusion of the Cold War, was squandered.

In the epic *Iliad of Homer*, Hector confidently reassured Andromache, who feared he would never escape the violence of the Achaians, that “[n]o man is going to hurl me to Hades, unless it is fated, but as for fate, I think no man yet has escaped it once it has taken its first form, neither brave man nor coward.”<sup>165</sup> Why should brave men and cowards, in the 21<sup>st</sup> Century, be fated to Oppenheimer’s Faustian bargain? We should be moving towards a more secure environment, but instead, as George Schultz sombrely elucidated, “the proliferation regime is unravelling, the situation is getting more dangerous.” He recognised the destabilizing nature of nuclear apartheid, pointedly stating; “it comes through very strongly . . . particularly from the countries that don’t have nuclear weapons—many of whom could but they have refrained—that the idea that some

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<sup>163</sup> By developing a phased plan for global reductions, building support among governments through effective diplomacy and generating broad public support through web and other channels.

<sup>164</sup> See: <http://online.wsj.com/article/SB10001424052748703338504575041562540396530.html> for complete article on the “agreement in principle”.

<sup>165</sup> Homer, trans. Richmond Lattimore, *The Iliad of Homer* (Chicago & London: University of Chicago Press, 1951), (6. 486-489), p. 166.

countries are going to have them while other countries cannot is increasingly not tenable.”<sup>166</sup> We cannot neglect our responsibility to act on this issue—whether through the reticence of the global community or misguided faith in rational nuclear deterrence by the NWS, a failure to address the situation of nuclear dualism may have disastrous consequences. The New Zealand Minister of Disarmament, Marian Hobbs, suggested with respect to the division between states calling for efforts to intervene in potential horizontal proliferation and those states expressing a desire to see established NWS move towards disarmament that:

*This split could be bridged, and progress made on both non-proliferation and disarmament fronts, by adopting an abolition framework, i.e. through advancing norms which further de-legitimise nuclear weapons regardless of who may possess or aspire to possess them, and further developing the mechanisms which prevent their acquisition and provide for their systematic and verified elimination.*<sup>167</sup>

The motivation to achieve “systematic and verified elimination,” it seems, will be difficult to achieve. We have engineered a significantly more complex world than we inherited from the fathers of our current military doctrine. Political meanderings and many of our old solutions have become irrelevant or degenerative. Fortunately, our tools have evolved in synchronicity with a growing interconnectedness and in our new, smaller world we can achieve great things. But we must not allow ourselves the comfort of delusion; nuclear proliferation, both horizontal and vertical, is a threat to our security and, through the measures summarized briefly herein; we must act in concord with international law and in the interests of mankind.

## Conclusion

Kofi Annan concluded in his Millennium Development Goals Report that “[n]o state and no organisation can solve all these problems by acting alone. Nor however, should any state imagine that others will solve them for it, if its own government and citizens do not apply themselves wholeheartedly to the task.”<sup>168</sup> It is imperative for the global community to move towards non-proliferation and to encourage the implementation of relevant posture review on the part of the Nuclear Weapon States. Hans Bethe, a physicist who worked with Oppenheimer to develop the first atomic bomb reflected on the event that ought still to be forefront in our consideration of international security in the 21<sup>st</sup> Century: When the destruction Hiroshima was confirmed, “the first reaction which we had was one of fulfilment: Now it has been done, now the work that we have been engaged in for so many years has contributed to the war. The second reaction was, of

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<sup>166</sup> Schultz, *Fora TV*. See n. 143.

<sup>167</sup> Hon. Marian Hobbs, New Zealand Minister for Disarmament and Arms Control, *Nuclear Non-Proliferation*, Presentation to the Atlanta Extraordinary Consultation on the Non-Proliferation Treaty (NPT) 2005 Review Conference, Atlanta, 26-01-05; <http://www.beehive.govt.nz/node/22080>. (Accessed 28 August 2008)

<sup>168</sup> Annan, Kofi A. We, The Peoples: The Role of the United Nations in the 21st Century. 2000. New York, United Nations Department of Public Information, p. 80.

course, one of shock and awe: What have we done? What have we done? And the third reaction: It shouldn't be done again."<sup>169</sup> We must exercise our resolve for the prevention of future nuclear confrontation. In the knowledge that enhanced international security cannot be achieved by perpetuating obsolete policies, let us approach our mutual quandary with prudence but most of all, with action.

