

9. Nuclear arms control and non-proliferation

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I. Introduction

The year 2009 saw new momentum behind global efforts to promote nuclear disarmament and non-proliferation. These efforts were given a boost in May 2009 when Russia and the United States began formal negotiations on a new strategic arms reduction treaty. Other developments included the consensus agreement reached in the 65-member Conference on Disarmament (CD) in Geneva to open negotiations on a fissile material cut-off treaty (FMCT) after a 12-year procedural impasse. The United Nations Security Council adopted a politically binding resolution that codified a broad consensus on a range of actions to promote nuclear disarmament and non-proliferation and to address the threat of nuclear terrorism. During the year two new nuclear weapon-free zone (NWFZ) treaties entered into force, one covering Central Asia and the other Africa.

At the same time, in 2009 little progress was made towards resolving the long-running controversies over the nuclear programmes of Iran and the Democratic People's Republic of Korea (DPRK, or North Korea), which have been the focus of international concerns about the spread of nuclear weapons. These concerns were heightened in 2009 by North Korea's decision to conduct a second nuclear test explosion and to resume the production of plutonium for nuclear weapons.

This chapter reviews these and other developments in nuclear arms control, disarmament and non-proliferation in 2009. Section II describes the opening of Russian-US negotiations on a strategic arms reduction treaty and the main points of contention in the talks. Section III describes developments related to Iran's nuclear programme and summarizes the findings of the International Atomic Energy Agency (IAEA) about the country's previously undeclared uranium enrichment plant whose existence was revealed in 2009. Section IV describes the impasse in the Six-Party Talks on the denuclearization of the Korean peninsula and North Korea's decisions to conduct a second nuclear test explosion and to restart its nuclear weapon production infrastructure. Section V summarizes international concerns about suspected undeclared nuclear activities in Syria and Myanmar. Sections VI and VII describe developments in multilateral disarmament and non-proliferation including the Central Asian and Afri-

Table 9.1. Summary of Russian–US nuclear arms reduction treaties' force limits

Treaty	Date of signature/ entry into force	Total treaty-accountable nuclear warheads	Total strategic nuclear delivery vehicles ^a	Expiration date
START I	31 July 1991/ 5 Dec. 1994 ^b	6000	1600	5 Dec. 2009
START II	3 Jan. 1993/ .. ^c	3000–3500	None ^d	..
SORT	24 May 2002/ 1 June 2003	1700–2200	None	31 Dec. 2012
START follow-on	8 April 2010 ..	1500	800 (700 deployed)	10 years after entry into force

SORT = Strategic Offensive Reductions Treaty (Moscow Treaty); START = Strategic Arms Reduction Treaty.

^a Strategic nuclear delivery vehicles are intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs) and long-range bombers.

^b In May 1992 Belarus, Kazakhstan and Ukraine signed the Lisbon Protocol with Russia and the USA, making all 5 countries parties to START I.

^c The START II Treaty never entered into force.

^d START II would have prohibited the deployment of multiple independently targetable re-entry vehicles (MIRVs) on ICBMs and limited parties to 1700–1750 SLBMs each.

Sources: Annex A; and White House, 'Joint Understanding for the START follow-on treaty', 8 July 2009, <http://www.whitehouse.gov/the_press_office/The-Joint-Understanding-for-The-Start-Follow-On-Treaty>.

can NWFZ treaties that entered into force in 2009. Section VIII presents the conclusions.

II. Russian–US strategic nuclear arms control

In 2009 Russia and the USA formally launched negotiations on a strategic arms reduction treaty to succeed the 1991 Treaty on the Reduction and Limitation of Strategic Offensive Arms (START Treaty).¹ The opening of the talks was a high priority for the Russian Government as well as for the new US Administration of President Barack Obama. In April Obama pledged to pursue a new treaty as part of a US commitment to a long-term vision of 'peace and security in a world without nuclear weapons'.²

The replacement of the START Treaty, which was set to expire on 5 December 2009, became an increasingly urgent issue for both Russia and

¹ For a summary and other details of the START Treaty see annex A in this volume.

² White House, 'Remarks by President Barack Obama, Hradcany Square, Prague, Czech Republic', 5 Apr. 2009, <http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/>.

the USA. This was because the START verification regime was the primary means by which the two countries monitor each other's strategic nuclear forces. The START regime included 13 types of on-site inspections as well as continuous monitoring activities, data exchanges and notifications regarding the parties' strategic nuclear forces and facilities.³ It was also the basis for verifying the implementation of the additional nuclear force reductions mandated by the 2002 Strategic Offensive Reductions Treaty (SORT), which lacks its own verification provisions (see table 9.1).⁴ Some arms control advocates pointed out that, if these arrangements were no longer to be observed, the strategic forces of Russia and the USA would become much less transparent to one another. This in turn would raise the risk of their respective nuclear force planning being driven by worst-case scenarios.⁵

On 1 April 2009 President Obama and Russian President Dmitry Medvedev issued a joint statement announcing their decision to begin talks on a 'new, comprehensive, legally binding agreement on reducing and limiting strategic offensive arms to replace the START Treaty'.⁶ Bilateral talks followed on 24 April and negotiations opened on 22 May.⁷

In a Joint Understanding in July Obama and Medvedev reaffirmed their pledges to make further cuts in their countries' strategic offensive arms and to conclude 'at an early date' a new legally binding agreement to succeed the 1991 START Treaty.⁸ The presidents proposed that each party reduce its strategic forces so that seven years after the treaty's entry into force the central limits would be 'in the range of 500–1100 for strategic nuclear delivery vehicles' (i.e. intercontinental ballistic missiles, ICBMs; submarine-launched ballistic missiles, SLBMs; and long-range bombers) and 'in the range of 1500–1675 for their associated warheads'.⁹ The provisions for calculating these limits were to be agreed through further negotiations

³ US Department of State, 'START: verification', Fact Sheet, 29 July 1991, <<http://www.state.gov/www/global/arms/factsheets/wmd/nuclear/start1/strtveri.html>>.

⁴ For a summary of SORT (also called the Moscow Treaty) see annex A in this volume.

⁵ Kimball, D., 'Jump-STARTing US–Russian disarmament', *Arms Control Today*, vol. 38, no. 9 (Apr. 2008), p. 3. Russian and US officials both emphasized the importance of preserving the START verification regime, albeit in a simplified form. Kile, S. N., 'Nuclear arms control and non-proliferation', *SIPRI Yearbook 2009*, p. 406.

⁶ White House, 'Joint statement regarding further reductions in strategic offensive arms', 1 Apr. 2009, <http://www.whitehouse.gov/the_press_office/Joint-Statement-by-Dmitriy-A-Medvedev-and-Barack-Obama>.

⁷ 'U.S., Russia set to open START talks May 19 in Moscow', RIA Novosti, 15 May 2009, <<http://en.rian.ru/russia/20090515/155026763.html>>. The delegations were led by US Assistant Secretary of State Rose Gottemoeller and Ambassador Anatoly Antonov, the Director of the Russian Foreign Ministry's Department of Security Affairs and Disarmament.

⁸ White House, 'Joint Understanding for the START follow-on treaty', 8 July 2009, <http://www.whitehouse.gov/the_press_office/The-Joint-Understanding-for-The-Start-Follow-On-Treaty>.

⁹ White House (note 8). Russia reportedly sought the lower limit of 500 delivery vehicles since it will have to eliminate a large number of obsolescent Soviet-era missiles over the next decade. MacAskill, E. and Harding, L., 'US and Russia close in on nuclear treaty', *The Guardian*, 15 Dec. 2009.

as were those on definitions, data exchanges, notifications, eliminations, inspections and verification procedures, and on confidence-building and transparency measures. The Joint Understanding stipulated that these measures were to be ‘adapted, simplified, and made less costly, as appropriate, in comparison to the START Treaty’.¹⁰ The treaty’s duration would be 10 years unless it were superseded by a subsequent agreement.

