



The Future of Nuclear Weapons in NATO

IAN ANTHONY AND JOHNNY JANSSEN

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- In 2010 five Allies have called for a discussion of NATO's nuclear policy with the objective of reducing the importance of nuclear weapons in Alliance security policy. Allies continue to see a role for nuclear weapons as part of a mix of capabilities needed to guarantee their security in an uncertain and fragmented international system. While NATO will continue to be a nuclear alliance, important aspects of nuclear policy may be adjusted in line with present economic, political and strategic realities.
- Whether nuclear weapons will only deter nuclear attacks or play a role in deterring other forms of aggression is ripe for discussion. Neither the feasibility nor the desirability of tailoring nuclear deterrence to new and emerging threats has been explained or discussed in Europe.
- The passage of time has put the credibility of short-range nuclear forces in doubt. National plans of nuclear weapon states, NATO enlargement, the retirement of many nuclear weapons and the aging of nuclear-capable aircraft have challenged the stated rationale for maintaining US nuclear weapons in Europe: Alliance solidarity and trans-Atlantic reassurance.



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Executive Summary

Governments in some of the European countries that are central to Alliance nuclear policy have ensured that the role of nuclear weapons in European security will be debated during 2010 as part of the discussion of a new NATO Strategic Concept. The current version of this document, described as a core mission statement for the Alliance and dating from 1999, lays out the main parameters of NATO nuclear policy today. This version also reflects the important changes in NATO membership and missions since the previous document was agreed.

The role of nuclear forces and force postures has recently been evaluated in several key NATO countries in parallel with a new interest in probing the prospects and options for nuclear arms control and further arms reductions. NATO itself is also undertaking an internal review of nuclear deterrence requirements for the twenty-first century.

Officials from the United States and Russia are creating new bilateral nuclear agreements that will provide a stable framework for further reductions in the size of deployed nuclear arsenals. In 2010, almost 200 countries will come together to review the Nuclear Non-Proliferation Treaty (NPT), a central component of international efforts to prevent the spread of nuclear weapons to new countries. The participants in the 2010 meeting have committed themselves to a balanced approach that also underlines the need for further steps towards nuclear disarmament and towards a new international framework for the equitable sharing of nuclear technology for peaceful uses.

The Allies continue to see a role for nuclear weapons as one part of a mix of capabilities that are needed to guarantee their security in an uncertain and fragmented international environment. While there is every reason to expect that NATO will continue to be a nuclear alliance, there are signals that important aspects of NATO nuclear policy may be adjusted.

Whether nuclear weapons will still be seen as central to deterring aggression against the Alliance or whether their role would be limited to deterring nuclear attacks is one question ripe for discussion. However, tailored deterrence has not been widely explained or discussed in Europe and neither its feasibility nor its desirability has been debated.

The future of short-range delivery systems for nuclear weapons, including US weapons based in Europe, will also be the focus of an inclusive and extensive reflection and analysis, although there is no imminent need for a decision on this question. The reflection should take place in the context of developments in Russia and in the Middle East.

NATO emphasises that its nuclear forces must be credible and flexible in order to achieve effective deterrence. However, changing circumstances and the passage of time have put the credibility and flexibility of existing forces in doubt. The national plans of nuclear weapon states, the enlargement of the Alliance, the retirement of many types of nuclear weapons and the aging of dual-capable aircraft earmarked for nuclear weapon delivery have combined to undermine the stated rationale for maintaining US nuclear weapons in Europe: Alliance solidarity and trans-Atlantic reassurance.

The configuration of the United States nuclear weapon stockpile is under review as Washington debates what an effective, reliable, sustainable and affordable nuclear posture will look like in future. The outcome may further marginalise short-range, dual-capable delivery systems within the arsenal. If these delivery systems are in the margins of nuclear force planning, their credibility and usefulness may further diminish.

While dual-capable delivery systems have limited ranges, the process of NATO enlargement has extended the distance between the places where weapons are stored and the periphery of the Alliance. Furthermore, while NATO nuclear policy has historically been characterised by a high degree of solidarity, the number of countries directly engaged in the nuclear mission has shrunk continuously since the end of the Cold War. A domino effect among the handful of Allies still engaged in the nuclear task may be unavoidable.

The discussion of a new Strategic Concept offers an opportunity to explore whether a consensus can be found inside the Alliance on the way forward, perhaps by linking the issue to the wider process of seeking a new quality in relations with Russia. Creating the conditions in which the stationing of US weapons in Europe can safely be ended might engage both NATO and Russia. However, difficult challenges would have to be overcome before the benefits of such an approach could be realised.

It will be necessary to identify and narrow gaps between NATO and Russia in their understanding of the role of nuclear weapons. In recent years, the Alliance has progressively de-emphasised the role of nuclear weapons, while Russia has become increasingly reliant on nuclear deterrence.

The ultimate objective should be a joint mandate with Russia to ban short-range nuclear forces in deployment, but to bring it about that goal-related issues – including the future of strategic nuclear arsenals, the development of advanced conventional weapons and the future parameters of ballistic missile defences – will have to be addressed in parallel.

1. The current NATO context

In April 2009, NATO Heads of State and Government held a summit on the occasion of the 60th anniversary of the Alliance. At the summit, leaders launched the process of designing a new Strategic Concept, updating a document that dates from 1999, to »define NATO's longer-term role in the new security environment of the 21st century«.¹

NATO has been engaged in an internal review of nuclear deterrence requirements for the twenty-first century since 2007, with a view to incorporating the results in a new strategic concept.²

This report will describe the political, military and technical issues that will have a bearing on the future nuclear weapons-related policies of NATO. The report will seek to describe the options and constraints that set the parameters for NATO's nuclear choices as a contribution to a pan-European debate on the role of nuclear weapons in European security. The report does not try to predict the outcome of NATO's deliberation, but instead tries to suggest approaches that could be prudent and advantageous in building national, European regional and international security.

1. Summit Declaration issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Strasbourg/Kehl, NATO Press Release (2009) 044, 4 April 2009. Available at: http://www.nato.int/cps/en/natolive/news_52837.htm?mode=pressrelease.

2. *Final Communiqué*, NATO, Ministerial meetings of the Defence Planning Committee and the Nuclear Planning Group, Brussels, 15 June 2007; Federal Minister of Defence, *White Paper 2006 on German Security Policy and the Future of the Bundeswehr*, Berlin, 2006, p. 26.

During the Cold War, NATO's strategic concept was a restricted document focused on military aspects of planning, organisation and deployment. The Cold War plan responded to the need for rapid military action in the face of aggression because the anticipated conflict scenarios left little time to evaluate options and reformulate strategies. After the end of the Cold War the strategic concept evolved into what a former Secretary-General has described as a core mission statement for the Alliance.

NATO planning was also adapted to take account of the fact that the Allies no longer faced a single, unidirectional threat to their territorial integrity and sovereignty. The new task was to prepare for a wider range of contingencies in which NATO leaders saw the need for a military dimension to their response. A new approach had to be crafted in light of the realities of military spending and the necessary political and legal constraints on the use of armed forces in missions other than self-defence.

The post-Cold War iteration of the Strategic Concept was a useful instrument to explain the direction that NATO was taking in terms that the public could understand. For example, the 1991 document explained that defence and detente (the basis for NATO relations with countries in Central and Eastern Europe after the publication of the Harmel Report in 1967) were now being supplemented with dialogue and cooperation. The 1999 revised Strategic Concept validated crisis management and crisis response operations, including operations alongside non-NATO countries – summarising and explaining changes being implemented »on the ground« in the Western Balkans.

In the public discussion of the 1991 and 1999 Strategic Concept documents, NATO had a good story to tell. The Alliance was not merely surviving, constrained by bureaucratic inertia, but making a positive contribution to a more integrated Europe through peaceful enlargement, new areas of cooperation with partners and new instruments to organise joint efforts. The Alliance was both helping to consolidate peace in the centre of Europe and playing its part in containing violence and resolving armed conflicts around its periphery.

When the Allies stated in 1999 that NATO »has been at the heart of efforts to establish new patterns of cooperation and mutual understanding across the Euro-Atlantic region and has committed itself to essential new activities

in the interest of a wider stability«,³ few fundamentally disagreed with that overall assessment. Ten years later it has become more difficult to make the same arguments in a convincing way.

The previous NATO Secretary-General underlined the need to show that NATO is aware of the need for a coherent approach towards an increasingly fragmented security environment, in particular in addressing the heightened concern over mass impact terrorism, and to give clear priorities and a clear sense of the resources needed to be successful.⁴ However, the main pillars of trans-Atlantic military cooperation are as likely to be produced in evidence by critics to support their argument that the Alliance is incapable of adapting to meet new challenges effectively.

Operations being carried out in Afghanistan underline that NATO has reached the point at which action is possible anywhere in the world. However, rather than demonstrating the military effectiveness of NATO, the experience has underlined just how hard it has been for NATO to adapt to the needs of new types of missions. Similarly, the process of engagement with countries that could ultimately lead to further enlargement of NATO risks being reduced to a zero-sum calculation that excludes a constructive partnership with Russia.

The problem of how to illustrate that NATO is capable of responding to the needs of the time will also manifest itself in the discussion of nuclear weapons, where the text of the 1999 Strategic Concept uses language that suggests indefinite retention of nuclear weapons. The document states that the nuclear forces of the Allies »continue to fulfil an essential role by ensuring uncertainty in the mind of any aggressor about the nature of the Allies' response to military aggression. They demonstrate that aggression of any kind is not a rational option.«⁵ While perhaps justified in 1999, seeing nuclear weapons at the apex of a ladder of escalation that could

be triggered by any existing confrontation looks conservative and old fashioned in 2010.

In a conscious act in 2009, NATO leaders nurtured a hope and created an expectation that the political context for nuclear arms reductions has changed in a positive direction. The discussions leading up to a new strategic concept could contribute to the positive political context by taking a fresh look at how the Alliance views the potential role of nuclear weapons.

During the Cold War, great effort was put into minimising any risk that the armed forces of two adversarial blocs would confront one another or engage in military operations in close proximity to one another. If confrontations did occur, even if by proxy, the adversaries went out of their way to reduce the risk of escalation. This was partly because any risk, however small, that escalation could lead to a nuclear conflagration was deemed unacceptable.

This cautious approach has given way to a different discourse in which the use of force has come to be seen as a tool to be used actively in order to promote beneficial outcomes rather than a last resort to be employed only in the most extreme circumstances. However, no general understanding of how force can and should be used has been developed – something that led to a crisis in relations between states in the Euro-Atlantic area in 2003.

2. The current status of nuclear weapons in NATO

To achieve the fundamental purpose of preventing coercion and any kind of war the nuclear forces of the United States, France and the United Kingdom are all, in their different ways, considered to contribute to overall deterrence and to the security of all of the NATO allies. Nuclear forces based in Europe and committed to NATO are currently considered to provide an essential political and military link between its European and North American members. In current NATO thinking, the commitment to maintain adequate nuclear forces in Europe is contingent on those forces having »the necessary characteristics and appropriate flexibility and survivability, to be perceived as

3. *The Alliance's Strategic Concept*, North Atlantic Council, Washington DC, 24 April 1999. Available at: http://www.nato.int/cps/en/natolive/official_texts_27433.htm.

4. NATO Secretary General, Jaap de Hoop Scheffer, *Beyond the Bucharest Summit*, Brussels Forum, Brussels, 15 March 2008. Available at: <http://www.nato.int/docu/speech/2008/s080315a.html>.

5. *The Alliance's Strategic Concept*, approved by the Heads of State and Government at the meeting of the North Atlantic Council, Washington DC, 23–24 April 1999, paragraphs 62–64.

a credible and effective element of the Allies' strategy in preventing war«. ⁶

At present, therefore, NATO is committed to maintaining nuclear forces in Europe, including adequate sub-strategic forces, consisting of dual-capable aircraft and a small number of UK Trident warheads. Sub-strategic nuclear weapons are not deployed in normal circumstances on surface vessels and attack submarines.

The need to adapt the nuclear dimensions of the Alliance was recognised immediately at the end of the Cold War and, after 1990, NATO's nuclear forces were among the first areas subject to review and also underwent some of the most radical changes. The 1991 Strategic Concept recognised that NATO no longer faced a situation of numerical inferiority in key conventional weapon systems and acknowledged the dramatic improvement in the political climate. Allies agreed to move away from the concept of forward defence and to modify the principle of flexible response to reflect the fact that conventional forces could now be relied on in most contingencies.

Having judged that the circumstances in which any use of nuclear weapons might have to be contemplated was extremely remote, the Allies agreed that the numbers of strategic nuclear forces, as well as the numbers of weapons based in Europe, could safely be reduced. Subsequently, the total numbers of nuclear weapons at the disposal of NATO have fallen dramatically. The rapid and progressive consolidation, rationalisation and reduction in nuclear forces in Europe have included reducing the size of forces in the field, scaling back readiness, reducing forward presence and realigning the base structure. Beginning in the early 1990s, NATO member states have reduced the number of sub-strategic nuclear weapons in Europe by roughly 90 per cent in comparison to the early 1970s – when the deployment of nuclear weapons in Europe reached its high point in terms of size and diversity. At that time, there are estimated to have been more than 7,000 nuclear weapons available in Europe for delivery by a wide variety of different delivery platforms. By 2003, only one type of weapon remained, an air-launched

gravity bomb, and the number of weapons is currently believed to fall within the range 150–200. ⁷

From the sketch above, it can be seen that NATO's nuclear forces have always been tailored to a particular strategy. The changes that have been made indicate that NATO does not make it an article of faith to maintain nuclear weapons at any given level or configuration and has always been willing to adapt nuclear policies and forces to new conditions.

3. Assessing threat and framing response

In 2006, when the United Kingdom decided to create the technical conditions to permit a later decision to renew nuclear capabilities it was on the basis that »significant nuclear arsenals remain, some of which are being modernized and expanded« and the proposition that »the number of states possessing nuclear weapons has continued to grow«. The underlying conditions on which the UK decision was based also noted that »ballistic missile technology has also continued to proliferate and most industrialized countries have the capability to develop chemical and biological weapons«.