## **Priorities for the International Community**

- NWS must move towards de-alerting
- NWS must move towards a reduction in nuclear arsenals—particularly with respect to non-strategic nuclear weapons. Entailing:
  - U.S.-Russian reductions in arsenals
  - An increase in dismantling rate of U.S.-Russian warheads to historic levels
  - A global freeze on nuclear weapon production
  - The negotiation and ratification of a Global Zero accord<sup>170</sup>
- Continued negotiations on a U.S.-Russia accord to replace the expired START
- The implementation of a Fissile Materials Cut-off Treaty
- Instituting a viable conglomerate for the multi-lateralisation of the fuel cycle
  - Including the requisite intrusive verification mechanisms
  - The creation of an international fuel bank
- The signing of CSO or OST (or both) to prevent the weaponization of space
- Engaging the middle east in substantive nuclear disarmament negotiations (whilst simultaneously increasing support for more intrusive verification mechanisms)
- The ratification of the CTBT by the remaining NWS
- Strengthened Negative Security Assurances
- The implementation of a Nuclear Weapons Convention

## **Recommendations for Canada**

- Press, within NATO, for:
  - The adoption of no-first-use and no launch-on-warning policies by member states
  - The de-alerting of nuclear ICBMs
  - Cessation of NATO nuclear sharing
  - Elimination of tactical nuclear weapons

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<sup>169</sup> Else, Jon, Peoples, David, and Peoples, Janet, *The Day After Trinity*. Pyramid, 1980. Motion Picture, time into film: 1 hour 2 mins.

<sup>170</sup> Refer: <http://www.globalzero.org/> for a complete summary of the Global Zero recommendations with respect to U.S. and Russian reductions in nuclear arsenals.

### **13 Practical Steps**

Excerpted from the final document of the 2000 NPT Review Conference

(Courtesy of: Middle Powers Initiative. Briefing Paper: Advancing the 13 Practical Steps. April 2003)

The Conference agrees on the following practical steps for the systematic and progressive efforts to implement Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons and Paragraphs 3 and 4 (c) of the 1995 Decision on “Principles and Objectives for Nuclear Non-Proliferation and Disarmament”:

1. The importance and urgency of signatures and ratifications, without delay and without conditions and in accordance with constitutional processes, to achieve the early entry into force of the Comprehensive Nuclear-Test-Ban Treaty.
2. A moratorium on nuclear-weapon-test explosions or any other nuclear explosions pending entry into force of that Treaty.
3. The necessity of negotiations in the Conference on Disarmament on a non-discriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices in accordance with the statement of the Special Coordinator in 1995 and the mandate contained therein, taking into consideration both nuclear disarmament and nuclear non-proliferation objectives. The Conference on Disarmament is urged to agree on a programme of work which includes the immediate commencement of negotiations on such a treaty with a view to their conclusion within five years.
4. The necessity of establishing in the Conference on Disarmament an appropriate subsidiary body with a mandate to deal with nuclear disarmament. The Conference on Disarmament is urged to agree on a programme of work which includes the immediate establishment of such a body.
5. The principle of irreversibility to apply to nuclear disarmament, nuclear and other related arms control and reduction measures.
6. An unequivocal undertaking by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament to which all States parties are committed under Article VI.
7. The early entry into force and full implementation of START II and the conclusion of START III as soon as possible while preserving and strengthening the ABM Treaty as a cornerstone of

strategic stability and as a basis for further reductions of strategic offensive weapons, in accordance with its provisions.

8. The completion and implementation of the Trilateral Initiative between the United States of America, the Russian Federation and the International Atomic Energy Agency.

9. Steps by all the nuclear-weapon States leading to nuclear disarmament in a way that promotes international stability, and based on the principle of undiminished security for all:

- Further efforts by the nuclear-weapon States to reduce their nuclear arsenals unilaterally.
- Increased transparency by the nuclear-weapon States with regard to the nuclear weapons capabilities and the implementation of agreements pursuant to Article VI and as a voluntary confidence-building measure to support further progress on nuclear disarmament.
- The further reduction of non-strategic nuclear weapons, based on unilateral initiatives and as an integral part of the nuclear arms reduction and disarmament process.
- Concrete agreed measures to further reduce the operational status of nuclear weapons systems.
- A diminishing role for nuclear weapons in security policies to minimize the risk that these weapons ever be used and to facilitate the process of their total elimination.
- The engagement as soon as appropriate of all the nuclear-weapon States in the process leading to the total elimination of their nuclear weapons.