Obama and Medvedev agreed that the new treaty would have a provision on the contentious issue of the ‘interrelationship of strategic offensive and strategic defensive arms’.¹¹ Previous bilateral discussions of a post-START agreement had been complicated by Russian objections to the planned US deployment of missile defence interceptors and tracking radar at sites in the Czech Republic and Poland. Russia had insisted that the USA must first address Russia’s concerns about the implications of the proposed missile defence system for its strategic nuclear deterrent before a new arms reduction agreement could be reached. According to US officials, the decision to include the provision linking strategic offensive and defensive forces reflected an understanding that missile defence issues would not be part of the negotiations on the post-START treaty.¹² The USA subsequently announced that it had shelved the planned missile defence system in the Czech Republic and Poland and would instead deploy elsewhere in Europe a reconfigured system designed to intercept short- and medium-range missiles. US officials denied that the decision was related to Russian objections to the system envisioned by the preceding US Administration.¹³

Principal issues of contention

Russia and the USA had held eight rounds of talks in Geneva by the end of 2009. The most significant substantive difference at the talks centred on specific monitoring activities for verifying the new numerical limits to be set by the post-START treaty. These included so-called non-reciprocal measures, in particular provisions for continuous portal monitoring by US inspectors at the Russian strategic missile production facility at Votkinsk.¹⁴ These activities would not be reciprocal because the USA, unlike Russia, was no longer building new strategic missiles.¹⁵ Russian also objected to

¹⁰ White House (note 8).

¹¹ White House (note 8).

¹² Tauscher, E., US Under Secretary of State for Arms Control and International Security, Remarks to US Strategic Command Deterrence Symposium, Omaha, NE, 30 July 2009, <<http://www.acronym.org.uk/docs/0907/doc11.htm>>.

¹³ Baker, P., ‘White House scraps Bush’s approach to missile shield’, *New York Times*, 17 Sep. 2009.

¹⁴ Grossman, E. M., ‘U.S. treaty-monitoring presence at Russian missile plant winding down’, *Global Security Newswire*, 20 Nov. 2009, <http://gsn.nti.org/gsn/nw_20091120_8953.php>.

¹⁵ Russia had a reciprocal monitoring arrangement at what was then the Thiokol Strategic Operations facility in Utah before the US decision to halt the production of new missiles.

renewing the START Treaty's provisions for handling strategic missile flight-test data. Russia reportedly resisted renewing START's ban on the encryption of telemetry data from missile flight tests because it planned to introduce a new generation of strategic missiles while the USA had no plans to do so.¹⁶

In addition, Russia and the USA reportedly disagreed over whether to adjust the 'counting rules' used in the START Treaty (i.e. the rules for attributing a specific number of warheads to specific delivery vehicles regardless of whether those delivery vehicles carry fewer warheads). The USA pushed to modify these attribution rules and allow each side to use on-site inspections to count the number of warheads deployed on the other's delivery systems.¹⁷ Russia countered that, without a set number of warheads per missile, what its inspectors find on individual missiles might not give adequate information about the US stockpile of operational warheads. This concern was related to Russia's insistence that a new treaty must effectively constrain the USA's considerable advantage over Russia in 'upload potential'—the ability to rapidly redeploy nuclear warheads held in storage on to strategic nuclear delivery vehicles. Russia's view was that a major shortcoming of SORT was that it did not 'lock in', or make irreversible, the mandated force reductions by requiring the parties to verifiably eliminate the warheads withdrawn from deployment.¹⁸

The previous US Administration's plans for deploying non-nuclear warheads on some strategic missile systems as part of the Strategic Command's Global Strike plan was another point of contention.¹⁹ Russia wanted any future treaty limits to apply to US ICBMs and SLBMs that might be armed with conventional instead of nuclear munitions.²⁰

¹⁶ Collina, T. Z., 'START stalls; talks continue', *Arms Control Today*, vol. 40, no. 1 (Jan./Feb. 2010); and Grossman, E. M., 'Talks hit "sweet spot" for landing new START agreement, U.S. official says', *Global Security Newswire*, 13 Jan. 2010, <http://www.globalsecuritynewswire.org/gsn/nw_20100113_6737.php>.

¹⁷ Collina, T. Z., 'START deadline looms; endgame begins', *Arms Control Today*, vol. 39, no. 9 (Nov. 2009).

¹⁸ Diakov, A. and Miasnikov, E., 'On some aspects of the Joint Understanding for the START follow-on treaty, signed by U.S. and Russian presidents during the recent summit meeting', Moscow Centre for Arms Control, Energy and Environmental Studies, 7 Aug. 2009, <<http://www.armscontrol.ru/pubs/en/adem080709e.pdf>>, p. 3. In contrast to Russia, which had to eliminate ageing and obsolescent strategic missile delivery systems, the USA met the START-mandated limit on deployed strategic warheads largely by removing warheads carried on MIRVed missiles and placing them in storage. Russian experts noted that this would give the USA a significant advantage in the number of deployed strategic warheads if it chose to return to the previous missile loadings.

¹⁹ See Kile, S. N., Fedchenko, V. and Kristensen, H., 'World nuclear forces, 2008', *SIPRI Yearbook 2008*, p. 370.

²⁰ Grossman, E. M., 'Russian experts question role of conventional "prompt Global Strike" weapons', *Global Security Newswire*, 7 Apr. 2009, <http://gsn.nti.org/gsn/nw_20090406_7955.php>.

Expiration of the START Treaty

By the late autumn of 2009 both Russia and the USA acknowledged that too many substantive issues and technical details remained unresolved for a new agreement to be concluded before the START Treaty expired.²¹ With the expiration date looming, the two sides worked to complete a legally binding 'bridging mechanism', which would be in force until they finished a follow-on treaty, but they were unable to meet the deadline.²² On 4 December presidents Obama and Medvedev issued a brief joint statement declaring their determination to continue working together 'to ensure that a new treaty on strategic arms enters into force at the earliest possible date'.²³

The expiration of START meant that some of its verification procedures were discontinued. The most controversial of these was the end of the arrangement for US continuous monitoring activities at the Russian missile production facility at Votkinsk. This arrangement had been criticized in Russia as being excessively intrusive.²⁴ However, in the USA some Republican senators criticized the administration for having allowed the measure to lapse at a time when the Russian facility was producing new mobile ICBMs that are difficult for the USA to monitor through national technical means.²⁵

A potential complication for the negotiations emerged when Russian Prime Minister Vladimir Putin linked Russia's signing of a follow-on treaty to new agreed limits on US missile defence plans.²⁶ This appeared to contradict statements made by US Administration officials that the two sides had agreed that missile defence issue would be addressed separately from the START follow-on accord.²⁷ In the USA, Putin's statement led to renewed political criticism of the Obama Administration's approach to the negotiations. In 2009 Republicans in the US Congress had sought to amend the 2010 National Defense Authorization Bill so as to prohibit spending to implement a START follow-on treaty unless the accord, among other things, placed no limitations on US missile defence capabilities and was

²¹ Baker, P. and Levy, C. J., 'Arms treaty is likely to expire before new pact is set', *New York Times*, 3 Dec. 2009.

²² 'START verification regime could outlast treaty', Global Security Newswire, 24 Nov. 2009, <http://www.globalsecuritynewswire.org/gsn/nw_20091124_5240.php>.

²³ White House, 'Joint statement by the President of the United States of America and the President of the Russian Federation on the expiration of the Strategic Arms Reduction Treaty (START)', 4 Dec. 2009, <<http://www.whitehouse.gov/the-press-office/joint-statement-president-united-states-america-and-president-russian-federation-ex>>.

²⁴ Poroskov, N., 'Goodbye Votkinsk', *Vremya Novostei*, 3 Dec. 2009.

²⁵ Kravev, N., 'U.S. to stop counting new missiles in Russia', *Washington Times*, 1 Dec. 2009.

²⁶ 'Vladimir Putin attacks US missile defence', BBC News, 29 Dec. 2009, <<http://news.bbc.co.uk/2/hi/8433352.stm>>.

²⁷ Tauscher (note 12).

accompanied by full funding for modernizing the US nuclear weapon production complex.²⁸

The year ended without the conclusion of a new arms reduction agreement to replace the START Treaty. The two sides agreed to resume negotiations in Geneva in mid-January 2010.