The continued existence of a powerful nuclear arsenal in Russia is a fixed point in threat assessment, and Russia has confirmed in its public statements and resource allocation that modernisation of nuclear forces is to be expected in the coming decade. However, the parameters of this issue are known and easily accommodated in current NATO planning. The likelihood that Russia would employ force to intimidate through arms racing and military-technical competition is considered to be low and is likely to decrease further in the coming decade as Moscow digests the economic implications of an extensive military reform programme. For Russia, eliminating the overhanging military capability remaining from the Cold War while simultaneously bringing into service newer systems will be a major internal challenge.

While Russia is beginning to transform its force structure – a process that is expected to unfold over a fairly extended period – preserving the effectiveness of its own strategic deterrent capability appears to have the highest

6. A reduction from the approximately 500 weapons estimated to have been deployed in Europe in 2001. Hans M. Kristensen, Federation of American Scientists, *Nuclear Posture Review to Reduce Regional Role of Nuclear Weapons*. Available at: <http://www.fas.org/blog/ssp/2010/02/nukemission.php>. See also <http://www.fas.org/programs/ssp/nukes/images/euronukes2010.pdf>.

7. *The Future of the United Kingdom's Nuclear Deterrent*, Presented to Parliament by the Secretary of State for Defence and the Secretary of State for Foreign and Commonwealth Affairs, Cm 6994, December 2006.

priority. The enormous and sustained investment made in military research and development in the United States in particular has produced a large and continuously expanding qualitative lead in military and military-relevant technology that Washington is willing to share with Allies.

Current threat assessments conclude that, for the foreseeable future, no state or alliance will have both the intent and the capability to pose a threat to NATO, either with nuclear weapons or other weapons of mass destruction, or with conventional forces. To the extent that there continues to be a threat from Russia, assessments tend to focus more on disruptive capabilities – using technology or methods such as cyber attacks, exploitation of cultural and social fissures inside NATO countries or economic instruments (such as energy policy). However, these capabilities cannot represent an existential threat to the sovereignty and security of NATO Allies.

The risk that additional states might acquire nuclear weapons in the future is widely recognised, inside and outside governments, but it is worth trying to put into proportion the likelihood of proliferation in the near and medium term. Several countries close to the boundaries of NATO have been, in one way or another, »de-nuclearised«. Iraq and Libya were aiming to acquire nuclear weapons but have been deprived of their capabilities in different ways. As part of the process of consolidating the nuclear weapon arsenal of the Soviet Union within Russia, three countries (Ukraine, Belarus and Kazakhstan) all joined the NPT as non-nuclear weapon states.

Two countries that added to their nuclear weapon potential during the same period were known factors. Although they did not openly acknowledge their military nuclear programmes until 1998, the nuclear potential of India and Pakistan has been recognised since the 1970s. It is debatable whether there has been any recent net increase in the number of nuclear weapon states (or in the number of states with nuclear programmes likely to give cause for concern). Current proliferation concern is heavily concentrated on two countries – Iran and North Korea – the latter possibly already in possession of nuclear weapons and the former making steady progress towards achieving the technical capacity required to make a weapon, should a political decision to do so be taken.

However, the failure to contain nuclear projects of current concern might become the catalyst for additional

programmes in future. Elements of this view can be traced in the threat assessments of nuclear weapon states. Looking at the potential security environment between 2020 and 2050, the UK government highlighted underlying trends that give rise to significant causes for long-term concern and noted that »we cannot discount the possibility that the number of states armed with nuclear weapons may have increased by 2050«. ⁸

A broadly similar analysis can be found in influential non-governmental assessments. For example, the underlying point of departure for the initiative led by the four senior US statesmen is that the »accelerating spread of nuclear weapons, nuclear know-how and nuclear material has brought us to a nuclear tipping point. We face a very real possibility that the deadliest weapons ever invented could fall into dangerous hands«. ⁹

Recent threat assessments have pinpointed programmes of potential concern based on technical characteristics – notably the steady progress made by Iran in assembling the equipment and know-how to produce fissile material that could be used in a nuclear weapon. These assessments also spotlight countries that have made a long-term and sustained investment in the development of ballistic missiles that would be suitable for delivering nuclear weapons. Step-by-step, these programmes are creating weapon delivery systems with longer ranges.

There has also been extensive analysis of the changing patterns of behaviour with regard to proliferation dynamics. Before starting a dedicated programme to develop weapons, countries of concern have gone through an extensive preparatory phase, assembling the human and physical resources that a weapons programme will later draw on. In a cycle of action–reaction, the countries that seek access to controlled materials, goods, technology and know-how have adapted their procurement practices in response to changes in the regulatory framework in countries from which the relevant items can be obtained. The results suggest that new approaches to procurement by proliferators, combined with the emergence of new and different suppliers, may have shortened the time frame of programmes of concern.

8. *The Future of the United Kingdom's Nuclear Deterrent*, Presented to Parliament by the Secretary of State for Defence and the Secretary of State for Foreign and Commonwealth Affairs, Cm 6994, December 2006.

9. George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, *Toward a Nuclear-Free World*, *Wall Street Journal*, 15 January 2008.

Recent information about technical assistance available from places that do not participate in (and, in fact, work to undermine) the international non-proliferation effort also raised a concern that proliferation may be closer in time than previously thought. A programme that might have unfolded over a 25–30 year timeframe, as the host country put together the many different parts of this complex jigsaw, might now reach fruition in something closer to a decade. Analyses of how Iran developed the most sensitive parts of its nuclear fuel cycle would support this view. Activities at what is believed to have been a nuclear-related site in Syria have not yet been fully explained in public, but that case might further reinforce the view that previously unknown weapon programmes may emerge in a relatively short time.

Proliferation provides compelling evidence of the need to reinforce the current non-proliferation regimes. In a significant number of cases states have carried out activities that are prohibited in arms control treaties and agreements to which they are parties. Moreover, in a number of cases prohibited activities went undetected over an extended period. For example, Soviet non-compliance with the Biological and Toxin Weapons Convention (BTWC) was not confirmed for many years, despite the extensive Cold War intelligence effort. In other cases – such as North Korean non-compliance with the Treaty on Non-Proliferation of Nuclear Weapons (NPT) – the exposure of the violation and its subsequent discussion in the UN Security Council did not lead to any satisfactory resolution of the compliance problem.

In this regard, a »worst-case analysis« might run as follows: if the regimes and norms against proliferation cannot be reinforced, and if their value as a source of security becomes progressively more questionable, then at some point states may argue that the norm for security in a world where nuclear weapons continue to play an important role is proliferation, rather than non-proliferation. Widespread proliferation is most likely to occur in conditions where nuclear weapons come to be seen as not only acceptable but essential. The probability would increase still further if nuclear weapons were believed to have an overall positive impact on international security.

While there is broad agreement about technical developments, few, if any, threat analyses seem to have concluded that specific countries have hostile intent vis-à-vis either NATO or individual Allies. NATO does not currently

consider any state to be an enemy. Instead, the approach to threat assessment focuses more on general classes of risk that could create instability which could be exploited by actors with malicious intent (whether state or non-state). The impact of civil wars on the periphery of the enlarged NATO and at or close to the borders of nuclear weapon states raise concerns about a potential spillover impact from conflicts in which NATO is not directly involved. The irresponsible behaviour of states that have sheltered terrorists and helped them to enhance their capabilities has led directly to attacks on NATO. Weak states that are not able to perform basic functions of government can also inadvertently provide safe havens for terrorists to plan and train for acts of mass-impact terrorism. The military capabilities developed using the resources of a state might be captured and misdirected by malicious actors if a state was to become enfeebled or to fail completely.

Concern about mass impact terrorism has expanded the range of items that are of proliferation concern to include many things that are not weapons or dual-use items as traditionally defined. NATO states now see chemical, biological and radiological agents in any physical state and form that can cause hazards to populations, territory and forces as part of a diffuse »threat« requiring a common response.¹⁰

The risk that an improvised nuclear device would be used against a high value target in a NATO member state is taken very seriously in the wake of a succession of mass-impact terrorist attacks in Europe and North America. The difficulty of acquiring the fissile materials (highly enriched uranium or plutonium) in the quantities needed to make a nuclear device represent a formidable challenge to a non-state actor unless supported by a state sponsor. However, recent studies have exposed inadequate levels of material accountancy and control and poor physical protection of sensitive nuclear material around the world. As a result, the possibility that quantities of fissile material already exist outside state custody cannot be discounted.

10. NATO's *Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending against Chemical, Biological, Radiological and Nuclear (CBRN) Threats*, Brussels 1 Sep. 2009. Available at: http://www.nato.int/cps/en/natolive/official_texts_57218.htm.

The risk that a non-state actor would be able to use infectious disease as a weapon has also been analysed extensively. The barriers to a biological attack that causes mass casualties are significant. However, the national and international responses to the distribution of anthrax using the postal system in the United States, as well as outbreaks of diseases such as SARS, have underlined that attacks could inflict significant psychological damage and cause serious economic losses in an already turbulent global financial system.

Government threat assessments have also concluded that the probability of increasing levels of instability and interstate conflict is significant. Combined with the possibility of further nuclear proliferation this could lead to an increased risk of conflict involving a nuclear-armed state in the period 2020–2050. It is understandable and natural that decision-makers avoid closing policy options through final and irrevocable choices related to force structure since these might open the way to vulnerability in the future.

Many of the contingencies identified in current threat assessments seem very contemporary and not too far divorced from current experience.

The situation along the border between Afghanistan and Pakistan has many of the characteristics that contemporary threat assessments identify as being of great potential concern. Terrorists known to have carried out mass-impact attacks are believed to be seeking a safe haven on either side of an international boundary. Allies are extremely concerned that the governments with nominal sovereign control over this location are either unable or unwilling to take action against the terrorists. Therefore, external powers feel justified in reaching into the countries concerned using a contemporary definition of the right to self-defence, and employing military capabilities against identified targets whenever they have actionable intelligence.

Although military action is being taken against a nuclear-armed Pakistan, nuclear weapons seem to play no role at all in the thinking of any party. Pakistani authorities have made no secret of their opposition to US actions and resent a policy that they believe to be unjustified and counter-productive. Pakistani armed forces are also authorised to respond to US attacks, for example by shooting down aircraft and unarmed air vehicles. However, Secretary of

Defense Robert Gates has made it clear that the US has no intention of changing the policy and will do whatever is considered necessary in legitimate self-defence.

Possession of nuclear weapons is sometimes said to protect a state from attack by conventional means and, in particular, from attack by the most powerful country in the world. The resources available to most countries could never effectively defend against a US attack, and this is sometimes said to be an incentive to acquire nuclear weapons. However, Pakistani nuclear weapons provide no immunity and events would rather support the US declaratory policy that all options remain »on the table«.

Another line of thinking that analysts have put forward is that »deterrence based on the high yields of the Cold War arsenal may not appear credible, given the excessive civilian destruction likely to occur ... some reasonable and much needed steps to better align US deterrence policy to the realities of the new era include broadening US deterrent threat options ... seeking an understanding of the opponents' intentions and the flexibility to tailor deterrence to specific requirements«. ¹¹ However, in creating this greater flexibility nuclear weapons do not seem to have been of any practical value.

The United States has used a range of military capabilities to attack different identified targets in Afghanistan, including in the border regions and across the border inside Pakistan. Options include manned aircraft (flying from either ground bases or ships), missiles of different kinds (cruise missiles or short-range stand-off weapons mounted on drones), and raids by special forces (either carried out over land or dropped from the air). The choice of capability has depended on what commanders think is most appropriate, but in spite of the terrain (where targets might be in caves or shielded by thick rock formations) there is no evidence that nuclear weapons have played any role in US thinking about which instrument might be appropriate for the task at hand.

Even if using nuclear weapons could significantly increase the probability of killing high value terrorist targets in dif-

11. Keith Payne, quoted in Amy Woolf, *Nuclear Weapons in US National Security Policy: Past, Present and Prospects*, CRS Report for Congress, 28 January 2008, p. 11. During the first George W. Bush administration, Payne was the Assistant Secretary of Defense during the 2001 Nuclear Posture Review.

difficult terrain, actually employing them seems absurd from any perspective, including that of field commanders.

Managing the spillover effects from civil wars at the periphery of the enlarged NATO also seems a very current concern in light of Russian intervention in the civil war in Georgia. Nuclear weapon options played no role in Russian or NATO thinking in this instance either.

In Georgia, several internal and external factors combined after 2004 to revive the so-called »frozen conflict« that had erupted in the early 1990s. While the government of President Saakashvili has pursued a number of internal policies that provoked concern among minority groups inside Georgia, Russia has looked on with growing concern as the Georgian government promoted rapid integration into NATO alongside a domestic political platform based on Georgian nationalism and anti-Russian rhetoric. The growing risk of Russian military intervention in Georgia was pointed out inside and outside government in 2007 and early 2008.¹²

While there is no clear insight into Russian planning for specific operations, the Russian armed forces have a wider range of dual-capable delivery systems at their disposal than NATO. However, current conventional capabilities allowed Russia to achieve its military objectives. Nuclear options were neither needed nor, as far as one can tell, ever considered.

The fact that Russia is a nuclear weapon state perhaps played a role in the thinking of other countries and organisations (including NATO) with regard to how they might respond to events as they unfolded. However, it is clear that there was never an intention by any outside actor to help Georgia mount a military response to Russian intervention.