10. Arrangements by all nuclear-weapon States to place, as soon as practicable, fissile material designated by each of them as no longer required for military purposes under IAEA or other relevant international verification and arrangements for the disposition of such material for peaceful purposes, to ensure that such material remains permanently outside of military programmes.

11. Reaffirmation that the ultimate objective of the efforts of States in the disarmament process is general and complete disarmament under effective international control.

12. Regular reports, within the framework of the NPT strengthened review process, by all States parties on the implementation of Article VI and paragraph 4 (c) of the 1995 Decision on "Principles and Objectives for Nuclear Non-Proliferation and Disarmament", and recalling the Advisory Opinion of the International Court of Justice of 8 July 1996.

13. The further development of the verification capabilities that will be required to provide assurance of compliance with nuclear disarmament agreements for the achievement and maintenance of a nuclear weapon-free world.

## Abbreviations:

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ABM: Anti-Ballistic Missile  
ALTBMD: Active Layered theatre Ballistic Missile Defence  
ASAT: Anti-Satellite  
BMD: Ballistic Missile Defence  
BTWC: Biological and Toxin Weapon Convention  
CBMs: Confidence Building Measures  
CD: Conference on Disarmament  
CHOM: Common Heritage of Mankind  
COPUOS: Committee on the Peaceful Uses of Outer Space  
CPG: Canadian Pugwash Group  
CRS: Congressional Research Service  
CSO: Common Security in Outer Space  
CTBT: Comprehensive Test Ban Treaty  
CTR: Cooperative Threat Reduction  
CWC: Chemical Weapons Convention  
DOE: Department of Energy  
DPRK: Democratic People's Republic of Korea  
EU: European Union  
FMCT: Fissile Materials Cut-off Treaty  
FYDP: Future Years Defense Plan  
GCD: General and Complete Disarmament  
GMD: Ground-based Mid-course Defence  
GNEP: Global Nuclear Energy Partnership  
GPALS: Global Protection Against Limited Strikes  
GSI: Global Security Institute  
HDBT: Hardened and Deeply Buried Target  
HNE: Hydro-Nuclear Explosion  
IALANA: International Association of Lawyers Against Nuclear Arms  
IAEA: International Atomic Energy Agency  
ICBM: Inter-Continental Ballistic Missile  
ICJ: International Court of Justice  
IRBM: Intermediate-Range Ballistic Missile

## Abbreviations:

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LCNP: Lawyers Committee on Nuclear Policy  
LTBT: Limited Test Ban Treaty  
MAD: Mutually Assured Destruction  
MIRV: Multiple Independently-targetable Re-entry Vehicles  
MNA: Multi-national Nuclear Agreements  
MNWC: Model Nuclear Weapons Convention  
MPI: Middle Powers Initiative  
NATO: North Atlantic Treaty Organisation  
NGO: Non-Governmental Organisation  
NMD: National Missile Defence  
NNWS: Non-Nuclear Weapon State  
NORAD: North American Aerospace Defence Command  
NPR: Nuclear Posture Review  
NPT: Nuclear non-proliferation Treaty  
NSG: Nuclear Suppliers Group  
NWS: Nuclear Weapons State  
OST: Outer Space Treaty  
PAROS: Prevention of an Arms Race in Outer Space  
SALT: Strategic Arms Limitation Treaty  
SDIO: Strategic Defense Initiative Organisation  
SLBM: Submarine Launched Ballistic Missile  
SSP: Stockpile Stewardship Program  
START: Strategic Arms Reduction Treaty  
THAAD: Theatre High Altitude Defence  
TMD: Theatre Missile Defence  
TTBT: Threshold Test Ban Treaty  
UN: United Nations  
UNAC: United Nations Association in Canada  
UNODA: United Nations Office of Disarmament Affairs  
USSR: United Soviet Socialist Republic  
WMDC: Weapons of Mass Destruction Committee

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