III. Iran and nuclear proliferation concerns

In 2009 the controversy over the scope and nature of Iran's nuclear activities intensified with the revelation that Iran was building a previously undeclared uranium enrichment plant. In September Iran sent a letter to the IAEA Director General, Mohamed ElBaradei, informing the agency that Iran was building a second pilot enrichment facility, in addition to the one located at Natanz, to produce low-enriched uranium (LEU) for use as nuclear fuel.²⁹ The letter was sent to the IAEA shortly before US President Obama, French President Nicolas Sarkozy and British Prime Minister Gordon Brown convened a joint press conference to announce that Iran was building an undeclared enrichment plant and that their countries had been aware of the site for some time.³⁰

According to US officials, the plant was located in an underground tunnel complex in the grounds of an Islamic Revolutionary Guards Corps base near the city of Qom. They expressed concern that the plant's size, configuration and location indicated that it might be used to produce highly enriched uranium (HEU) for a suspected nuclear weapon programme.³¹ The plant's discovery also raised new suspicions about the possible existence of other undeclared nuclear facilities that were not subject to IAEA safeguards inspections.³²

Iran denied that the facility, called the Fordow Fuel Enrichment Plant (FFEP) by the IAEA, was part of a covert nuclear weapon programme. In a letter to the agency in October Iran stated that the decision to build the plant came 'as a result of the augmentation of threats of military attacks against Iran'—an allusion to past Israeli and US statements that the use of

²⁸ Collina, T. Z., 'Administration pushes to finish "new START"', *Arms Control Today*, vol. 39, no. 7 (Sep. 2009).

²⁹ IAEA, Board of Governors, 'Implementation of the NPT safeguards agreement and relevant provisions of Security Council resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran', Report by the Director General, GOV/2009/74, 16 Nov. 2009, p. 2. The letter indicated that the uranium would be enriched up to a level of 5% (in the isotope uranium-235). The IAEA documents cited here are available on the IAEA website, <<http://www.iaea.org/>>.

³⁰ Sanger, D. E. and Broad, W. J., 'U.S. and allies warn Iran over nuclear "deception"', *New York Times*, 26 Sep. 2009.

³¹ White House, 'Background briefing by senior Administration officials on Iranian nuclear facility', 25 Sep. 2009, <http://www.whitehouse.gov/the_press_office/Background-Briefing-By-Senior-Administration-Officials-On-Iranian-Nuclear-Facility>.

³² Lewis, J., 'Covert site in Iran', *Arms Control Wonk*, 25 Sep. 2009, <<http://www.armscontrolwonk.com/2475/covert-site-in-iran>>.

force against Iran's nuclear programme could not be ruled out. The letter stated that the Fordow site had been 'allocated' to the Atomic Energy Organization of Iran (AEOI) in the second half of 2007 and construction had begun at that time; the FFEP was scheduled to become operational in 2011. The letter explained that the site was being prepared as a 'contingency' plant so that enrichment activities would not be halted in the case of military attacks on Iran's pilot- and commercial-scale centrifuge plants at Natanz.³³

On 26–27 October 2009 IAEA inspectors carried out a design information verification visit and confirmed that the plant was at an advanced stage of construction, although no centrifuges had been installed there. They also verified that the plant was configured to hold 16 cascades with a total of approximately 3000 centrifuges.³⁴ Iran told the IAEA that it planned to install only first-generation IR-1 centrifuges at Fordow. However, comments made by the director of the AEOI suggested that Iran would install a new generation of more efficient centrifuges there at a later date.³⁵ According to US officials, when fully operational the FFEP would have the capacity to produce enough HEU for 'one or two' nuclear weapons per year.³⁶

IAEA questions and concerns

In November ElBaradei reported to the IAEA Board of Governors on safeguards implementation in Iran, highlighting several issues of concern regarding the Fordow plant. Although inspectors had confirmed that the layout of the facility matched the information provided in the design information questionnaire submitted by Iran in October, more information was needed to clarify the purpose of the facility. The report also questioned Iran's stated chronology of its work on the facility, noting that commercial satellite photos indicated that there had been construction at the site between 2002 and 2004 and that this had resumed in 2006. Whether all of these activities were associated with the construction of an enrichment plant was unclear.³⁷

Regardless of when design work on the FFEP was authorized or construction began, Iran's failure to notify the IAEA of the new facility until

³³ IAEA, GOV/2009/74 (note 29), p. 3.

³⁴ IAEA, GOV/2009/74 (note 29), p. 2.

³⁵ Kalantari, H., 'Iran plans to use new centrifuge at nuclear plant', Reuters, 6 Oct. 2009, <<http://www.reuters.com/article/idUSTRE5951Z920091006>>.

³⁶ White House (note 31). The US Government's timeline was contested by 2 non-governmental analysts, who calculated that the plant would require up to 4 years to produce enough HEU for 1 weapon, if it started with natural uranium. Oelrich, I. and Barzashka, I., 'A technical evaluation of the Fordow fuel enrichment plant', *Bulletin of the Atomic Scientists*, 23 Nov. 2009.

³⁷ IAEA, GOV/2009/74 (note 29), p. 3.

September 2009 was ‘inconsistent with its obligations under the Subsidiary Arrangements to its Safeguards Agreement’.³⁸ The report rejected the claims made by Iranian officials that they had not yet been required to inform the IAEA about the Fordow plant because Iran was currently implementing an older version of a safeguards subsidiary arrangement called Code 3.1.³⁹ The IAEA has stated repeatedly that no mechanism exists in Iran’s safeguards agreement for its unilateral suspension of the modified Code 3.1 text that was agreed with the agency in 2003.⁴⁰

In November the IAEA Board of Governors adopted a resolution that criticized Iran for not fulfilling its safeguards obligations and not complying with previous demands by the Board and the UN Security Council that it suspend all enrichment-related activities.⁴¹ The resolution called on Iran to halt construction of the FFEP plant and to confirm that it had not ‘taken a decision to construct, or authorize construction of, any other nuclear facility previously not declared to the Agency’. Iran was also urged to apply the modified Code 3.1 and to implement promptly the Additional Protocol.⁴²

The resolution called on Iran to cooperate fully with the IAEA by ‘providing such access and information that the Agency requests to resolve all outstanding issues concerning Iran’s nuclear programme’. As detailed in ElBaradei’s 16 November report to the Board, there remained a number of safeguards compliance issues ‘of serious concern’ that needed to be clarified to exclude the existence of possible military dimensions to Iran’s

³⁸ In Feb. 2003, following the revelation of the previously undeclared enrichment plants at Natanz, Iran agreed to a modified text of its Subsidiary Arrangements General Part, Code 3.1, concerning the early provision of design information to the IAEA. This required Iran to provide the agency with design information for new nuclear facilities subject to safeguards ‘as soon as the decision to construct, or to authorize construction, of such a facility has been taken, whichever is earlier’.

³⁹ In response to the UN Security Council’s adoption of Resolution 1747, in Mar. 2007 Iran suspended its adherence to the modified Code 3.1 text. It reverted to the original version of the text agreed in 1976 under which Iran was required to submit design information for a new facility ‘not later than 180 days before the facility is scheduled to receive nuclear material for the first time’.

⁴⁰ Iran has maintained that it could revert to the original version of the Code 3.1 text because the modified text had never been ratified by the Majlis (parliament). For a critical assessment of the Iranian claim see Acton, J. M., ‘Iran violated international obligations on Qom facility’, Carnegie Endowment of International Peace, Proliferation analysis, 25 Sep. 2009, <<http://www.carnegieendowment.org/publications/index.cfm?fa=view&id=23884>>.

⁴¹ IAEA, Board of Governors, ‘Implementation of the NPT safeguards agreement and relevant provisions of Security Council resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran’, Resolution, GOV/2009/82, 27 Nov. 2009. The resolution was rejected by 3 states (Cuba, Malaysia and Venezuela) and 6 states abstained (Afghanistan, Brazil, Egypt, Pakistan, South Africa and Turkey); 26 states voted in favour.