External actors did immediately put in place a response intended to bring hostilities to a rapid conclusion and mitigate the humanitarian consequences of the fighting (including civilians of Abkhaz, Ossetian and Georgian origin). Russia's nuclear status did not prevent the inter-

national response, even though it included a certain military dimension, such as the use of military assets for the delivery of assistance and the use of military-style vehicles to transport civilian observers in conflict areas.¹³

A third theme noted in contemporary threat assessments is the risk that states that acquire nuclear weapons might be more free to pursue regional hegemony and intimidate other countries in their neighbourhood. The domestic political effect of the weapons might help to lock-in intransigent regimes that might otherwise be more vulnerable to removal by their own population. An emboldened regime, believing that the risk of an external response was low and the home front united, might take steps that would not previously have been considered.

A related theme is a potential preventive aspect to the possession of nuclear weapons by existing weapon states willing to offer extended deterrence. There might be fewer incentives for a country to acquire nuclear weapons if it knew in advance that their possession could not be translated into any meaningful policy gain. The crisis that has been unfolding in slow motion in Iran would seem to offer some empirical basis for an evaluation of this claim.

Iran is working in a determined and systematic way to obtain the technical basis for a critical part of any nuclear weapon programmes, the production of fissile material, within a fairly short time (although it is not possible to be very precise about that time frame). There is a high degree of shared international concern about the most sensitive parts of the current Iranian nuclear programme.

Iran is developing capabilities that could threaten the interests of NATO, its member states and its partners. Steady progress in the nuclear programme is matched by similarly determined long-term Iranian missile development, which has now created several missiles with different ranges and payloads.

Iran and the United States have had a difficult and, at times, hostile relationship since 1979, while recently there has been a steady deterioration in relations between Iran

12. For example, Pavel Baev wrote in 2007 that »the smouldering secessionist conflicts in Abkhazia and south Ossetia present plentiful casus belli, and Russia now possesses usable military capabilities in the north Caucasus, further strengthened by the deployment of two mountain brigades in 2007. An Afghanistan-type intervention remains improbable but a swift occupation of the Black Sea coast might be a feasible option«, Pavel K. Baev, From West to South to North, Russia Engages and Challenges Its Neighbours, *International Journal*, Spring 2008, p. 300.

13. At one step removed, one of the main international outcomes of the Georgian conflict has been to revitalise thinking about other »frozen conflicts« to ensure that there is no repetition. This has included constructive and reassuring statements about some of the most difficult potential future cases, including the status of and conditions in Crimea, Ukraine.

and European countries. Concern about Iran's nuclear and ballistic missile programmes have also been an important factor in the growing hostility between Iran and Israel. Whereas in the 1980s strategic partnership between Egypt, Iraq and Jordan (the latter a somewhat unwilling partner) created room for pragmatic cooperation between Israel and Iran, with concern about threats from Arab states now reduced, Israeli concern about putative Iranian hegemonic regional ambitions across the wider Middle East has been heightened.

Although several countries with which Iran has deteriorating relations are nuclear armed – albeit not always openly – there is no evidence that having nuclear weapon states arrayed in opposition to its nuclear policy has led to any significant change in Iranian calculations. The revitalisation of Iranian interest in nuclear programmes, including the more sensitive parts of the nuclear fuel cycle, coincides with the period when Iran was the victim of battlefield use of chemical weapons by an Iraq that had its own aggressive nuclear and missile programmes. The extent of the Iraqi activities in the WMD field, which shocked the international community after being revealed by the United Nations after 1991, probably came as less of a surprise in Tehran. Iranian authors often draw attention to the impact on force planning of being left alone in the face of Iraqi chemical weapon and ballistic missile attacks.

NATO is not engaged in the ongoing diplomatic efforts to modify Iran's nuclear programme, but potential future implications are being considered. The issue was raised by the incoming Secretary General Anders Fogh Rasmussen in his first major US speech and also during his first official visit to Moscow. Asked about the impact of an Iran with nuclear-armed ballistic missiles, the Secretary General replied »it might of course eventually become NATO business as well, because then it is a question of protecting our territories and our populations against a potential threat«.¹⁴

The discussion of how nuclear weapons might be relevant in addressing current problems suggests that they simply play no role (positive or negative) as a factor in the

thinking of decision-makers when confronted with given scenarios. However, four senior US statesmen have expressed concern that, given the uncertainties surrounding the future security environment, nuclear policies designed to strengthen deterrence might not only be less and less effective, but they might become positively hazardous.¹⁵

The possibility that nuclear weapons might play a part in deterring the leadership of a terrorist group bent on carrying out acts with a mass impact is perhaps another case in point. Since the purpose of such attacks would be to undermine social cohesion, as well as to inflict damage it seems unlikely that an extremist terrorist group would be deterred by the risk of nuclear retaliation. On the contrary, such a group would probably see provoking a respectable state to resort to nuclear means as another blow to world order.

What we can learn from contemporary examples suggests that any notion of using nuclear weapons for a practical and limited military purpose, outside the scenario where nations are fighting for their existence and feel justified in resorting to desperate measures, leads to increased danger. Attention has been drawn to the risks that might follow from any weakening of the »nuclear taboo« that many argue has been a factor preventing nuclear weapons use.

There is considerable evidence that NATO governments are aware of this risk and take it into account in their nuclear policy. In its official documents, NATO has stressed that its nuclear policy (and the policies of its individual member states that possess nuclear weapons) is not based on either nuclear first use or a policy of no first use. The Alliance »does not determine in advance how it would react to aggression. It leaves this question open, to be decided as and when such a situation materialized«.¹⁶ Nevertheless, NATO statements have underlined that the circumstances in which they might have to contemplate any use of nuclear weapons are extremely remote.¹⁷

14. NATO chief mulls missile shield if Iran gets bomb, *Agence France Press*, 26 November 2009: available at: http://www.spacewar.com/reports/NATO_chief_mulls_missile_shield_if_Iran_gets_bomb_999.html; NATO Secretary General Rasmussen: First Major US Speech, 28 September 2009: available at: <http://www.acus.org/event/nato-secretary-general-rasmussen-first-major-us-speech/transcript-full>.

15. George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, *Toward a Nuclear-Free World*, *Wall Street Journal*, 15 January 2008.

16. *NATO's Position Regarding Non-proliferation, Arms Control and Disarmament and Related Issues*, NATO Fact Sheet. Available at: <http://152.152.94.201/issues/nuclear/position.html>.

17. *NATO's Nuclear Forces in the New Security Environment*, NATO Fact Sheet. Available at: <http://www.nato.int/issues/nuclear/sec-environment.html>.

At the national level, in the United States and in Europe governments have tried to correct any impression that nuclear weapons are somehow becoming a more readily usable option or that official thinking is moving in that direction. On the contrary, there is a general tendency in official statements to push the potential role of nuclear weapons as instruments of security policy further into the background.

4. Military-technical issues

The national nuclear doctrines as well as NATO statements indicate that the credibility of nuclear deterrence rests on being able to use the weapons if need be. Although the role that nuclear weapons might play in conflict situations tends to be downplayed, the possibility of their use must be militarily credible if there is to be any political effect. Nuclear weapons would quickly lose their utility as a deterrent if:

- A. It became known that they could not be used for technical reasons.
- B. It became clear that there are no plans in place to employ them as part of the response to aggression.
- C. The target of deterrence is unable to receive or understand the signals warning them that their aggression will draw a response that is tuned to their behaviour.

A. Evolving nuclear force structures

Maintaining force structures that contribute to the military credibility of the deterrent is a critical aspect in ensuring that the weapons can play their political role in both the outward dimension of deterring potential adversaries and the internal dimension of providing reassurance to allies.

Nuclear forces need to be developed, bought and maintained in good working order, plans must be prepared for their use and the forces that will have custody over them must be trained in their use. Safety and security issues related to custody over nuclear weapons are also very important both in and of themselves and as an aspect of public diplomacy.

The question of credibility extends to cover safety and security issues because the consequences of either an ac-

cident involving a nuclear warhead or the loss of custody over a weapon could be so severe. The perception that the main risk to society stems from our own arsenal rather than from the actions of a possible adversary would be a serious blow to public acceptance of nuclear weapons.

The national plans of the Allies with nuclear forces are obviously critical in that it is a sovereign decision whether and how these national assets are used. The overall pattern of development in nuclear force structures in the NATO countries with nuclear weapons has shown a clear tendency not only to lower numbers but also towards a consolidation of nuclear delivery systems and a reduction in different warhead types. This pattern has not been confined to long-range platforms that are exclusively dedicated to deliver nuclear weapons but can also be seen in dual-capable delivery platforms with shorter ranges that could be armed with either nuclear or conventional weapons.

From the early 1990s the United States began to reduce the numbers and types of strategic nuclear weapons at its disposal in line with national decisions about force transformation to respect the provisions of arms control treaties and voluntary undertakings to other countries. Decisions reflected the retention of a »triad« of land, sea and air based delivery platforms, intended to provide a range of capabilities and flexibility in nuclear planning, as well as providing reassurance that unexpected problems with any particular delivery system would compromise the overall effectiveness of the deterrent. After 1991, the United States retired many types of warheads and delivery systems.¹⁸

This consolidation and rationalisation meant that, by 2009, the multiple types of delivery system that characterised US strategic nuclear forces during the Cold War had been replaced by a more streamlined force structure with one land-based system (Minuteman III inter-continental ballistic missiles), one sea-based system (the Trident II missiles carried onboard submarines) and two airborne systems (B-52 and B-2 bombers that carry air-launched cruise missiles, as well as gravity bombs).¹⁹

18. For a summary, see Amy F. Woolf, *US Strategic Nuclear Forces: Background, Developments and Issues*, CRS Report for Congress RL33640, 14 July 2009.

19. Shannon Kile, Vitaly Fedchenko and Hans Kristensen, *World Nuclear Forces 2008*, *SIPRI Yearbook 2007: Armaments, Disarmament and Inter-*

The French government has laid out its plans for nuclear forces in the recent White Paper, which makes clear that France has and will maintain a seaborne and an airborne component, providing capabilities of different range, accuracy and trajectory. Both components are in the process of modernisation.

In 2010, the M-51 intercontinental ballistic missile will be brought into service on a new generation of ballistic missile submarines (SSBN). This will increase the range and flexibility of the force. The M-51 will be armed with a new warhead, the ONW. The airborne component will be armed in future with the ASMP-A cruise missile and will include Mirage-2000-NK3 aircraft, as well as Rafale. The airborne component could be either land-based or flown from an aircraft carrier. The ASMP-A missile will also carry a new warhead, the ANW.²⁰

The United Kingdom has progressively consolidated its nuclear forces so that only a seaborne component remains, consisting of four Vanguard-class SSBNs that carry the Trident D5 missile. The current warhead design that the UK developed for the Trident missile is expected to last into the 2020s. After an evaluation of a range of possible alternatives, in 2006 the UK government decided to replace the current SSBN with a new class of submarines, and anticipates being able to begin the detailed design of the new vessel by around 2012 to 2014.

In summary, it can be said that the three Allies that are nuclear weapon states have reduced their operational nuclear forces radically in comparison to Cold War arsenals and these weapons are carried on a smaller range of delivery systems. The current weapons and delivery systems are fairly modern and there is no risk that either the integrity or effectiveness of these nuclear forces will be compromised in the near or medium-term future.

NATO nuclear weapons stored in Europe: military-technical issues

While neither NATO nor its individual members discuss the disposition of nuclear forces in detail, official docu-

national Security (Oxford University Press: Oxford 2008). A number of nuclear warheads for long-range cruise missiles are also retained but the nuclear-armed missiles are no longer normally carried by ships.

20. *The French White Paper on Defence and National Security* (New York: Odile Jacob, 2008).

ments also acknowledge that US nuclear weapons are based in Europe in peacetime and that some European air forces are equipped and trained to use those weapons under certain scenarios. After the nuclear weapons that were stationed outside the territory of the former Soviet Union were consolidated inside Russia this is a unique arrangement. Discounting weapons based on submarines on patrol in international waters, the United States is the only country that has nuclear weapons based outside its own territory.

NATO has underscored that a credible Alliance nuclear posture and the demonstration of Alliance solidarity and common commitment to war prevention continue to require widespread participation by European Allies involved in collective defence planning in nuclear roles, in peacetime basing of nuclear forces on their territory and in command, control and consultation arrangements.²¹ However, while the residual nuclear missions of NATO are carried out under the auspices of a policy agreed within the Alliance as a whole, the associated military-technical questions inevitably affect countries differently, depending on the particular role they play within the overall framework.

First, there is the group of countries that accept the stationing of US nuclear weapons on their territory. Second, there is another group of countries in NATO that are not believed to host US weapons on their territory, but whose air forces may still be equipped and trained for nuclear missions. Finally, there are countries that could not undertake nuclear missions but nevertheless participate in matters that are common to the alliance as a whole, including the discussion of wartime contingencies.

The current status and future plans for dual-capable nuclear forces are not as easy to summarise as the case for strategic weapons. Since dual-capable aircraft could have either a nuclear or a non-nuclear role, it is more difficult to isolate modernisation decisions that are specific to the nuclear mission.²² Furthermore, for dual-capable systems

21. *NATO's Nuclear Forces in the New Security Environment*, NATO Fact Sheet. Available at: <http://www.nato.int/issues/nuclear/sec-environment.html>.

22. Plans to place conventional warheads on what have traditionally been seen as strategic nuclear delivery systems are criticised on the grounds that they further blur the transparency and understanding of the number and disposition of nuclear forces, undermining predictability and strategic stability.

it is harder to pinpoint the nuclear mission of units that also train for non-nuclear tasks.

There are currently military-technical question marks against both elements of dual-capable nuclear forces: the armaments themselves and the delivery systems for them.

Starting with the armaments, in its documents NATO has confirmed that, by 2003, the number of different types of nuclear system deployed in Europe had been reduced from 13 in 1971 to one (gravity bombs carried on dual-capable aircraft).²³ While the NATO documents stop short of identifying the types of nuclear gravity bomb currently in use, it is widely believed that these are B-61 thermo-nuclear bombs. This type was first produced in 1966 and it was designed so that it can be dropped at high speeds and from low altitudes from a variety of different aircraft (perhaps as many as 22 different aircraft types can carry the B-61 externally or internally). The weapon can be dropped either in free-fall or with a parachute to slow its progress and it can be detonated either by air burst or ground burst. The B-61 has subsequently been modified a number of times so that today it exists in more than one version.²⁴

The development of this type of armament has not kept pace with trends in air-launched weapons.

One focus in airborne strike systems has been to reduce vulnerability to modern air defence systems. Low-observable precision air-to-ground missiles have been developed with significant ranges, extending beyond 300 kilometres, to allow aircraft to launch the weapons while operating outside the reach of ground-based air defence systems. With the introduction of stand-off weapons Western air forces are gradually abandoning terrain-hugging, deep-penetration tactics carried out by manned multi-role combat aircraft.

While nuclear variants of stand-off weapons designed for use with such aircraft have been evaluated, only France has followed through a nuclear-armed medium-range air-to-ground missile. The United Kingdom planned to replace its own nuclear free-fall bombs with an air-launched

nuclear missile but subsequently cancelled the project.²⁵ In the late 1970s, the United States studied a nuclear version of the AGM-84 missile, but full development was not funded and the project was later cancelled.²⁶ The US does not have a nuclear stand-off missile that could be the basis for a sharing arrangement.

During the 1990s, many conventional free-fall bombs were upgraded, in part to reflect experiences from the 1991 Gulf War, and the upgrade kits that were developed converted free-fall bombs into accurate guided weapons. The destructive power of nuclear weapons reduces the premium for accuracy in many circumstances, but a precise hit may be required when confronting particularly high value targets as these may be super-hardened (that is, made nuclear resistant).

As part of the modernisation wave, a part of the B-61 arsenal underwent a modification during the 1990s to provide the bomb with a deep-penetration capacity. The upgraded Mod-11 B-61 earth-penetration bomb was tested on a variety of aircraft, included the F-16 and F-15E, but the B-2 bomber was later assigned as the sole carrier. The nuclear weapons in Europe are believed to be the older Mod-4 B-61, which lacks penetration capacity. However, according to the 2001 Nuclear Posture Review, even the modified Mod-11 B-61 has limited capability and »cannot survive penetration into many types of terrain«.²⁷

A further upgrade was proposed in 2002, but the Robust Nuclear Earth Penetrator programme was widely criticised.²⁸ A conventional bomb (the GBU-57) is being developed for use against hardened or deeply buried facilities by the B-2.²⁹

23. NATO's *Nuclear Forces in the New Security Environment*, NATO Fact Sheet. Available at: <http://www.nato.int/issues/nuclear/sec-environment.html>.

24. Modifications were made to the B-61 in 1975, 1977, 1979 and 1991.

25. Records Management Department, *Nuclear Weapons Policy 1967–1998*, Operational Selection Policy OSP11, pp. 10–11. Available at: <http://www.nationalarchives.gov.uk/documents/osp11.pdf#page=11>.

26. *United States of America, air-to-surface missiles, AGM-84 Harpoon, SLAM, SLAM-ER*, Jane's Air-Launched Weapons, Jane's Data Service, 2002. A new long-range cruise missile was introduced, the AGM-129, with the B-52H heavy bomber as its carrier.

27. The classified Nuclear Posture Review was submitted to the US Congress on 8 January 2002 and published on the website of GlobalSecurity.org on 14 March 2002. *Nuclear Posture Review* [Excerpts], p. 47. Available at: <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>.

28. Congressional Research Service (CRS), *Report for Congress, Bunker Busters: Robust Nuclear Earth Penetrator Issues, FY2005 and FY2006*, RL32347, 6 October 2005. Available at: <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA443393&Location=U2&doc=GetTRDoc.pdf>.

29. The Senate rejected an amendment prohibiting development of the Robust Nuclear Earth Penetrator. The amendment was rejected 43–53 on 1 July 2005. US Senate, *Nuclear Weapons Funding – Fiscal 2006 Energy*

The United States is currently grappling with difficult issues related to the future of the nuclear warhead stockpile. The Secretary of Defense has asserted »to be blunt, there is absolutely no way we can maintain a credible deterrent and reduce the number of weapons in our stockpile without either resorting to testing our stockpile or pursuing a modernization programme«. ³⁰ The Secretary pointed to the need for the Reliable Replacement Warhead Programme to field a safer, more secure warhead with enhanced safety features and high reliability. However, he also underlined that the programme would not create new nuclear capabilities.

At present, there is no clarity over the future for different US nuclear warheads and what, if anything, this implies for the B-61. However, if the discussion led to a new warhead that could be accommodated in a stand-off weapon compatible with the future generation aircraft Europeans are contemplating buying then the parameters of the nuclear sharing issue would have changed significantly.

The lack of official information makes deductive reasoning the only way to try to understand the current and future situation regarding dual-capable aircraft that can deliver the B-61 gravity bomb. Nuclear capable aircraft include any that have the technical characteristics that allow the delivery of nuclear weapons. A nuclear capable aircraft would have the necessary equipment on board (appropriate bomb racks and a tailored fire control and release mechanism) and would also meet the requirements for take-off weight, service ceiling and speed. The aircraft would also meet prescribed safety standards regarding issues such as protection in case of fire.

Nuclear capability also has an administrative aspect in that only certain aircraft would be certified to participate in the nuclear mission. Certification would mean that the aircraft and the air and ground crews who service it have been tested to demonstrate that they meet the required operational and technical standards.

Different information can be assembled to try and understand which NATO aircraft are both nuclear capable and nuclear certified. One important method has been to combine information about the bases where nuclear

weapons are stored with data on the activities of the Munitions Support Squadrons (MUNSS) that are responsible for the security and maintenance of nuclear bombs stored at national air bases of Allied countries. The MUNSS are stationed at the air bases with storage facilities and that work closely with the host nation, including during exercises. The MUNSS have custody of weapons in peacetime and would release the weapons to the authorised NATO partner when directed to do so by US commanders. The MUNSS personnel would also supervise the way in which aircrew of partner countries handle the weapons after handover.

In 1987, the US Department of Defense provided the House of Representatives with a list of all overseas air bases that have the capacity to store nuclear bombs. ³¹ Using that list, which included 19 bases in Europe, as a starting point it is possible to work forward and track what has happened to each base during the post-Cold War process of base realignment and closure.

Every site that stores nuclear weapons is evaluated during a Nuclear Surety Inspection (NSI). The goal of the inspections is to assess the ability of units to meet nuclear surety standards with regard to safety, security and reliability. Units must pass the NSI at least every 18 months to remain certified to handle and store nuclear weapons. ³² The MUNSS are part of the 52nd Munitions Group based at Spangdahlem air base and the website of the unit summarises the currently active support squadrons. ³³ Combining the information on bases and the activities of MUNSS gives an impression of the current disposition of weapons in storage. The combined information is presented in Table 1.

Of the 19 bases listed in 1987, 14 remain operational, the others having been closed. Eight of the operational bases still have MUNSS assigned to them and six of those eight have received a Nuclear Surety Inspection in the last 18 months.

and Water Appropriations. H.R. 2419 (Roll Call 171), Washington, 1 July 2005.

30. Robert Gates, *Nuclear Weapons and Deterrence in the 21st Century*, Carnegie Endowment for International Peace, 28 October 2008.

31. US House of Representatives, *Committee on Appropriations, Hearing on the Department of Defense, FY 1987 Military Construction Program*, Washington 1987, p. 216.

32. Department of the Air Force, *Presentation to the United States Senate Armed Services Strategic Subcommittee subject: nuclear weapons security*, 13 December 2001. Available at: <http://armed-services.senate.gov/statemnt/2001/011213blaisdell.pdf>.

33. Spangdahlem Air Base website, Units. Available at: <http://www.spangdahlem.af.mil/units/index.asp>.



Table 1 European sites with nuclear storage vaults

Country	Air force base	Storage capacity	Munitions squadron	NSI last 18 months
Belgium	Kleine Brogel	44	701MUNSS	yes (2008)
Germany	Büchel	44	702MUNSS	yes (2009)
	Nörvenich		disbanded in 1995	no
	Ramstein	220	86MUNS	no
Greece	Araxos		disbanded in 2001	no
Italy	Aviano	72	31MUNS	yes (2009)
	Ghedì	44	704MUNSS	yes (2008)
Netherlands	Volkel	44	703MUNSS	yes (2008)
Turkey	Akinci		disbanded in 1996	no
	Balıkesir		disbanded in 1996	no
	Erhac		disbanded in 1991	no
	Eskisehir		disbanded in 1991	no
	İncirlik	100	39MUNS	yes (2008)
UK	Lakenheath	132	48MUNS	no

UK = United Kingdom; MUNSS = Munitions Support Squadron; MUNS = Munitions Squadron; NSI = Nuclear Surety Inspection.

Note: While the actual number of nuclear bombs at a given base is impossible to ascertain, the six sites that are still nuclear certified have the capacity to store 348 B-61 bombs.

Findings based on using NSI reports in this way may not be fully up-to-date since the withdrawal of nuclear weapons from a particular site would not come to light sooner than 18 months after the last conducted NSI. However, it is also possible to monitor flights to and from the bases involving hazardous cargo, which are updated more regularly. In 2009, nuclear related flights took place to Aviano, Büchel, Ghedi, İncirlik, Kleine Brogel and Volkel air bases, which supports the finding that only these six sites are currently nuclear certified.³⁴

It is likely that there are still air bases where nuclear storage facilities are preserved but not currently in use. In 2004, the US Air Force announced a contract for the upgrade of the Nuclear Weapon Storage and Security Systems at 12 NATO air bases, although at that time only eight were actually certified to store nuclear weapons.³⁵ This suggests that storage vaults at Akinci, Araxos,

Balıkesir and Nörvenich are being maintained in spite of the withdrawal of nuclear bombs.

An additional source of information pertains to the NATO exercise Steadfast Noon, which is organised each year to train ground crews in loading, unloading and employing nuclear bombs from different dual-capable aircraft. Although it is widely reported that all nuclear weapons were removed from Araxos air base in 2001, the Hellenic Air Force still participates on a regular base, suggesting that the country may still retain the nuclear task – although this is uncertain. In 1998, it was reported that the Greek government decided not to assign a nuclear mission to F-16 units.³⁶

34. Foreign Forces: European Review, *Military Aviation Review*, 2009, pp. 155, 342, 409, 532, 610, 661 and Foreign Forces: US in Europe, *Military Aviation Review*, 2009, pp. 174, 238, 366, 564, 750.

35. WS3 NATO modernisation program installation upgrade for monitoring and console equipment, 12 NATO installations, *Federal Business Opportunities*, 30 July 2004. Available at: <<http://www.cbd-net.com/index.php/search/show/644999>>.

36. Hans M. Kristensen, *U.S. nuclear weapons in Europe: A review of post-Cold War policy, force levels, and war planning*, February 2005, p. 56, available at: <<http://www.nrdc.org/nuclear/euro/euro.pdf>>; Greece, *Elliniki Aeroporia, Hellenic Air Force*, F-16.net, available at: <http://www.f-16.net/f-16_users_article5.html> and Ian Anthony, *The Future of Nuclear Weapons in NATO*, 4 February 2008, pp. 29–30 (note 2).



Table 2 Exercise Steadfast Noon participants, 2000–2009³⁷

Air force	Wing	Aircraft	Home base	Participation
Belgian	10W	F-16AM	Kleine Brogel	annual
German	JBG33	Tornado IDS	Büchel	annual
Hellenic	111PM	F-16C	Nea Anchealos	in 2004, 2005 and 2007
	115PM	F-16C	Souda	in 2006 and 2008
Italian	6St	Tornado IDS	Ghedi	annual
Dutch	1FW	F-16AM	Volkel	annual
Turkish	4AJÜ	F-16C	Akinci	in 2006
US	48FW	F-15E	Lakenheath	until 2008, annual
	31FW	F-16C	Aviano	2005, 2008 and 2009

Note: While the Souda and Nea Anchealos based wings participated in the exercise, their home base does not house nuclear container vaults. The Araxos-based 116 wing is currently receiving 30 new F-16C, replacing the last A-7E aircraft.

It is also noteworthy that F-16s from the Turkish air base at Akinci took part in the 2006 exercise, although it was reported that same year that the Turkish Air Force was no longer certified for the nuclear task.³⁷ It therefore seems likely that there are Allied air force squadrons that could still perform a nuclear mission, although nuclear weapons are not located at their assigned air base or even in their country.

Information related to the Steadfast Noon exercise is not sufficient to draw conclusions about the readiness level of a given air wing. For example, the Aviano based fighter wing (which has played a central role in conventional air missions) has remained nuclear certified although absent from exercises. As the main goal is to familiarise the ground crew with handling different dual-capable aircraft, it is not necessary for all participants to send aircraft – the Akinci, Aviano and Nea Anchealos based fighter wings, for example, use identical F-16s. The participation of ground crews is extremely difficult to track and some units may only delegate these to participate in the exercise.

It is noteworthy that the F-15E was not present during the 2009 Steadfast Noon edition because this aircraft is significantly different from an F-16 or Tornado. The readiness

level of the F-15E may have been lowered after the withdrawal of nuclear weapons from Lakenheath, which is perhaps not surprising given the heavy workload assigned to F-15E wings in current operations.³⁹ If the Lakenheath based F-15E aircraft have lost the nuclear task then the Aviano based F-16 fighter wing is the only nuclear certified US combat aircraft unit.⁴⁰

In the United States, a process for Base Realignment and Closure (BRAC) has rationalised the structure of bases in the US and elsewhere. To summarise the impact on units with dual-capable tactical aircraft, it appears that US-based fighter wings had all lost their nuclear mission by 2005. In 1996, US Air Combat Command eliminated the nuclear task for Seymour Johnson based dual-capable F-15E aircraft that were then in continuous use in the Balkans and the Middle East. While there is a squadron of F-16s at the Kirtland Air Force Base in New Mexico (where the Kirtland Underground Munitions Storage Complex [KUMSC] is situated), this is operated by the Air National Guard, which has no nuclear mission. There is a warhead

37. Jeffrey Larsen, *The Future of US Non-Strategic Nuclear Weapons and Implications for NATO: Drifting toward the Foreseeable Future*, 31 October 2006, p. 75. Available at: <<http://www.nato.int/acad/fellow/05-06/index.html>>.