⁴² IAEA, GOV/2009/82 (note 41), p. 2. In Dec. 2003 Iran had signed an Additional Protocol to its comprehensive safeguards agreement that gave IAEA inspectors enhanced powers to investigate possible undeclared nuclear activities. In Feb. 2006 Iran announced that it would no longer implement the protocol, which had yet to be ratified by the Majlis, in protest at the IAEA Board’s decision to refer Iran’s nuclear file to the UN Security Council.

nuclear programme.⁴³ The report noted that ‘well over a year [had passed] since the Agency was last able to engage Iran’ in discussions about the outstanding issues, in particular about allegations that Iran had carried out studies related to certain aspects of nuclear weapon design.⁴⁴ In addition to these alleged studies, suspicions that Iran was engaged in secret nuclear weapon design work were heightened when a Farsi-language document was published in a British newspaper that appeared to describe a programme to develop and test a key nuclear weapon component.⁴⁵

In an apparent response to the IAEA Board’s resolution, the Iranian Government announced on 29 November that it had approved plans for building 10 new uranium enrichment plants. The construction of 5 plants whose locations had already been decided would start within 2 months.⁴⁶

Resumption of talks between Iran and the P5+1 states

Coinciding with the controversy over the plant at Fordow, in October Iran and the P5+1 states (the five permanent members of the UN Security Council—China, France, Russia, the United Kingdom and the USA—plus Germany) resumed negotiations, for the first time in more than a year, on the future of Iran’s uranium enrichment programme. The talks appeared to achieve a breakthrough when the parties announced that they had reached an agreement in principle on a nuclear fuel supply deal: Iran would send 1200 kilograms of LEU—approximately 75 per cent of its total inventory of domestically produced LEU—to Russia for further enrichment.⁴⁷ France would then fabricate the Iranian LEU or Russian-origin enriched uranium into fuel for the Tehran Research Reactor (TRR).⁴⁸ That reactor was expected to run out of LEU fuel in 2010—a prospect that reportedly prompted Iran during the summer of 2009 to seek assistance in refuelling it.⁴⁹

The proposed deal was greeted by Western countries as a useful confidence-building measure, since it would require Iran to ship most of its

⁴³ For a summary of these issues see Kile, S. N., ‘Nuclear arms control and non-proliferation’, *SIPRI Yearbook 2009*, pp. 395–96.

⁴⁴ IAEA, GOV/2009/74 (note 29), pp. 6–7.

⁴⁵ Philip, C., ‘Secret document exposes Iran’s nuclear trigger’, *The Times*, 14 Dec. 2009. The document, which was dismissed by Iran as a fabrication, described a neutron initiator made out of uranium deuteride that was designed to set off the explosion in a nuclear weapon.

⁴⁶ Iran “planning 10 new uranium enrichment sites”, BBC News, 29 Nov. 2009, <<http://news.bbc.co.uk/2/hi/8385275.stm>>; and ‘Iran to build more uranium plants’, Al Jazeera, 30 Nov. 2009, <<http://english.aljazeera.net/news/middleeast/2009/11/20091129154255281852.html>>.

⁴⁷ Erlanger, S. and Landler, M., ‘Iran agrees to send enriched uranium to Russia’, *New York Times*, 2 Oct. 2009.

⁴⁸ The TRR, which is used to produce medical isotopes, has been operating on Argentine fuel since 1993. The fuel in use is enriched to 19.7% in uranium-235. France and Russia are the only countries with the technical capability to fabricate fuel rods to the specifications required by the TRR.

⁴⁹ Porter, G., ‘Iran’s fuel for conflict’, *Le Monde Diplomatique*, 9 Dec. 2009.

declared LEU stockpile out of the country by the end of 2009.⁵⁰ The material would be returned to Iran in the form of fuel plates, usable in the TRR but difficult to convert to weapon use. According to a number of official and non-governmental estimates, by early 2009 Iran had produced enough LEU to build at least one nuclear weapon if it chose to do so in the future.⁵¹

On 29 October Iran presented a counter-proposal to an IAEA-drafted plan that had been based on the P5+1 proposal.⁵² Iran accepted in principle the idea of shipping domestically produced LEU abroad for enrichment, but it insisted that the shipments must be made in smaller batches over an undefined period of time. The offer reflected the Iranian Government's distrust over whether the Western countries would allow the return of the enriched fuel. The P5+1 proposal reportedly had become a politicized issue among the senior Iranian leadership, which was already deeply divided over the disputed results of the country's presidential elections in June 2009.⁵³

Following repeated calls for Iran to clarify its position, the deal between Iran and the P5+1 collapsed the following month. Iranian Foreign Minister Manoucherh Mottaki announced that his country was not willing to send LEU abroad before the fuel intended for the TRR arrived in the country; Iran would consider a 'simultaneous exchange' on Iranian territory, on the Gulf island of Kish.⁵⁴ The new offer was dismissed by France, Germany and the UK (the 'European Union three', EU-3) and the USA as undermining the basic purpose of the original deal: namely, to bring Iran's stockpile of LEU below the level required to construct a nuclear weapon.⁵⁵

The year ended without a fuel supply deal for the TRR. The breakdown of the talks led the USA to call for a tougher international approach to Iran, including the adoption of robust new sanctions. As 2010 began, however, signs appeared that the US calls would not enjoy the unanimous backing of the P5 states.⁵⁶

⁵⁰ Erlanger and Landler (note 47); and Kalantari (note 35). According to several estimates, Iran would require c. 1 year to replace the 1200 kg of LEU at its current rate of production.

⁵¹ Borger, J., 'Iran has enough enriched uranium to make bomb, IAEA says', *The Guardian*, 19 Feb. 2009; and 'Iran has enough nuclear fuel to make bomb: US', Reuters, 1 Mar. 2009, <<http://www.reuters.com/article/idUSTRE5201GO20090301>>.

⁵² Blitz, J., Bozorgmehr, N. and Dombey, D., 'Iran seeks big changes to nuclear deal', *Financial Times*, 30 Nov. 2009; and Pouladi, F., 'Iran wants more talks on nuclear fuel deal', Agence France-Press, 30 Oct. 2009.

⁵³ 'Iran: too divided for a nuclear deal?', BBC News, 5 Nov. 2009, <<http://news.bbc.co.uk/2/hi/8343990.stm>>; and Porter (note 49).

⁵⁴ Hafezi, P., 'Iran rejects sending uranium abroad', Reuters, 18 Nov. 2009, <<http://www.reuters.com/article/idUSTRE5AH2H820091118>>.

⁵⁵ Erlanger, S., 'Frustration as Iran stalls on deal', *New York Times*, 20 Nov. 2009. See also Council of the European Union, 'Statement by Robert Cooper following the E3+3 meeting on Iran in Brussels', 20 Nov. 2009, <http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/EN/declarations/111386.pdf>.

⁵⁶ MacFarquhar, N., 'Chinese envoy objects to more penalties for Iran', *New York Times*, 6 Jan. 2009.

IV. The impasse over North Korea's nuclear programme

In 2009 the Six-Party Talks remained stalemated over reviving a denuclearization plan for North Korea that had been agreed by the parties in 2007.⁵⁷ The plan set out a sequence of reciprocal steps, based on the principle of 'action-for-action', that were intended to pave the way for North Korea to verifiably 'abandon' its nuclear programme.⁵⁸ However, the deal broke down in the autumn of 2008 because of dispute between the two principal antagonists—North Korea and the USA—over how to verify the accuracy and completeness of North Korea's initial declaration of its nuclear facilities and plutonium production activities as required under the agreement.⁵⁹

North Korea's resumption of ballistic missile and nuclear tests

In April 2009 North Korea's news agency reported that a three-stage rocket launched from the Musudan-ri missile facility on the north-east coast of the country had successfully carried into orbit a communications satellite.⁶⁰ In contrast to its previous launches of long-range rockets, North Korea had announced its intention to launch a civilian satellite several weeks before the event. The North Korean claim to have placed a satellite in orbit was dismissed by outside analysts because tracking data indicated that the rocket's third stage, along with the satellite payload, had crashed into the Pacific Ocean.⁶¹ Japan, South Korea and the USA denounced the launch as an attempt by North Korea to continue flight testing its long-range Taepodong-2 ballistic missile following a failed test in 2006.⁶²

Following protracted discussions, the UN Security Council unanimously adopted a presidential statement condemning North Korea's rocket launch, demanding that North Korea 'not conduct further launches' and reiterating that North Korea must fully comply with Resolution 1718 and suspend all ballistic missile activities.⁶³ The statement also called on the Security Coun-

⁵⁷ The Six-Party Talks began in Aug. 2003 as a Chinese diplomatic initiative aimed at resolving the controversy over how to address North Korea's suspected nuclear weapon programme. The 6 parties are China, Japan, North Korea, South Korea, Russia and the USA.