38. No report could be found for the 2001 and 2002 edition.

39. The F-15E is used extensively in combat operations. Only three combat wings operate the F-15E (Lakenheath, Mountain Home, Seymour Johnson, with a total of around 200 F-15E). Air Combat Command, *Staff Summary Sheet, Reassigning CONUS-based Dual Capable Aircraft (DCA) Tasking*, 10 May 1996, [Obtained under the Freedom of Information Act by Hans M. Kristensen], p. 2, available at: <http://nukestrat.com/us/afn/98-134_ACC051096.pdf>, and Jeffrey Larsen, *The Future of U.S. Non-Strategic Nuclear Weapons and Implications for NATO: Drifting Toward the Foreseeable Future*, 31 October 2006, p. 43, available at: <<http://www.nato.int/acad/fellow/05-06/index.html>>.

40. The US Navy completely eliminated the nuclear role for its aircraft while the Seymour Johnson based 4 Fighter Wing was the last US based US Air Force unit with a nuclear task.

storage facility at the Nellis Air Force Base in Nevada. However, the F-15 and F-16 fighter aircraft stationed there are used in air combat training and do not have a nuclear mission. The unit based at the Cannon Air Force Base in New Mexico has been disbanded and the base is in the process of being closed.

The future of Incirlik as forward operation base for US combat aircraft flying nuclear missions must be considered uncertain. No combat aircraft are stationed permanently at the base, and since 2003 the base has only been used for logistic support to operations in Afghanistan and Iraq. At the same time, it seems reasonable to assume that in conditions where the Alliance agreed that the use of NATO's nuclear forces was necessary, Incirlik would be available.⁴¹

Using the information on nuclear certified bases and the aircraft that are assigned to them, which is summarised in Figure 1, it is possible to pinpoint which NATO dual-capable aircraft are assigned the nuclear mission. The aircraft are: the Tornado IDS operated by Germany and Italy, the F-16C/D and MLU versions operated by Belgium and the Netherlands and the F-16C operated by the US Air Force. US Air Force F-15E aircraft remain nuclear capable, but may have lost the nuclear mission. The situation concerning Greek and Turkish F-16 aircraft is ambiguous. NATO documents have confirmed that the US Navy has completely eliminated the nuclear role for its aircraft carrier-based dual-capable aircraft.

In 2006, it was reported that the aging of NATO's dual-capable fighter aircraft would put the nuclear mission at risk.⁴² While this seems unlikely to be an issue during the coming ten years, there do seem to be genuine doubts over the medium-term options for European air forces retaining dual-capable aircraft.

In Belgium, current plans indicate that F-16 fighters should be withdrawn from service between 2015 and 2021 and no decision has been taken on programmes for fighter aircraft replacement.

Some debate about future choices in relation to the nuclear mission was raised after the Belgian Minister of Defence broke the usual habit of refusing to confirm or deny the presence of nuclear weapons in Belgium in an interview.⁴³ A decision to reduce the numbers of fighter aircraft in the Belgian Air Component significantly could end Belgian participation in the nuclear task. The Belgian government appears to prioritise spending scarce resources on other capabilities that are in short supply, notably transport aircraft. The Belgian decision not to take part in the Joint Strike Fighter programme in the late 1990s but to join the project to build the Airbus 400M transport aircraft perhaps points in this direction.

The Netherlands is evaluating the F-35 fighter aircraft (the aircraft formerly known as the Joint Strike Fighter or JSF) as a replacement for its F-16 fighters. Although it has periodically been suggested that the F-35 could take over the nuclear task, the Dutch government denies that any decision about the F-16 successor has been made. The Dutch government has agreed to participate in the Initial Operational Test & Evaluation phase of the F-35 programme and two F-35As are expected to be purchased at the start of 2009. However, the Ministry of Defence has underlined that the test and evaluation of aircraft does not indicate that the F-35 will certainly be acquired.⁴⁴

In 2004, the prototype of the F-35 (then still known as the JSF) is said to have completed its initial nuclear certification requirements plan.⁴⁵ Nevertheless, the F-35 is not currently able to carry or drop nuclear weapons, and while the development of a nuclear capable variant is not excluded, a decision is said to depend on whether »enough foreign orders come in to justify the additional cost.«⁴⁶ The scale of the additional cost is not known, but might not be very high unless there were changes to the physical form of the B-61 during refurbishment that prevented it from being carried in the internal bomb bay of the F-35. However, this seems unlikely to be an issue.

41. Incirlik'te süre uzatma kararı hukuka aykırı [The decision to extend the period of Incirlik is unlawful], *Hurriyet*, 3 November 2009. Available at: <<http://arama.hurriyet.com.tr/arsivnews.aspx?id=12851979>> (in Turkish).

42. Oliver Meier, News Analysis: An End to U.S. Tactical Nuclear Weapons in Europe?, *Arms Control Today*, July/August 2006, pp. 37–40.

43. Belgium's Interim Government Reveals NATO Secret, *Brussels Journal*, 21 January 2008. Available at: www.brusselsjournal.com/node/2899.

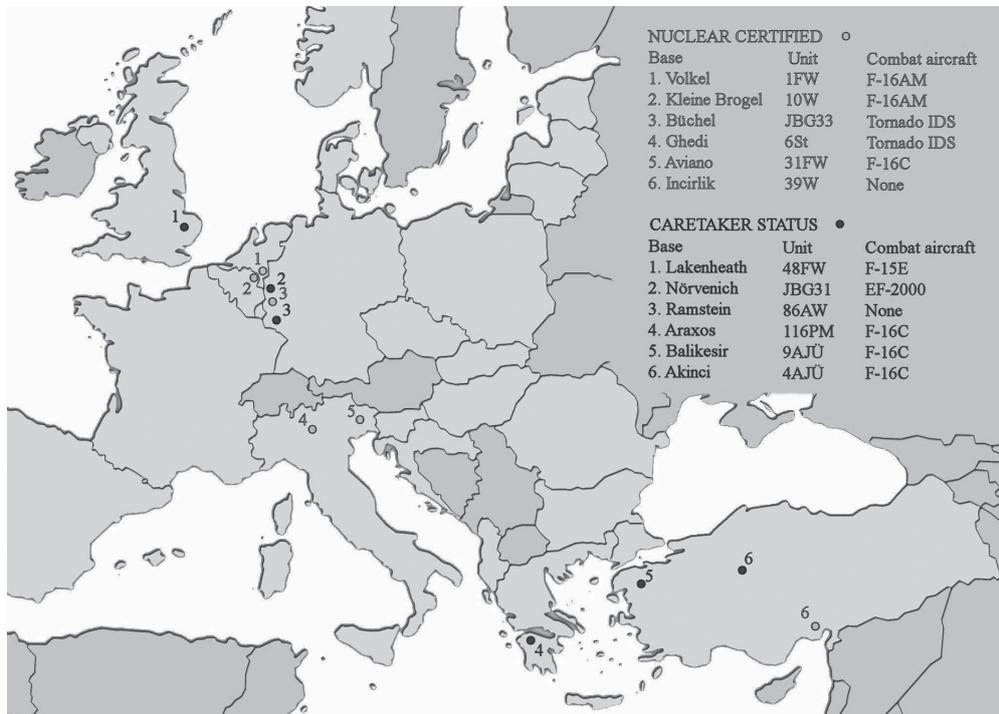
44. Discussed at: www.stopwapenhandel.org/projecten/jsf/JSFartikelen/odjsfnukes.html.

45. *RDT&E Budget Item Justification Sheet*, Defense Technical Information Center. Available at: <http://www.dtic.mil/descriptivesum/Y2004/AirForce/0604222F.pdf> p. 782.

46. Jeffrey Larsen, *The Future of U.S. Non-Strategic Nuclear Weapons and Implications for NATO: Drifting toward the Foreseeable Future*. Available at: www.nato.int/acad/fellow/05-06/index.html p 43.



Figure 1 Status of NATO's nuclear forces in Europe



Germany has decided that the Typhoon aircraft, which is not dual-capable, will be the backbone of its fighter aircraft fleet in future. The nuclear certified Tornado IDS aircraft flown by the 33rd fighter bomber wing based at Büchel are also planned to be replaced by the Typhoon. The schedule for the replacement was previously announced as 2013–15, but delays in the programme to adapt the Typhoon (which was originally designed for air-to-air combat) for the ground attack mission make this timetable uncertain. In February 2008, the German government stated that it would keep part of its Tornado IDS fleet in service until 2020, including dual-capable aircraft.⁴⁷ Therefore, although Germany will already begin to withdraw some Tornado IDS aircraft after 2010 or 2011, others will remain in service for the next decade.

In Italy, the withdrawal of the Tornado IDS is expected to begin after 2015, although here too a life extension is planned for some aircraft. Italy, like the Netherlands, is participating in the cooperative programme to develop and produce the F-35 fighter. A production contract has

not yet been signed, and in Italy participation in the programme was questioned as recently as 2006. However, Italy is scheduled to host the European F-35 final-assembly line and withdrawal from the programme seems very unlikely.

Apart from the F-35 the other possible contenders to replace European fighter aircraft in a ground attack role seem unsuited to the nuclear task. A nuclear mission for the JAS-39 Gripen would almost certainly be excluded by the Swedish government as a condition of any sale. The French Rafale F3 is dual-capable and has a nuclear mission in France. However, the United States would need to grant access to the relevant parameters of the B-61 to allow a release mechanism to be designed and fitted, while the French government would need to grant access to the relevant aircraft technology. It seems unlikely that either government would be willing to share the relevant technical data, while the French companies involved might also be reluctant to release technical data to the United States. The FGR4 ground attack version of the Typhoon would be the only other European alternative, but this aircraft is not currently tasked to deliver the B-61 bomb and the German government apparently does not

47. Cordula Meyer and Alexander Szandar, Berlin Holds on to Obsolete Weapons, *Spiegel Online*, 1 July 2008. Available at: <http://www.spiegel.de/international/germany/0,1518,563137,00.html>.

currently intend to certify the Typhoon to carry nuclear weapons.⁴⁸

To summarise, the nuclear mission does not seem to be at any short-term risk in Belgium, Germany, the Netherlands or Italy. However, while the countries that participate in nuclear tasks are all currently evaluating future aircraft modernisation options, only two – Italy and the Netherlands – are considering an alternative that could offer dual-capability (the F-35).

Security

In August 2007, a B-52 bomber was to fly 12 cruise missiles between two US Air Force bases for decommissioning. However, instead of loading only non-nuclear missiles, airmen mistakenly took six non-nuclear and six nuclear-armed missiles from storage and loaded them onto the wings. The aircraft loaded with missiles waited for a total of 36 hours without the appropriate level of security for nuclear weapons until the mistake was discovered.

The discovery was the catalyst for a wider review of nuclear security by the US Air Force that included two internal reviews, as well as an external investigation by the Department of Defense. In addition, a number of senior officers were critical of nuclear security arrangements in public testimony to the Senate Armed Services Committee in February 2008. One of the reviews, the Air Force Blue Ribbon Review of Nuclear Weapons Policies and Procedures, issued its report in February 2008, which drew the attention of the expert community in the United States and subsequently also attracted a degree of public scrutiny, including in Europe.⁴⁹

The identified problems were at national bases of some of the European air forces rather than at US air bases in Europe and the report noted that »host nation security at nuclear-capable units varies from country to country«.

The questions raised included whether or not the use of external private contractors rather than military personnel to perform certain functions at bases compromised security. Certainly, some of the routines used did not conform with US Department of Defense routines and procedures, but whether the report revealed any serious deficiencies in security is contested.⁵⁰

Security procedures have always had a high priority in relation to nuclear weapons. The level of awareness was increased after the mass impact terrorist attacks on the United States in September 2001 and the discovery of a conspiracy to attack the Kleine Brogel airbase in Belgium with a car bomb, a crime for which a Tunisian citizen was tried and convicted in 2003.⁵¹

Through a Joint Theater Management Group, which is a subsidiary body to NATO's Nuclear Planning Group, the Alliance has had a firm commitment to implement nuclear security upgrades in a programme that runs into several million euros. This continuous process of review links all of the countries involved in sustaining a high level of security.

If the immediate security concerns about the way in which nuclear weapons are managed in Europe are contested, nevertheless questions have been raised by the various security reviews that could impact on future nuclear tasks within NATO. The report of the Defense Science Board (DSB) review led by General Larry Welch concluded that the nuclear task has lost prestige and resources within the US military and that »the decline in focus has been more pronounced than realized and too extreme to be acceptable«. The DSB observed that »the decline is characterized by embedding nuclear mission forces in non-nuclear organizations, markedly reducing levels of leadership whose focus is the nuclear enterprise, and a general devaluation of the nuclear mission and those who perform the mission«.⁵²

48. Thomas Newdick, Germany Debates Nuclear Future, *Defense News*, 14 July 2008. Available at: <http://www.defensenews.com/story.php?i=3637173>.

49. *Air Force Blue Ribbon Review of Nuclear Weapons Policies and Procedures*, 8 February 2008. A version of the report is available at: www.fas.org/nuke/guide/usa/doctrine/usaf/BRR-2008.pdf. European attention was drawn in particular to the analysis made by Hans Kristensen on the Federation of American Scientists Strategic Security Blog in his 19 June 2008 report, entitled *USAF Report: »Most« Nuclear Weapons Sites in Europe Do Not Meet U.S. Security Requirements*, also available at: <http://www.fas.org>.

50. A senior NATO official, Guy Roberts, has stated that the US review »contains no security issue that NATO wasn't aware of«. Oliver Meier, NATO Mulls Nuke Modernization, Security, *Arms Control Today*, September 2008.

51. Zachary K. Johnson, *Bin Laden's Striker: The Case of Nizar Trabelsi*, Chronology – The Plots, PBS Frontline. Available at: <http://www.pbs.org/wgbh/pages/frontline/shows/front/special/cron.html>.

52. Defense Science Board Permanent Task Force on Nuclear Weapons Surety, *Report on the Unauthorized Movement of Nuclear Weapons*, Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, February 2008, p. 7.

In October 2008, the US Air Force published a nuclear »road map«, laying out the future arrangements intended to reinvigorate the Air Force nuclear enterprise. The document noted that »focus on the nuclear mission, especially in dual-capable bomber units, has diminished from the robust nuclear culture that existed during the Cold War«. However, while outlining the problem it was not clear from the road map what the Air Force proposed as a solution for integrating the nuclear mission assigned to dual-capable aircraft into wider strategy and doctrine.⁵³ The Air Force subsequently created Global Strike Command to act as a focal point for the nuclear mission and to develop and provide combat-ready forces for nuclear deterrence and global strike operations.

The implications of these new proposals cannot yet be evaluated, but it is not clear how dual-capable aircraft and the nuclear weapons assigned to them fit into the strategic architecture being developed by the United States. If these forces are pushed to the periphery of US thinking and there are questions over the organisational capacity and authority to deal with them, more questions might be raised in future about the security of nuclear weapons stationed outside the United States.

B. Evolving approaches to nuclear planning

The official documents of the NATO nuclear weapon states tend to emphasise that the levels of nuclear forces need to be calibrated to reflect existing strategic realities. While consistent with the goal of the worldwide abolition of all weapons of mass destruction, this approach rejects the idea that reducing nuclear force levels represents a goal in itself or that force structures should simply be the residual that remains after economic forces have shaped the budget and arms control has pre-determined numerical ceilings. As discussed above, it seems that modifying plans to use nuclear forces has so far been approached at a national level in the countries that have the weapons. Although the mandate and progress of the current internal NATO review of nuclear deterrence is not public, finding a common approach among the Allies is presumably a central aspect of the task.

53. *Reinvigorating the Air Force Nuclear Enterprise*, Air Force Nuclear Task Force Report, 28 October 2008, p. 46.

For NATO planners, a significant divergence among the nuclear weapon states would complicate the task of finding a meaningful common approach. In a crisis, NATO would have to use its existing planning mechanisms to reach agreement on when and how nuclear weapons might be used, including changes in alert status and deployment patterns. These mechanisms would normally require a consensus among the Allies in order to reach any decision. If there was an ever more diverse set of views among the NATO community there must be a point at which differences could no longer be contained. At that point, the credibility of the common policies and plans regarding nuclear weapons would be undermined.

In Cold War conditions, the need for rapid military response dictated a somewhat rigid approach under which a complex and integrated plan was developed in peacetime for immediate implementation once a conflict began. Since the end of the Cold War there has not been the same degree of time urgency or the same need to integrate military forces in plans. Rather, the emphasis has been on developing and adapting plans and planning systems to meet the much wider and very different range of contingencies that have actually engaged the Alliance.

The United States already put a premium on what was called »adaptive planning« in its January 2002 Nuclear Posture Review. That document noted that »the current nuclear planning system, including target identification, weapon system assignment, and the nuclear command and control system requirements, is optimized to support large, deliberately planned nuclear strikes. In the future, as the nation moves beyond the concept of a large, single integrated operational plan (SIOP) and moves towards more flexibility, adaptive planning will play a much larger role«.⁵⁴

The Quadrennial Defense Review (QDR) further reinforced the need to take into account operations against adversaries that use asymmetric tactics, and that are able to move and hide without being confined within national boundaries. The 2006 QDR spelled out clearly the challenges at the national level involved in moving from a focus on nation-state threats to a focus on decentralised network threats from non-state enemies. According to that review, changes at the national level would not be

54. *Nuclear Posture Review Report*, 8 January 2002, p. 29. Available at: <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>.

sufficient and the report from the 2006 QDR noted that it could be implemented only »by maintaining and adapting the United States' enduring alliances«, including NATO.⁵⁵

While the 2002 Nuclear Posture Review was regarded by many analysts as a quixotic document,⁵⁶ in the QDR achieving tailored deterrence, tended to emphasise non-nuclear forces. The QDR emphasised enhancing special forces, building greater resilience into society and developing new and advanced conventional capabilities, as well as non-lethal weapons, but it did not propose new nuclear options.

The United States has gone furthest to move away from a »one size fits all« approach to deterrence and replace it with so-called tailored deterrence for rogue powers, terrorist networks and near-peer competitors.⁵⁷

Analyses of US thinking on tailored deterrence identify three separate aspects, namely tailoring to specific actors and specific situations, tailoring capabilities and tailoring communication channels – that is, ensuring effective signalling to actual or potential adversaries.⁵⁸ Current NATO policies are not based on tailored deterrence as articulated in the US domestic discussion. As part of the internal review in NATO it seems reasonable to assume that the United States will raise the question of how to tailor deterrence as part of the discussion with Allies. In a number of ways, making the changes necessary to introduce the idea of tailored deterrence into NATO policy might require modification of tendencies that are present in NATO thinking about the current and future threat environment.

Tailoring deterrence would require the different potential »deterrees« to be identified, analysed and characterised. It is only in this way that specific threats can be defined

in ways that facilitate a tailored response.⁵⁹ NATO, on the other hand, has tended to avoid detailing a precise matrix of capabilities and intentions linked to specified actors and instead emphasises its overall capabilities as a response to general international tendencies. NATO statements explain that there are no immediate specific threats from identified enemies at the level of the Alliance.

The US Nuclear Posture Review of 1995 stated that, while the United States will sustain its nuclear commitments to NATO, the nuclear forces have »the ability to deploy nuclear capabilities to meet various regional contingencies«. ⁶⁰ The review does not explicitly mention Europe-based nuclear forces, but documents obtained under the US Freedom of Information Act reveal that arrangements were made in 1994 to allow the use of the B-61 bombs outside the US European Command (USEUCOM) area of responsibility, perhaps including support to US Central Command in Southwest Asia.⁶¹

Although the discussion of these issues in NATO is still to take place, there are signs of an evolution in thinking on these issues in the past decade in the United States that could have implications for the eventual conclusions reached by the Alliance. The emphasis in tailoring capabilities would be to provide a mix of systems that could be configured to meet any given scenario on an as needed basis. However, the rationalisation, concentration and reduction of nuclear weapons in NATO left forces that would be difficult to deploy forward in an enlarged NATO and extremely difficult to take »out of area«.

After the enlargement of the Alliance the bases certified for nuclear missions are located in the heart of NATO's

55. *Quadrennial Defense Review Report*, February 6, 2006. Available at: <http://www.globalsecurity.org/military/library/policy/dod/qdr-2006-report.htm>.

56. For a trenchant criticism, see Fred Kaplan, Rumsfeld's Dr. Strangelove: Keith Payne says 7,000 warheads aren't enough, *Slate Magazine*, 12 May 2003. Available at: <http://www.slate.com/id/2082846/>.

57. Amy F. Woolf, *Nuclear Weapons in US National Security Policy: Past, Present and Prospects*, Congressional Research Service, RL34226, 28 January 2008.

58. The arguments are laid out in M. Elaine Bunn, Can Deterrence Be Tailored?, Institute for National Security Studies, *Strategic Forum*, No. 225, January 2007.

59. Ronald F. Lehman II, Director of the Center for Global Security Research at Lawrence Livermore National Laboratory, has argued that, to be effective, deterrence has to be »context specific and culturally sensitive«, Fletcher Conference, Institute for Foreign Policy Analysis, 14 December 2005.

60. William J. Perry, Secretary of Defense, *Annual Report to the President and the Congress*, February 1995, p. 84.

61. Strategic Command, NSNF Working Group Meeting Minutes of 29 March 94, STRATCOM/J513, 29 March 1994, [Obtained under the Freedom of Information Act by Hans M. Kristensen], available at: <http://www.nukestrat.com/us/stratcom/STRATCOM033194.pdf> and Strategic Command, NSNF Working Group Meeting Minutes of 10 May 1994, STRATCOM/J513, 10 May 1994. [Obtained under the Freedom of Information Act by Hans M. Kristensen], available at: <http://www.nukestrat.com/us/stratcom/STRATCOM051094.pdf>. EUCOM provided major forces for operations in Afghanistan and Iraq, *A Brief History*, United States European Command, available at: <http://www.eucom.mil/english/history.asp>



Figure 2 Combat range dual-capable aircraft without aerial-refuelling



territory, and dual-capable aircraft are not able to perform the nuclear strike mission independently (see Figure 2). The aircraft would need to refuel at least twice, with the last tanker rendezvous immediately before entering hostile territory, in order to operate outside the borders of NATO. Belgian aircraft lack national tanker aircraft, while the aerial-refuelling capacities of Germany, Italy and the Netherlands are limited. The assistance of the US Air Force would be needed to enable the nuclear task during a major operation.

Operating from other NATO airbases that do not house nuclear vaults (or refuelling at them) would be inconsistent with security restrictions. Therefore, out-of-area operations from existing bases by the dual-capable aircraft would be difficult. In conditions in which all NATO partners agree that a nuclear mission is appropriate, Exercise Steadfast Noon suggests that contingencies are in place. However, for any contingency in the Middle East there is no escaping the reality of geography, namely that most of the starting points for a mission are more than 3000 km away.

Aside from aerial-refuelling, NATO must keep in mind the possibility that non-NATO members or neutral countries will not grant permission for aircraft on a combat mission to cross their airspace. This risk would be heightened if the aircraft appeared to be flying a nuclear mission. The shortest routes to Russia would overfly Belarus and Ukraine, while the shortest routes to the Middle East could overfly Austria, the countries in the Balkans, Jordan and Iraq. Operating only in international airspace/international waters would increase the flying distance to the target and limit accessibility.

Reaching the borders of hostile territory will not be the end of the challenge for dual-capable aircraft flying a nuclear mission. Planners would also have to consider whether an effective strike could be made on the designated target. The primary issue is the reliance on gravity bombs and the lack of a stand-off weapon noted above. During the Cold War, very large and highly concentrated conventional ground forces of the Warsaw Treaty Organisation offered a high-value military target for nuclear missions. No comparable target exists today.

Smaller and more discrete targets with a high military value would logically be the focus for the most advanced air defences of the adversary. To reach such targets, dual-capable aircraft would have to survive modern air-defence networks. The air forces of Allied countries have given a lot of thought to the suppression of air defences. In the 1991 Gulf War, coalition aircraft overcame a dense mix of anti-aircraft systems protecting the high-value targets by using a large strike package tailored to the accessibility and complexity of a mission. For example, the Iraqi nuclear research facility at Al Tuwaitha was attacked by 72 F-16s. A mix of support aircraft were assigned to assist the strike package to the targets, such as air-to-air combat aircraft, electronic jamming support aircraft and anti-radiation strike aircraft destroying the search and tracking radars. In all, the support package could easily grow to over 40 aircraft.

Despite the scale of this effort several aircraft were shot down during the first days of the campaign and the flight altitude for missions was changed from low to medium-altitude attacks to avoid anti-aircraft artillery. This change was made possible because Iraqi fighter aircraft did not challenge the coalition and Iraq's centralised Integrated Air Defence System was blinded at the start of the campaign.⁶² Nevertheless, Iraqi ground-based air defence systems still proved to be a real obstacle and 11 of the 15 downed aircraft were struck by surface-to-air missiles.⁶³

The vulnerability of combat aircraft during operations against well defended targets has tipped the balance towards the use of stealth aircraft and, in particular, stand-off missiles that now tend to lead the initial strikes against high-value targets.

The United States released its Quadrennial Defense Review (QDR) in February 2010. In analysing the QDR, Hans Kristensen of the Federation of American Scientists has concluded that it »strongly suggests that the reduction in the role [of nuclear weapons] will occur in the regional part of the nuclear posture«.⁶⁴

62. Richard J. Blanchfield, *Gulf War Air Power Survey, volume IV, Weapons, Tactics, and Training and Space Operations*, Washington, 1993, p. 238. Available at: <http://www.airforcehistory.hq.af.mil/Publications/fulltext/gulf_war_air_power_survey-vol4.pdf>.

63. For the full list of coalition aircraft combat attrition, see Eliot A. Cohen, *Gulf War Air Power Survey, volume V, A Statistical Compendium and Chronology*, Washington, 1993, pp. 641–51.

64. Hans Kristensen, Nuclear Posture Review to reduce regional role of nuclear weapons, 22 February 2010. Available at: <http://www.fas.org/blog/ssp/2010/02/nukemission.php>

The United States is not alone in thinking about how to step back from any tendency to emphasise any role for nuclear weapons other than responding to a nuclear attack. A similar tendency can be seen in Europe.

At different times, statements by senior political leaders in France and the United Kingdom have appeared to give nuclear weapons a new core mission in strategic planning: namely, to deter or respond to attacks by a non-nuclear weapon state armed with chemical or biological weapons. Some statements even hinted that a possible role for nuclear forces to deter or to respond to threats or acts of mass impact terrorism was under consideration.

This appears to have been in part a subjective and psychological response after the mass impact terrorist attack on the United States in 2001, as political leaders tried to come to terms with the idea that a small and poor opponent might acquire capabilities against which there is no defence. In this way, an essentially weaker player might be able to paralyse much stronger players, and then severely wound them by actual use. The combination of mass impact terrorism and the proliferation of nuclear and biological weapons in particular knocked political decision-makers in major powers off-balance and this began to be reflected in their public statements.