⁵⁸ For a description of the 2007 denuclearization plan see Kile, S. N., 'Nuclear arms control and non-proliferation', *SIPRI Yearbook 2008*, pp. 351–54.

⁵⁹ See Kile (note 5), pp. 399–402.

⁶⁰ Korean Central News Agency, 'KCNA on DPRK's successful launch of satellite Kwangmyong-song-2', 5 Apr. 2009, <<http://www.kcna.co.jp/item/2009/200904/news05/20090405-11ee.html>>.

⁶¹ Broad, W. J., 'North Korea's missile launch was a failure, experts say', *New York Times*, 5 Apr. 2009.

⁶² 'Defiant N Korea launches rocket', BBC News, 5 Apr. 2009, <<http://news.bbc.co.uk/2/hi/7982874.stm>>.

⁶³ United Nations, Security Council, Statement by the President, S/PRST/2009/7, 13 Apr. 2009. Resolution 1718 demanded that North Korea abandon all nuclear weapons as well as all existing

cil's Sanctions Committee on North Korea to implement the measures set out in Resolution 1718 that had been suspended on North Korea's return to the Six-Party Talks in late 2006.

North Korea denounced the statement as a US-led effort 'wantonly infringing upon the sovereignty of the DPRK' and the country's right under international law to develop a civilian satellite programme. In response to the Security Council's action North Korea announced that it would no longer participate in the Six-Party Talks and would not be bound by any agreements previously reached in the talks. It also would act to 'boost its nuclear deterrent for self-defence in every way'. In particular, it would restart the production of plutonium for nuclear weapons that been halted as part of the 2007 denuclearization agreement and would take measures 'to restore to their original state the nuclear facilities which had been disabled according to the agreement'.⁶⁴ North Korea subsequently announced that it had begun reprocessing the spent fuel rods from the graphite-moderated nuclear reactor at Yongbyon.⁶⁵

International reaction to the second North Korean nuclear test explosion

In May 2009 North Korea's news agency reported that, for the second time, a successful underground nuclear test explosion had been carried out.⁶⁶ The previous test in October 2006 was widely considered to have been a failure because of its unexpectedly low explosive yield.⁶⁷ Although the test was not unexpected, the announcement was greeted by international condemnation.⁶⁸

In June the UN Security Council unanimously approved Resolution 1874, which demanded that North Korea 'abandon all nuclear weapons and existing nuclear programmes in a complete, verifiable and irreversible

nuclear and ballistic missile programmes in a 'complete, verifiable and irreversible manner'. UN Security Council Resolution 1718, 14 Oct. 2006.

⁶⁴ Korean Central News Agency, 'DPRK Foreign Ministry vehemently refutes UNSC's "Presidential Statement"', 14 Apr. 2009, <<http://www.kcna.co.jp/item/2009/200904/news14/20090414-23ee.html>>.

⁶⁵ Korean Central News Agency, 'Foreign Ministry spokesman on reprocessing of spent fuel rods', 25 Apr. 2009, <<http://www.kcna.co.jp/item/2009/200904/news25/20090425-20ee.html>>.

⁶⁶ Korean Central News Agency, 'KCNA report on one more successful underground nuclear test', 25 May 2009, <<http://www.kcna.co.jp/item/2009/200905/news25/20090525-12ee.html>>.

⁶⁷ Based on the seismic data collected by several monitoring networks, non-governmental experts estimated that the explosive yield was c. 2–7 kilotons. The nuclear test explosion in 2006 was estimated to have a yield of under 1 kiloton. On the test explosion see appendix 8B in this volume.

⁶⁸ North Korea had issued a statement at the end of Apr. 2009 warning that it might conduct a nuclear test in response to the Security Council Sanctions Committee's decision to impose new restrictions on 3 major North Korean companies. Korean Central News Agency, 'UNSC urged to retract anti-DPRK steps', 29 Apr. 2009, <<http://www.kcna.co.jp/item/2009/200904/news29/20090429-14ee.html>>.

manner' and return to the Six-Party Talks.⁶⁹ In addition to imposing new financial sanctions on North Korea, the resolution called on UN member states to cooperate with the inspection of cargo travelling to and from North Korea. It gave them expanded authority to interdict ships on the high seas if there were 'reasonable grounds' to believe that the ships were carrying banned cargo, including equipment and materials for North Korea's nuclear and ballistic missile programmes. This provision brought the interdiction powers authorized by the Security Council into closer alignment with those of the US-led Proliferation Security Initiative (PSI).⁷⁰

The North Korean Foreign Ministry denounced Resolution 1874 as 'yet another vile product of the US-led offensive of international pressure' aimed at undermining North Korea and its political system.⁷¹ North Korea announced that, in light of the Security Council's action, it would move to weaponize all of the plutonium separated from the remaining spent fuel rods at Yongbyon.⁷² The statement also said that North Korea had been developing experimental uranium enrichment technology for producing nuclear fuel for a future light-water reactor and would now 'commence' with enriching uranium. This attracted considerable international attention because it appeared to confirm longstanding suspicions that North Korea was secretly pursuing a uranium enrichment programme.⁷³

In October 2009 the prospects for renewed diplomatic efforts appeared to brighten. North Korean leader Kim Jong Il reportedly said that his country would be prepared to return to the Six-Party Talks if it could first make progress in bilateral negotiations with the USA. US officials welcomed Kim's reported comments but emphasized that, while the USA was open to renewed bilateral dialogue with North Korea, it would not allow such discussions to replace the Six-Party Talks.⁷⁴

⁶⁹ UN Security Council Resolution 1874, 12 June 2009. On the provisions of Resolution 1874 see appendix 12A in this volume.

⁷⁰ Announced by US President George W. Bush in May 2003, the PSI consists of a set of agreed principles under which participating countries are allowed to search aircraft and ships carrying suspect cargo and seize illegal weapons or missile and nuclear technologies. For an analysis of legal concerns arising from the PSI see Ahlström, C., 'The Proliferation Security Initiative: international law aspects of the Statement of Interdiction Principles', *SIPRI Yearbook 2005*, pp. 741–65.

⁷¹ Korean Central News Agency, 'DPRK Foreign Ministry declares strong counter-measures to UNSC's "Resolution 1874"', 13 June 2009, <<http://www.kcna.co.jp/item/2009/200906/news13/20090613-10ee.html>>.

⁷² On 3 Nov. 2009 North Korea announced that it had completed the reprocessing of the spent fuel rods. For further detail see chapter 8, section IX, in this volume.

⁷³ E.g. see Harden, B., 'North Korea says it will start enriching uranium', *Washington Post*, 13 June 2009. However, some non-governmental analysts pointed out that the North Korean statement did not explicitly refer to enriching uranium for use in nuclear weapons. Pollack, J., 'Mis-reporting North Korea', *TotalWokerr*, 14 June 2009, <<http://totalwokerr.com/2038/mis-reporting-north-korea>>.

⁷⁴ Thatcher, J., 'North Korea says ready to return to nuclear talks', *Reuters*, 6 Oct. 2009, <<http://www.reuters.com/article/idUSSP48900020091006>>.

There was a cautious improvement in the bilateral relations between North Korea and the USA during the remainder of 2009. These included the first visit to Pyongyang by Stephen Bosworth, the US special envoy to North Korea, on 8–10 December 2009.⁷⁵ After the visit, the North Korean Foreign Ministry stated that the country's leadership understood the need to resume the Six-Party Talks and had agreed to work with the USA to narrow the 'remaining differences'.⁷⁶ However, the year ended with no progress made towards restarting the talks, amid indications that North Korea was determined to retain its nascent nuclear arsenal for the indefinite future.