In March 2002, when the invasion of Iraq was already under active public discussion, the British Minister of Defence Geoff Hoon told a parliamentary committee that states such as Iraq »can be absolutely confident that in the right conditions we would be willing to use our nuclear weapons«. Two days later, appearing on a current affairs programme, Hoon told presenter Jonathan Dimbleby that »if there is a threat to our deployed forces, if they come under attack by weapons of mass destruction, and by that specifically chemical biological weapons, then we would reserve the option in an appropriate case, subject to the conditions that I have referred to when I was talking to the select committee, to use nuclear weapons«.⁶⁵

This approach by the Minister of Defence contrasted with the statements by the UK Prime Minister at the time of the first war against Iraq in 1991 (at a time when Iraq had

65. Richard Norton-Taylor, Bush's nuke bandwagon, *The Guardian*, 27 March 2002. The transcript of the interview from the ITV Jonathan Dimbleby Show is available at: <http://cndyorks.gn.apc.org/news/articles/uknukpolicy.htm>.

large quantities of chemical weapons and was widely suspected to have biological weapons, even if the full extent of the BW programme was not fully understood). Asked about the possibility of nuclear weapons being used in any scenario in 1991, Prime Minister John Major replied that »we [do] not envisage the use of nuclear weapons«, then after a short pause adding the more categorical »we would not use them.«⁶⁶

The remarks made in 2002 led to public discussion about how an attack on British armed forces in the field, far from the United Kingdom, could meet the criteria of last resort or extreme self-defence. When later asked to clarify his comments in an official setting, the Minister qualified his remarks and used a formulation closer to the more established understanding of the role of nuclear forces. In the House of Commons, Hoon said that »the use of nuclear weapons is still a deterrent of last resort. However, for that to be a deterrent, a British Government must be able to express their view that, ultimately and in conditions of extreme self-defence, nuclear weapons would have to be used.«⁶⁷

At the end of the Cold War, France also began to adapt its nuclear policy. The broad outline of the new approach was laid out in a speech by President Jacques Chirac at the time France announced an end to its programme of nuclear weapon testing.⁶⁸ In January 2006, President Chirac made a speech explaining contemporary French thinking.⁶⁹ This 2006 speech was widely interpreted to indicate an increased role for nuclear weapons in French security and defence policy. For example, David Yost wrote that the revised approach included deterring state sponsors of terrorism, the threat to attack an enemy's »capacity to act«, the development of more discriminate and controllable employment options, the willingness to launch »final warning« strikes, the description of »strategic supplies« as a potential vital interest and the presentation of nuclear deterrence as the foundation of a strategy of prevention and, when necessary, conventional military intervention.«⁷⁰

66. John Major, quoted in Hugo Young, Hoon's talk of pre-emptive strikes could be catastrophic, *The Guardian*, 6 June 2002.

67. Hoon's response to a parliamentary question is reproduced in the House of Commons, Hansard Debates for 29 April 2002.

68. President Jacques Chirac, *The New Style Armed Forces*, speech to the Military Academy, 22 February 1996.

69. Ann MacLachlan and Mark Hibbs, Chirac shifts French doctrine for use of nuclear weapons, *Nucleonics Week*, 26 January 2006.

70. David S. Yost, France's New Nuclear Doctrine, *International Affairs*, Vol. 82, No. 4, 2006, 701–21.

According to French analyst Bruno Tertrais, the impression gained by external analysts and commentators from the 2006 speech was the wrong one and correcting it was one of the objectives of President Nicolas Sarkozy in the first speech he gave on nuclear policy after taking office. In his speech, Sarkozy noted that »the use of nuclear weapons would clearly be conceivable only in extreme circumstances of legitimate defence, a right enshrined in the UN Charter«. Sarkozy added that such a scenario could be envisaged only in the event of an existential threat to »the elements that constitute our identity and our existence as a nation-state, as well as the free exercise of our sovereignty.«⁷¹

In the French White Paper on Defence and National Security, the »sole function« of nuclear weapons is stated to be »to prevent a state-originated aggression against the vital interests of the country.«⁷²

The underlying logic of these positions seems to be the one that is shared across NATO. For example, in the 2006 White Paper on German Security Policy and the Future of the Bundeswehr the German government notes that »the Alliance will continue to need nuclear assets in the foreseeable future as a credible deterrence capability. The Alliance members' nuclear forces have a fundamentally political purpose, this being to preserve peace, prevent coercion and war of any kind.«⁷³

To summarise, the available evidence does not suggest that nuclear weapons are currently being considered as a central element of tailored deterrence. Instead, the role of nuclear forces is to help convince any possible future state adversary that, no matter what approach they adopt, they cannot expect to achieve any objective through intimidation or aggression. This is very similar to the long-standing position that nuclear weapons »make the risks of aggression against NATO incalculable and unacceptable in a way that conventional forces alone cannot.«⁷⁴

71. *Presentation of Le Terrible in Cherbourg*, speech by French President Nicolas Sarkozy, 21 March 2008. For an analysis of the speech, see Bruno Tertrais, *France and Nuclear Disarmament: The Meaning of the Sarkozy Speech*, Proliferation Analysis, 1 May 2008. Both documents can be found on the website of the Carnegie Endowment for International Peace at: <http://www.carnegieendowment.org>.

72. *The French White Paper on Defence and National Security*, (New York: Odile Jacob, 2008), p. 65.

73. Federal Minister of Defence, *White Paper 2006 on German Security Policy and the Future of the Bundeswehr*, Berlin 2006.

74. NATO's Nuclear Forces in the New Security Environment, *NATO Nuclear Fact Sheet*, June 2004. Available at: <http://www.nato.int/issues/nuclear/sec-environment.html>.

C. Communicating with adversaries

Apart from standing forces and plans to use them, deterrence also requires the ability to communicate effectively with the adversary based on an understanding of which message is likely to be effective in modifying behaviour. During the Cold War the adversarial blocs developed technical means of monitoring one another on a continuous basis, as well as direct and secure lines of communication. This was part of the process of enhancing stability and reducing any risks, should a crisis nonetheless develop.

The future conditions anticipated in threat assessments assume that there might be multiple state and non-state opponents, each with quite different characteristics. Using nuclear capabilities as part of a rather differentiated set of signalling strategies developed under the tailored deterrence approach might also be difficult, given that opponents might be poorly understood or might have no interest in preserving stability. Moreover, most potential opponents would have relatively weak technical capacities with which to monitor signals of different kinds or to communicate effectively.

Effective communication to support a tailored approach would require different signals, which could consist of either words or actions, expected to affect the behaviour of specific actors. These signals would need to be sent on a continuous basis in both peacetime and in crisis situations.

Beyond the underlying message that such a powerful weapon exists, it is hard to see any practical way of using nuclear weapons to convey more sophisticated messages to leaders in civil wars or limited wars against a relatively small power, such as Iran today. This kind of opponent would not be able to see any of the steps being taken in a finely calibrated approach – such as changes in force deployments, activation of units, uploading of weapons or changes in alert status at deployed units.

The difficulties of using nuclear weapons to communicate with violent but decentralised extremist networks would be even greater given that deterrence would have to send signals to multiple actors at several different levels in the terrorist organisation. If the opponent does not use an integrated command structure or have a system for ordering attacks from the centre, then each of the

members of the network would have to be individually deterred from taking hostile actions.

5. Political dimensions of evolving nuclear policy

While in the previous section we examined military-technical issues that have an impact on the future role of nuclear weapons, the issue of deterrence has a number of political dimensions, including issues among the Allies and issues in the external relations of the Alliance. The official statements of NATO member states suggest that there is still strong support for a nuclear component of extended deterrence. The view that NATO will continue to need nuclear assets as one part of a credible deterrence capability seems unlikely to be challenged as part of any discussion inside the Alliance. However, a number of elements of nuclear policy may be open to question.

A very high degree of solidarity among the participating states has been a critical component in the success of NATO. This solidarity has been made operational through the work of the Nuclear Planning Group, where both nuclear weapon states and non-nuclear weapon states discuss operational issues, questions of deployment and consultation mechanisms for the use of nuclear weapons assigned to NATO. The exception to this general cooperation and consultation has been the special relationship of France to the nuclear mission of the Alliance.

In the 2008 White Paper on defence and national security the French government noted two necessary components of what is called »NATO renewal«. The first highlighted aspect is the need to revisit collective defence in the new context provided by the proliferation of nuclear, biological and chemical weapons, along with ballistic missile delivery systems for them and mass impact terrorism. The second aspect is the potential role of NATO in crisis management and stabilisation missions in conflict zones. In developing its capacity to deal with this new context the White Paper underlines the need for a better sharing of responsibilities between the United States and European partners.

Since 1994, France has played an increasing role in NATO structures and is a major contributor to the operations that have been agreed within the framework of the Alliance. However, the Nuclear Planning Group is one of

only two multilateral bodies within NATO on which France still does not sit. For France, participation in most of the structures of the Alliance does not present a problem because they work by consensus and therefore cannot encroach on national sovereignty. However, the White Paper goes on to note that »participation in the Nuclear Planning Group raises a different kind of issue since our nuclear assets are totally independent«. ⁷⁵

This position, reflecting a traditional difficulty of integrating French nuclear weapons into advance plans for use in wartime, might be expected to change in light of the issues highlighted in the White Paper, combined with the NATO emphasis on an adaptive planning model over identifying and predesignating targets. However, the White Paper is very clear that »France's nuclear assets will remain outside the NATO framework«. ⁷⁶ France prefers to stick to the formula agreed in the 1999 Strategic Concept, which states that the nuclear forces of France and the United Kingdom are »capable of playing a deterrent role of their own contributing to the overall strengthening of the deterrence of the Alliance«.

France seems to exclude itself from an important part of the discussion of how NATO can adapt to achieve one major French objective – strengthening the deterrence of emerging WMD capabilities. While ways can be found to ensure that French views become known to Allies, failing to participate in the collective consideration of alternatives may put solidarity at risk.

A different challenge to solidarity might come in the form of the outcome of the US Nuclear Posture Review, anticipated for release in 2010. However, from what can be gathered in advance, the document will underline tendencies that should facilitate agreement within the Alliance and create the conditions for an open minded debate on the issue of NATO and nuclear weapons. While stopping short of any commitment never to use nuclear weapons first, the review is expected to follow broadly the same line as recent official statements by France and the United Kingdom by placing nuclear weapons in a deeply recessed role, and suggesting that the nuclear mission is to respond to a nuclear attack.

75. *The French White Paper on Defence and National Security* (New York: Odile Jacob: 2008), p. 102.

76. *Ibid.*, p. 104.

In 2005, then Secretary of Defense Donald Rumsfeld was asked in an interview »Since the time of the Cold War, US nuclear bombs have been stationed on German territory. What is their purpose today?« In reply, Rumsfeld said »I think I'll leave that to the Germans and to NATO. Some countries in Europe made the decision to allow them to be on the continent. It was seen to be in their interest and is still seen that way today as it persists. So one would assume it continues being in their interest.« ⁷⁷ Asked more or less the same question, the current US Secretary of Defense recently commented that »my impression is that all of our Allies in Europe are very comfortable with the arrangements that we have today«. ⁷⁸

In fact, several of the European countries that are central to the nuclear mission of the Alliance have indicated that they would like the present discussion of a new Strategic Concept to change the current nuclear sharing arrangements. In November 2009, after the election of a new government in Germany, incoming Foreign Minister, Guido Westerwelle informed his US counterpart that there is a need to reassess parts of NATO's nuclear policy. ⁷⁹ Belgium and the Netherlands – two other countries that play a key role in NATO's nuclear strategy – supported the German call for a reassessment. These countries, along with Norway, drafted a letter to the NATO Secretary General, calling on him to initiate an internal discussion of how NATO can support the goal of a world without nuclear weapons. The issue is expected to be taken up in April 2010. ⁸⁰

The need for a re-examination of the role of nuclear weapons in NATO has partly been driven by the difficulties of achieving an equitable sharing of roles, risks and responsibilities inside the Alliance as the conditions in Europe have evolved since the end of the Cold War. Whereas a deep involvement in the nuclear mission was the norm within NATO during the Cold War, engagement in the nuclear task has progressively shrunk as countries have given up dual-capable forces and closed military bases.

77. Europe has the lead on Iran. Now lead!, *Der Spiegel*, 31 October 2005. Available at: <http://www.spiegel.de/international/0,1518,382527-2,00.html>.

78. Robert Gates, *Nuclear Weapons and Deterrence in the 21st Century*, Carnegie Endowment for International Peace, 28 October 2008.

79. Julian Borger, Germans press for removal of US nuclear weapons in Europe, *The Guardian*, 6 November 2009. Available at: <http://www.guardian.co.uk/world/2009/nov/06/germany-removal-us-nuclear-weapons>.

80. Ralf Neukirch, German Foreign Minister Pushes for NATO Nuclear Drawdown, *Der Spiegel*, 4 March 2010.

The fall in the number of countries engaged in the nuclear mission has also been brought about by the addition of new Allies that cannot participate in sharing arrangements. In December 1996, NATO Foreign and Defence Ministers made a unilateral announcement that NATO has »no intention, no plan, and no reason to deploy nuclear weapons on the territory of new member countries, nor any need to change any aspect of NATO's nuclear posture or nuclear policy, and that it does not foresee any future need to do so«. This commitment was reiterated in the document that established a new basis for cooperation between NATO and Russia, and that document also elaborated and explained that »this subsumes the fact that NATO has decided that it has no intention, no plan, and no reason to establish nuclear weapon storage sites on the territory of those members, whether through the construction of new nuclear storage facilities or the adaptation of old nuclear storage facilities«. Nuclear storage sites are understood to be facilities specifically designed for the stationing of nuclear weapons, and include all types of hardened above or below ground facilities (storage bunkers or vaults) designed for storing nuclear weapons.⁸¹

Among the newer members of NATO that cannot participate in sharing arrangements, the Baltic states and Poland are believed to take a cautious approach to revising current arrangements. However, for countries to have strong views on arrangements in which they cannot participate underlines the difficulty in reconciling solidarity and burden-sharing under current conditions. Analysing the debate, two Lithuanian analysts have noted: the »Baltic states may have more at stake in the credibility of NATO's nuclear deterrence than most of the other NATO Allies. On the other hand, the Baltic states are probably least capable to contribute to NATO's nuclear mission due to some objective and subjective reasons«.⁸²

A Polish analyst has recently argued that the nuclear sharing arrangements are not a taboo for countries that might be considered to be in an exposed position. Rather, changes to the policy »need to be conducted in a way that does not weaken the trans-Atlantic link nor the im-

age of the Alliance as a credible security provider in the eyes of outside actors, including Russia«.⁸³

The presence of US conventional and nuclear forces in Europe has been regarded as vital to the security of Europe because it demonstrates an inseparable link to North America. The most important way of demonstrating this link is to continue to safeguard and build upon the multitude of military, social, diplomatic and economic links that bind the two sides of the Atlantic – factors that have always been more important than specific weapon systems.