V. Proliferation concerns in Syria and Myanmar

Syria

In 2009 little progress was made in resolving the outstanding issues arising from the IAEA's investigation of a suspected undeclared nuclear facility located at al-Kibar, in eastern Syria. The site was destroyed by an Israeli air strike in September 2007.⁷⁷ The Israeli and US governments have alleged that Syria had been secretly constructing, with technical assistance from North Korea, a nuclear reactor said to be similar to the reactor that North Korea used to produce plutonium for a nuclear explosive device.⁷⁸ The Syrian Government has stated that the destroyed building was a disused military facility that had no connection to nuclear activities.⁷⁹

In November the IAEA's Director General, Mohamed ElBaradei, reported to the Board of Governors that Syria continued to withhold the cooperation necessary for the agency to be able to confirm Syria's statements about the non-nuclear nature of the al-Kibar site.⁸⁰ Among other shortcomings, Syria had declined to provide information about its procurement of material and equipment that the IAEA believed could be used for building a reactor. Syria also continued to deny inspectors access to three

⁷⁵ 'Senior US envoy Bosworth begins talks in North Korea', BBC News, 8 Dec. 2009, <<http://news.bbc.co.uk/2/hi/8400739.stm>>.

⁷⁶ Korean Central News Agency, 'DPRK on US envoy's Pyongyang visit', 11 Dec. 2009, <<http://www.kcna.co.jp/item/2009/200912/news11/20091211-12ee.html>>.

⁷⁷ See Follath, E. and Stark, H., 'How Israel destroyed Syria's Al Kibar nuclear reactor', *Der Spiegel*, 2 Nov. 2009.

⁷⁸ US Office of the Director of National Intelligence, 'Background briefing with senior U.S. officials on Syria's covert nuclear reactor and North Korea's involvement', 24 Apr. 2008, <<http://www.dni.gov/interviews.htm>>. US intelligence officials acknowledged that they had only 'low confidence' that the site was part of a clandestine nuclear weapon programme since Syria did not possess a reprocessing facility or any of the other infrastructure needed for such a programme.

⁷⁹ 'Syria denies US allegations over nuclear reactor', *Syria Today*, May 2008.

⁸⁰ IAEA, Board of Governors, 'Implementation of the NPT safeguards agreement in the Syrian Arab Republic', Report by the Director General, GOV/2009/75, 16 Nov. 2009.

other locations that were suspected of having a 'functional relationship' to the activities at al-Kibar.⁸¹

The report also noted that the IAEA had made little progress in determining the origin of the anthropogenic (chemically processed) natural uranium particles, which are of a type not included in Syria's declared inventory, that were found in environmental samples taken by inspectors in 2008 at the al-Kibar site.⁸² According to Syria, the particles are likely to have come from depleted-uranium (DU) munitions used by Israel in the attack on the site. Based on its analysis of the composition and the morphology of the particles, the IAEA assessed that there was a 'low probability' that the use of DU munitions could account for their presence.⁸³ The question of the particles' origin was important to the agency.⁸⁴ The uranium was in a form which must be declared by Syria to the IAEA under the country's safeguards agreement, and its presence raised doubt about the correctness and completeness of Syria's declaration.⁸⁵ In 2009 a similar safeguards compliance question arose when anthropogenic natural uranium particles, of a type not in Syria's declared inventory, were found in environmental samples taken from the hot cells of the country's single research reactor, in Damascus.⁸⁶

Myanmar

In August 2009 an Australian newspaper reported that Myanmar was engaged in clandestine nuclear collaboration with North Korea. Dissident groups had previously made claims about covert nuclear sites in Myanmar, including reactors and uranium mines and mills.⁸⁷ The Australian story reported the construction of a secret nuclear reactor and plutonium reprocessing facility in caves at Naung Laing in the northern part of the country.⁸⁸ The alleged facilities were located near the site of a 10-megawatt

⁸¹ IAEA, GOV/2009/75 (note 80), p. 3.

⁸² IAEA, GOV/2009/75 (note 80), p. 2.

⁸³ IAEA, GOV/2009/75 (note 80), p. 2.

⁸⁴ One non-governmental expert, citing an unnamed source close to the IAEA, speculated that the particles came from nuclear fuel secretly imported by Syria from North Korea. Acton, J., 'Norks may have shipped Syria U fuel', Arms Control Wonk, 21 Nov. 2008, <<http://www.armscontrolwonk.com/2106/new-evidence-of-nork-syria-link>>.

⁸⁵ Agreement between the Government of the Syrian Arab Republic and the International Atomic Energy Agency for the application of safeguards in connection with the Treaty on the Non-proliferation of Nuclear Weapons, signed on 25 Feb. 1992, entered into force on 18 May 1992, reproduced in IAEA Information Circular INFCIRC/407, July 1992.

⁸⁶ See Albright, D. and Shire, J., 'IAEA Report on Iran', Institute for Science and International Security (ISIS) Report, 16 Nov. 2009; and Brannan, P., 'ISIS analysis of November 16, 2009 IAEA report on Syria', Institute for Science and International Security Reports, 16 Nov. 2009, <<http://www.isis-online.org/isis-reports/detail/isis-analysis-of-november-6-2009-iaea-report-on-syria>>.

⁸⁷ E.g. see Lintner, B., 'Tunnels, guns and kimchi: North Korea's quest for dollars: part I', Yale-Global Online, 9 June 2009, <<http://yaleglobal.yale.edu/content/NK-quest-for-dollars-part1>>.

⁸⁸ McDonald, H., 'Revealed: Burma's nuclear bombshell', *Sydney Morning Herald*, 1 Aug. 2009.

nuclear reactor to be built by Russia under IAEA safeguards.⁸⁹ The newspaper cited two defectors as the source of the information about the secret facilities.

During the autumn of 2009 doubts arose about the report. According to one authoritative source, the IAEA had concluded that the suspect site was not a nuclear reactor but rather a non-nuclear industrial workshop or machinery plant. This conclusion was based on the absence of certain 'overhead signatures' for a reactor in satellite imagery and on 'specific information derived from first-hand knowledge of the site and its activities'.⁹⁰ A non-governmental organization examining the allegations emphasized that, while there remained 'valid suspicions about the existence' of such activities in Myanmar, 'the lack of specifics about many of the sites mentioned in the reports from opposition groups and defectors' made independent analysis of the claims 'very difficult'.⁹¹

VI. Developments related to multilateral treaties and initiatives

Fissile material cut-off treaty negotiations

In 2009 the Conference on Disarmament overcame a 12-year procedural impasse and adopted a programme of work, including an agreement to convene a working group to begin negotiations on an FMCT on the basis of the mandate adopted by the CD in 1995.⁹² The CD also agreed to establish working groups for the other three core items on its agenda: nuclear disarmament, the prevention of an arms race in outer space, and negative security assurances.⁹³ In previous years, many member states or informal groups of states had insisted that progress towards an FMCT should be linked to simultaneous movement on the other core issues.

⁸⁹ Apart from this project, Myanmar is not known to have any significant nuclear facilities or to have conducted work in any area of the nuclear fuel cycle.

⁹⁰ Hibbs, M., 'IAEA probes Myanmar data, discourages new research reactor', *Nuclear Fuel*, vol. 34, no. 16 (10 Aug. 2009), pp. 3–5.

⁹¹ Kelley, R., Scheel Stricker, A. and Brannan, P., 'Exploring claims about secret nuclear sites in Myanmar', Institute for Science and International Security (ISIS) Reports, 28 Jan. 2010, <<http://www.isis-online.org/isis-reports/detail/exploring-claims-about-secret-nuclear-sites-in-myanmar/>>.

⁹² Conference on Disarmament, 'Decision for the establishment of a Programme of Work for the 2009 session', CD/1864, Geneva, 29 May 2009. The 1995 mandate (the so-called Shannon mandate) was to 'negotiate a non-discriminatory, multilateral and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices'. Conference on Disarmament, 'Report of Ambassador Gerald E. Shannon of Canada on consultations on the most appropriate arrangement to negotiate a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices', CD/1299, 24 Mar. 1995.

⁹³ Conference on Disarmament, CD/1864 (note 92). Negative security assurances are commitments by the 5 legally recognized nuclear weapon states not to use, or threaten to use, nuclear weapons against non-nuclear weapon states parties to the NPT.

The CD's adoption of the programme of work gave rise to renewed optimism about the prospects for negotiating an FMCT. This was reinforced by the new US Administration's commitment to the goal of a verifiable treaty, in contrast to the position of its predecessor.⁹⁴ At the same, the decision to form a working group to open FMCT negotiations raised anew the dispute over the scope of a future treaty that had been left unresolved by the 1995 mandate.⁹⁵ One of the main points of contention has been whether an FMCT should ban only the future production of fissile material for weapon purposes or should also prevent existing stocks of such material from being used to manufacture new weapons. Some states, in particular Egypt and Pakistan, have demanded that the ban on future production of fissile material for weapon purposes should go beyond mandating a production cut-off and also cover existing stocks of such material. In contrast, the five legally recognized nuclear weapon states, along with India, have insisted that the mandate should apply only to future production of fissile material.⁹⁶

Despite the adoption of the programme of work, the CD was unable to adopt a framework for implementing the programme before the end of the 2009 session, primarily due to procedural reservations from Pakistan.⁹⁷ In the absence of an implementation framework, the CD was unable to begin substantive work on any of the agenda items. This meant that the CD would have to adopt a new programme of work and implementation framework for its 2010 session, thereby raising the risk that some member states which have been traditionally lukewarm about an FMCT, such as Pakistan, might use procedural objections to block substantive work on it.

Preparatory Committee meeting for 2010 NPT Review Conference

The third and final meeting of the Preparatory Committee for the 2010 NPT Review Conference took place in New York on 4–15 May 2009.⁹⁸ The

⁹⁴ In 2006 the USA put forward a draft treaty text that omitted provisions for verification in accordance with the position of the Administration of President George W. Bush, announced in 2004, that an FMCT could not be effectively verified. See Kile, S. N., 'Nuclear arms control and non-proliferation', *SIPRI Yearbook 2007*, pp. 510–11.

⁹⁵ For a survey of issues related to the scope and verification of a future FMCT see International Panel of Fissile Materials (IPFM), *Global Fissile Material Report 2008: Scope and Verification of a Fissile Material (Cutoff) Treaty* (IPFM: Princeton, NJ, 11 Oct. 2008).

⁹⁶ Meyer, P., 'A fissile material (cut-off) treaty: some observations on scope and verification', *Disarmament Diplomacy*, no. 91 (summer 2009).

⁹⁷ Conference on Disarmament, 'Statement by Ambassador Zamir Akram, Permanent Representative of Pakistan, to the Conference on Disarmament', Geneva, 2 July 2009.

⁹⁸ The purpose of the Preparatory Committee meetings, which are held in the 3 years leading up to the quinquennial review conferences, is to 'consider principles, objectives and ways in order to promote the full implementation of the Treaty, as well as its universality, and to make recommendations thereon' to the review conferences. 'Strengthening the review process for the treaty', NPT/CONF.1995/32 (Part I), 11 May 1995.

meeting was characterized by a constructive atmosphere, which in the view of many observers reflected the new US Administration's positive approach to multilateral diplomacy and arms control.⁹⁹ A provisional agenda for the 2010 Review Conference was adopted by consensus, thereby averting a repeat of the procedural impasse that blocked most of the 2005 conference.¹⁰⁰ The parties also agreed on funding and organizational decisions, including the endorsement of Ambassador Libran Cabactulan of the Philippines for the presidency of the 2010 Review Conference.¹⁰¹

The Preparatory Committee meeting highlighted longstanding differences between the states parties on substantive matters related to the three main pillars of the NPT (nuclear energy, nuclear disarmament and non-proliferation). A consensus agreement was not reached on forwarding to the upcoming conference a set of substantive recommendations drafted by the chair. These had to do with nuclear disarmament and security assurances; regional issues, including the Middle East; and measures to strengthen compliance with non-proliferation undertakings. Some Non-Aligned Movement member states demanded action by the nuclear weapon states to take steps towards nuclear disarmament. Egypt took the lead in calling for renewed action to implement the resolution, adopted at the 1995 Review Conference, on the establishment of a weapons of mass destruction-free zone in the Middle East.¹⁰²

New commitments to reducing nuclear dangers

New political commitments by world leaders to work towards nuclear disarmament and to support a broad framework of actions to reduce global nuclear dangers were made in 2009. Particular attention was given to expanding current efforts to enhance the safety and custodial security of weapon-usable nuclear material. Many of these efforts, notably the Group of Eight (G8) countries' Global Partnership against the Proliferation of Weapons and Materials of Mass Destruction, have focused on nuclear security activities on the territory of the former Soviet Union.¹⁰³

In April 2009 US President Obama expressed particular concern about the risk of a nuclear weapon falling into the hands of a terrorist group—a

⁹⁹ Charbonneau, L., 'Obama boosts nuclear talks, split remains', Reuters, 15 May 2009, <<http://www.reuters.com/article/latestCrisis/idUSN15244364>>.

¹⁰⁰ For a summary of these issues see Kile, S. N., 'Nuclear arms control and non-proliferation', *SIPRI Yearbook 2006*, pp. 612–14.

¹⁰¹ Final report of the Preparatory Committee for the 2010 Review Conference of the parties to the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.2010/1, 20 May 2009.

¹⁰² Johnson, R., 'Enhanced prospects for 2010: an analysis of the third PrepCom and the outlook for the 2010 NPT Review Conference', *Arms Control Today*, vol. 39, no. 5 (June 2009).

¹⁰³ The Global Partnership was established in 2002 to support cooperative projects, initially in Russia and Ukraine, aimed at addressing non-proliferation, disarmament, counterterrorism and nuclear safety issues. For a summary of recent activities see Kile (note 5), pp. 410–11.

scenario that he described as ‘the most immediate and extreme threat to global security’.¹⁰⁴ Obama announced an ambitious international effort to secure ‘all vulnerable nuclear material around the world’ within four years and his intention to host a nuclear security summit meeting in 2010.

UN Security Council Resolution 1887

In September 2009 at a summit-level meeting chaired by President Obama and attended by 13 other heads of state or government, the United Nations Security Council unanimously adopted Resolution 1887.¹⁰⁵ The politically binding resolution expressed support for a broad range of steps to promote nuclear disarmament and to combat the spread of nuclear weapons, while eliding disagreements between member states over specific measures.

Although Resolution 1887 attracted considerable media attention because of its call to work towards a world without nuclear weapons, most of its substantive recommendations addressed non-proliferation and nuclear security measures. The resolution focused on strengthening legal and regulatory arrangements aimed at reducing the risk of illicit diversion of nuclear material. Resolution 1887 called for universal adherence to the 1980 Convention on the Physical Protection of Nuclear Material and Nuclear Facilities and its 2005 amendment, as well as the Convention for the Suppression of Acts of Nuclear Terrorism.¹⁰⁶ The resolution also called on states to share best practices in order to raise standards of nuclear security, with the aim of securing all vulnerable nuclear material within four years, and urged them to take ‘all appropriate national measures . . . to prevent proliferation financing and shipments, to strengthen export controls, to secure sensitive materials, and to control access to intangible transfers of technology’. In this context, the resolution recognized the need to give additional financial and other support for the sustainable implementation of UN Security Council Resolution 1540.¹⁰⁷

The adoption of Resolution 1887 reflected a growing international recognition of the threat of nuclear terrorism and the need for cooperative action to address it. It also highlighted the emphasis that some countries, in particular the UK and the USA, have put on identifying nuclear security as a ‘fourth pillar’ of the NPT framework.¹⁰⁸ However, there has been concern in other countries that this emphasis on nuclear security will distract attention from the core goals of the NPT.

¹⁰⁴ White House (note 2).

¹⁰⁵ UN Security Council Resolution 1887, 24 Sep. 2009.

¹⁰⁶ For a description of the CPPNM see annex A in this volume.

¹⁰⁷ UN Security Council Resolution 1540, 28 Apr. 2004. See also Ahlström, C., ‘United Nations Security Council Resolution 1540: non-proliferation by means of international legislation’, *SIPRI Yearbook 2007*, pp. 460–76.

¹⁰⁸ E.g. see British Cabinet Office, *The Road to 2010: Addressing the Nuclear Question in the 21st Century*, Cmd 7675 (The Stationery Office: Norwich, 16 July 2009), p. 7.

VII. New nuclear weapon-free zones

Regional arrangements establishing nuclear weapon-free zones are important legal components of the global nuclear non-proliferation regime and supplement international efforts to prevent the emergence of new nuclear weapon states. In 2009 treaties establishing new NWFZs in Central Asia and in Africa entered into force (see table 9.2).