The element of reassurance gained from the presence of US forces is argued to have reduced any risk that countries would seek their own independent capabilities, and therefore supported nuclear non-proliferation. The US Secretaries of Energy, Defence and State made this point in a recent joint statement when they gave a prominent place to the observation that »the extension of a credible US nuclear deterrent has been critical to allied security and removed the need for many key allies to develop their own nuclear forces«.⁸⁴

In contemporary conditions, it would be very difficult, if not impossible, for a country in NATO to develop nuclear weapons in a clandestine programme. The fissile materials that are required for a nuclear weapon would need to be acquired from another state or from a domestic source, which would involve setting up an enrichment or reprocessing capacity. The possibility that such a capacity could be concealed inside a NATO member state for the period of time needed to produce sufficient material for an arsenal of weapons is extremely low. Moreover, the country concerned would also have to develop a weapon design and adapt a delivery system to carry a nuclear weapon.

A more likely scenario would be for a country to make the case for a civilian programme that could subsequently provide the fissile material for a nuclear weapon if the political decision to develop a military option was taken. In such an eventuality, the capacity would be developed

81. Founding Act on Mutual Relations, Cooperation and Security between NATO and Russian Federation, Paris, 27 May 1997.

82. Lukasz Kulesa, *Reduce US Nukes in Europe to Zero, and Keep NATO Strong (and Nuclear): A view from Poland*, PISM Strategic Files, Polish Institute of International Affairs, March 2009.

83. *National Security and Nuclear Weapons: Maintaining Deterrence in the 21st Century*, A Statement by the Secretary of Energy, Secretary of Defense and Secretary of State, July 2007.

84. Associated Press, US, Poland OK missile defense base, riling Moscow, *ABC News*, 20 August 2008. Available at: <http://a.abcnews.com/International/WireStory?id=5614785&page=3>.

under continuous monitoring by the International Atomic Energy Agency. The subsequent decision to adapt a civilian programme and use it for military purposes or to withdraw fissile material from safeguards could therefore only realistically be taken following an extensive political debate both inside the country and with foreign partners.

The chance of a proliferation scenario involving the clandestine acquisition of a nuclear weapon capability by a member of NATO therefore seems remote with or without the presence of US nuclear weapons and forces in Europe. Should NATO move away from a strategic concept based on nuclear deterrence, the probability of a proliferation scenario developing might be different. However, as noted above, there does not seem to be any likelihood that NATO will stop being a nuclear Alliance in the foreseeable future.

6. Can US nuclear forces in Europe be compensated?

One conclusion drawn from the previous section was that ending the US nuclear weapon sharing arrangements in Europe could best be accomplished in the context of decisions that offset any negative political consequences felt domestically by Allies and that underline the continued solidarity and military effectiveness of NATO.

A number of decisions taken together could create a climate in which the sharing arrangements are ended in a way that strengthens NATO.

A compensating military-technical approach might be based on providing advanced conventional weapons, perhaps together with expanded participation in missile defence-related research and development. For this approach to be feasible, two obstacles would have to be overcome. First, Allies would have to make the human and financial resources available to finance any additional conventional capabilities – something that might be a challenge in the current economic conditions. Second, the technical effectiveness of missile defences would have to be validated and the validation data (some of which were classified by the Bush Administration in May 2002) would have to be shared with the relevant Allies.

NATO has discussed how to defend against attacks by ballistic missiles for a number of years. However, the na-

ture of the debate changed significantly in 2009 when the Obama Administration revised US policy regarding missile defence. Unlike the previous administration, Obama no longer emphasises in the first instance defending the continental United States against the threat from long-range ballistic missiles. Instead, the main emphasis in programme development would appear to be a focus on intermediate range missiles of the type being developed in the Middle East. This approach makes it easier to conduct discussions on missile defence both internally – because it emphasises the indivisibility of defence among Allies – and externally, because Russia no longer has missiles of the type the new architecture is designed to defend against. There is no indication as yet that Middle Eastern countries (such as Iran and Syria) regard NATO missile defence plans as provocative.

As an alternative, or in combination, additional bilateral assurances from the United States might accompany any withdrawal of weapons over and above the guarantees provided by NATO. A precedent for this might be the arrangement recently concluded with the Polish government in the context of the agreement to station elements of a missile defence system in Poland. Alongside the agreement on the stationing of missile defence infrastructure, Poland and the United States signed a Declaration on Strategic Cooperation intended to deepen their military and political partnership through a mutual commitment to assist one another immediately if either should come under attack.⁸⁵

A mesh of subsidiary agreements to compensate individual countries for a perceived increase in risk associated with common projects might be difficult to achieve inside NATO. The use of ad hoc bilateral agreements between individual Allies and the United States also contains an inherent risk that the solidarity on which NATO has depended will be put in jeopardy and suggests that Allies already have doubts about whether the existing commitments can be honoured. At a press conference announcing the new bilateral agreement between Poland and the United States, Polish Prime Minister Donald Tusk was critical of current NATO crisis decision-making and said that »Poland and the Poles do not want to be in Alliances in which assistance comes at some point later – it is no good when assistance comes to dead people. Poland

85. Quoted in Associated Press, Poland, U.S. Reach Deal on Missile Shield, 14 August 2008. Available at: <http://www.nysun.com/foreign/poland-us-reach-deal-on-missile-shield/83904/>.

wants to be in Alliances where assistance comes in the very first hours of any possible conflict».⁸⁶

This statement by the Polish Prime Minister underscores the need for all Allies to make a new effort to ensure a full understanding of and commitment to their mutual obligation for collective defence.

NATO threat assessments have raised the risk that conflicts at or close to the borders of the Alliance could have spillover effects, whether or not NATO is directly involved. Russian military engagement inside Georgia underlined that this is not a hypothetical concern. Although the conflict in Georgia did not engage a NATO ally, it did heighten concerns in several parts of NATO about a growing vulnerability to Russian pressure. This is perhaps greatest in the Baltic states and in Poland, given that Russia continues to carry out major exercises in close proximity to these countries.⁸⁷

To address the reasonable concerns of Allies who feel that they are exposed to risk, the pattern of exercises organised under the NATO umbrella could be modified so that activities become more regular and more tailored to the security environment of those exposed countries. These exercises could demonstrate that NATO is still able to concentrate very significant conventional firepower in a particular place and at fairly short notice. The exercises could be made part of a dedicated effort to strengthen military planning for any contingencies arising at the periphery of the enlarged NATO.

A theoretical approach to addressing any potential threat to solidarity would be to revise the balance of nuclear burden sharing among Allies, for example by redistributing tasks across Allies that could (and in the past did) participate in sharing arrangements. However, to move in this direction would require an increase in the number of US nuclear weapons in Europe and in the number of dual-capable aircraft in the air forces of European countries, as well as a new examination of the process of base

86. In 2009, about 12,500 troops from Russia and Belarus took part in major exercises involving aircraft, armour and other heavy weapons in southern Belarus, about 125 km from the Polish border, and in Kaliningrad (which borders Poland and Lithuania).

87. The linkage between the wider issues facing NATO and Russia, on the one hand, and nuclear arms reductions, on the other, is explored in Rose Gottemoeller, *Eliminating Short-Range Nuclear Weapons Designed to Be Forward Deployed*, in George P. Shultz, Sidney D. Drell and James E. Goodby (eds), *Reykjavik Revisited*, Hoover Institution Press, 2008.

realignment. The current and expected threat environment would not justify these decisions.

An additional element in the package of measures would be a new effort to engage Russia in a discussion on the role of nuclear weapons in European security. This question is closely linked to the issue of the role (if any) NATO might play in the next phase of nuclear arms control.

As the United States and Russia have launched a new round of bilateral nuclear arms control it is likely that the US will want to discuss progress and positions inside NATO using the existing structures. This can demonstrate that there is no lack of transparency or openness inside the alliance.

This high level of transparency and consultation within NATO should provide a platform for the Alliance to raise nuclear weapon-related issues in its dialogue with Russia without running any risk of sending »mixed messages« that might complicate the very important bilateral US–Russia arms control track.

The ultimate objective of NATO should be a joint mandate with Russia for negotiations leading to a ban on short-range nuclear forces in deployment. However, difficult challenges would have to be overcome before such an approach could be realised.

The current gap in understanding with regard to the role of nuclear weapons that seems to have emerged between NATO and Russia will need to be closed. At present, NATO is progressively de-emphasising the role of nuclear weapons, but Russia appears to rely on nuclear deterrence to an increasing degree. A thorough and comprehensive analysis of Russia's evolving nuclear posture should be a priority for NATO.

While the next phase of nuclear arms control will be bilateral, between the United States and Russia, talks will need to take account of a range of inter-related issues of great interest to NATO – including the development of advanced conventional weapons and ballistic missile defences. Generating greater transparency regarding short-range nuclear forces might form part of an agenda for a wider engagement of issues.

NATO itself has argued that, in general, the potential of the NATO–Russia Council has not been fully realised.

While the NATO–Russia Council is unlikely to emerge as a significant multilateral forum for arms control, it has the potential to address issues that will have a bearing on the success or failure of future nuclear arms control talks.⁸⁸

It would be valuable to try and engage with Russia to consider the role of short-range delivery systems for nuclear weapons more broadly, given the new strategic geography of Eurasia. While the dissolution of the Soviet Union changed the strategic and political geography of Eurasia, it has not proved possible to engage with Russia to discuss how the changes have affected thinking in relation to Asia and the southern rim of Russia.

While the degree of transparency with regard to NATO's nuclear policies and force posture has increased progressively since the end of the Cold War, the same is not true for Russia and little is known about the size or configuration of Russian short-range nuclear forces. Moreover, and more generally, there are concerns that the limited steps to increase the transparency of Russian military planning made after the end of the Cold War are being steadily eroded. Therefore, an incremental approach to engaging Russia in discussions about the future role of short-range nuclear forces could begin with voluntary transparency measures, such as reporting on the implementation of past initiatives (for example, the 1991–92 Presidential Nuclear Initiatives). As trust is built, the process could expand step-by-step to incorporate discussions of current holdings and future modifications to identified stocks.

For Russia, the transformation into a legal obligation of the statement by NATO that there is no intention, no plan and no reason to deploy nuclear weapons on the territory of new members might be a reassuring and welcome development. For NATO, such a legal commitment might be explored in the context of discussions of whether the basing of nuclear weapons and short-range delivery systems for them in Kaliningrad might play a greater role in Russian plans in the context of an evolving missile defence architecture.

A re-evaluation of the current role and future prospects of nuclear weapons in Europe and the sharing arrangements for them could also play a useful role in the management of the 2010 NPT Review Conference. The legality of current arrangements has been raised at past Review Conferences and, given that this is now a unique as well as an anomalous arrangement, it would not be surprising if the issue was raised again in 2010.⁸⁹

In the past, NATO has defended itself against the accusation that present arrangements are incompatible with the NPT by pointing out that the arrangements predate the Treaty. According to this argument, the countries that participate in the NPT accepted the legality of the arrangements at the time they joined the Treaty. While this position is logical, it does not address the substance of the issue or take account of changing circumstances and it can also come across as further evidence of a rather defensive and legalistic approach to disarmament. The position does nothing to unlock the entrenched and ideological positions into which countries have regrettably fallen in the NPT context.

Demonstrating that the substantive issues related to nuclear sharing and concerns that may arise from the current policies are being evaluated inside NATO with an open mind would also be a valuable contribution in the NPT context in 2010.

This open-minded evaluation could examine the circumstances in which weapons might be removed, taking into account both the alternative of a unilateral decision by NATO and a bargaining process. Moreover, the assessment of the options for a bargaining process should include a range of alternatives related to the identity of the partners and the possible elements of a bargain. The form of an eventual bargain should also take into account the option of reciprocal and agreed unilateral measures (such as a new set of Presidential Nuclear Initiatives), as well as more formal negotiations.

This approach would be fully consistent with current public diplomacy that should continue to inform and educate the public about the full extent of the major reduc-

88. Arjun Makhijani and Nicole Deller, *NATO and Nuclear Disarmament: An Analysis of the Obligations of the NATO Allies of the United States under the Nuclear Non-Proliferation Treaty and the Comprehensive Test Ban Treaty*, Institute for Energy and Environment Research (IEER), October 2003.

89. For a critique of the NATO position, see Martin Butcher, Otfried Nassauer, Tanya Padberg and Dan Plesch, *Questions of Command and Control: NATO, Nuclear Sharing and the NPT*, PENN Research Report 2000.1, March 2000. Available at: <http://www.bits.de/public/research/report/rr00-1-1.htm>.



tions to weapon stockpiles and adjustments to nuclear policy that have already been accomplished in the past 15 years. This process would underscore that the decision on whether or not to retain current arrangements is a political judgement, which takes into account strategic realities, thereby indicating that NATO countries continue to be open to change.



About the authors

Dr Ian Anthony is Research Coordinator at SIPRI.

Johnny Janssen is Project Intern at SIPRI.

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Dr. Gero Maaß, Head, International Policy Analysis

Tel.: ++49-30-269-35-7745 | Fax: ++49-30-269-35-9248
www.fes.de/ipa

To order publications:
info.ipa@fes.de

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