The Central Asian nuclear weapon-free zone

The Treaty on a Nuclear-Weapon-Free Zone in Central Asia (Treaty of Semipalatinsk) entered into force on 21 March 2009 after the final state party, Kazakhstan, deposited its instrument of ratification.¹⁰⁹ In 1997 the leaders of the five Central Asian states—Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan—issued the Almaty Declaration, calling for the creation of a Central Asian nuclear-weapon-free zone. The treaty opened for signature in September 2006.¹¹⁰

The treaty's provisions are similar to those of other NWFZ agreements and oblige the parties not to conduct research on, develop, manufacture, stockpile or otherwise possess nuclear weapons and not to allow the use of their territory for the stationing of nuclear weapons.¹¹¹ It has several distinctive features as well. It is the first treaty to oblige the parties to conclude an Additional Protocol agreement with the IAEA and to follow the restrictions of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), which has yet to come into force.¹¹² It also requires the parties to apply measures of physical protection to nuclear material and nuclear facilities on their territories in order to meet international standards—a reflection of concerns that Central Asia could become a source or transit corridor for the smuggling of nuclear materials. It also commits the parties to work to reverse environmental damage caused by the production and testing of former Soviet nuclear weapons in the region.

The protocol to the treaty, which provides for negative security assurances to the parties from the five legally recognized nuclear weapon states, had not been signed by any of these states as of 1 January 2010. China and Russia have supported adoption of the protocol, while France, the UK and the USA have expressed misgivings about it. The main concern of the latter

¹⁰⁹ United Nations, Office of Disarmament Affairs (UNODA), 'Fact Sheet: Treaty on Nuclear-Weapon-Free Zone in Central Asia', 20 Mar. 2009, <<http://www.un.org/disarmament/WMD/Nuclear/NWFZ.shtml>>.

¹¹⁰ Parrish, S. and Potter, W., 'Central Asian states establish nuclear-weapon-free-zone despite US opposition', Center for Nonproliferation Studies (CNS) Research Report, Monterey Institute of International Studies, 8 Sep. 2006, <<http://cns.miis.edu/stories/060905.htm>>.

¹¹¹ For a summary and other details of the treaty see annex A in this volume.

¹¹² For a summary and other details of the CTBT see annex A in this volume.

Table 9.2. Nuclear weapon-free zone treaties

Treaty ^a	Zone of application	Date of signature	Date of entry into force
Treaty of Tlatelolco	Latin America, Caribbean	14 Feb. 1967	22 Apr. 1968
Treaty of Rarotonga	South Pacific	6 Aug. 1985	11 Dec. 1986
Treaty of Bangkok	South East Asia	15 Dec. 1995	27 Mar. 1997
Treaty of Pelindaba	Africa	11 Apr. 1996	15 July 2009
Treaty of Semipalatinsk	Central Asia	8 Sep. 2006	21 Mar. 2009

^a In addition, certain uninhabited areas have been formally denuclearized: Antarctica (1959 Antarctic Treaty); outer space, the moon and other celestial bodies (1967 Outer Space Treaty); and the seabed and ocean floor (1971 Seabed Treaty).

Source: Annex A.

three governments has been that the treaty's language could be interpreted as allowing Russia to deploy nuclear weapons in the zone under certain circumstances, in accordance with the provisions of a prior defence agreement, the 1992 Treaty on Collective Security (Tashkent Treaty).¹¹³

The African nuclear weapon-free zone

The Treaty of Pelindaba, establishing an African NWFZ, entered into force on 15 July 2009, after Burundi had become the 28th state signatory to ratify it.¹¹⁴ The treaty, named after the former South African nuclear weapon facility near Pretoria, opened for signature in Cairo in 1996. Its entry into force marked the culmination of over 40 years of activity within the African Union (AU) as well as the expansion of NWFZs to the entire southern hemisphere.

The treaty covers Africa, island state members of the AU and island territories considered by the AU to be part of Africa. In addition to containing provisions similar to those of other NWFZ agreements, the treaty provides for the parties to engage in peaceful nuclear activities while obliging them to conclude comprehensive safeguards agreements with the IAEA. The treaty also provides for the five legally recognized nuclear weapon states to give negative security assurances to the parties (Protocol I) and to pledge

¹¹³ Kakatkar, M. and Pomper, M., 'Central Asian nuclear-weapon-free zone formed', *Arms Control Today*, vol. 39, no. 7 (Jan./Feb. 2009). Treaty on Collective Security, opened for signature 15 May 1992, entered into force 20 Apr. 1994, *United Nations Treaty Series*, vol. 1894 (1995). Four Central Asian parties to the Treaty of Semipalatinsk—Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan—are also parties to the Collective Security Treaty and are members of the associated Collective Security Treaty Organization (CSTO). For a brief description of the CSTO see annex B in this volume.

¹¹⁴ Harvey, C., 'African NWFZ treaty enters into force', *Arms Control Today*, vol. 39, no. 7 (Sep. 2009). The treaty has been signed by all 53 AU member states and Morocco. For a summary and other details of the Treaty of Pelindaba see annex A in this volume.

not to test or assist the testing of nuclear weapons within the zone (Protocol II).¹¹⁵

The entry into force of the Treaty of Pelindaba focused renewed attention on the dispute over whether the Africa NWFZ applies to the Indian Ocean island of Diego Garcia in the Chagos Archipelago.¹¹⁶ The AU considers Diego Garcia and the surrounding islands to be part of Mauritius, an AU member state, and hence part of the African zone. However, the UK—which regards Diego Garcia, over which it exercises sovereignty, as part of the British Indian Ocean Territory—does not.¹¹⁷ Under a series of bilateral agreements with the UK, the USA has built large naval and air installations on the island that support deployments of nuclear-capable attack submarines and long-range bombers. The USA has declared that neither the treaty nor protocols I and II apply to the activities on Diego Garcia of the USA, the UK or any other state not party to the treaty.¹¹⁸

VIII. Conclusions

In 2009 global efforts to promote nuclear disarmament and non-proliferation ahead of the 2010 NPT Review Conference gained new momentum. A potential breakthrough was made at the CD where the procedural impasse that had blocked the opening of negotiations on an FMCT was overcome. The prospects for bringing into force the CTBT were given a boost by a renewed US commitment to ratify the treaty. Greater political attention was also given to the challenge of enhancing the safety and custodial security of nuclear materials. The UN Security Council's adoption of Resolution 1887 reflected growing international recognition of the threat of nuclear terrorism and the need for cooperative action to address it.

Nonetheless, important challenges remained to the legal and normative underpinnings of the NPT regime. North Korea, which was a non-nuclear weapon state party to the NPT before announcing its formal withdrawal in 2003, conducted a second nuclear explosive test in 2009 and declared its intention to expand its military nuclear capabilities. In Iran safeguards compliance questions continued to be unresolved, which pointed to a possible military dimension to the country's nuclear programme.

¹¹⁵ All 5 nuclear weapon states signed protocols I and II. They were ratified by China on 6 Sep. 1996; by France on 31 July 1997; and by the UK on 27 Feb. 2001.

¹¹⁶ Sand, P. H., 'Diego Garcia: a thorn in the side of Africa's nuclear-weapon-free zone', *Bulletin of the Atomic Scientists*, 8 Oct. 2009.

¹¹⁷ The UK qualified its signature of protocols I and II in 1996 by stating that it did 'not accept the inclusion of [the Chagos Archipelago] within the African nuclear-weapon-free zone' without the British Government's consent. See annex A in this volume.

¹¹⁸ Russia has refused to ratify protocols I and II until it receives assurances from the USA that Diego Garcia will not be used for storing or transporting nuclear weapons. Harvey (note 114); and annex A in this volume.

Perhaps the most hopeful sign in 2009 was that top political leaders began ‘thinking the unthinkable’ and gave serious attention to formulating a long-term strategy for not only reducing the size and spread of nuclear arsenals, but eventually for eliminating them altogether. This was bolstered by the arrival of a new US Administration that embraced treaty-based arms control and disarmament and called for multilateral action to meet urgent proliferation challenges based on international law. As the year ended, the looming question was whether the rhetorical commitments that were heard in 2009 would be translated into concrete action.¹¹⁹

¹¹⁹ On steps towards achieving a world free of nuclear weapons see chapter 1 in this volume.