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The Future of Nuclear Weapons in NATO

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Executive Summary

The year 2009 will present an interesting opportunity to evaluate the role of nuclear weapons in European security and to consider possible alternative approaches to current policies. NATO may well embark on a process to update the Strategic Concept that has been described as a core mission statement for the Alliance. The current document, dating from 1999, lays out the main parameters of NATO nuclear policy today. NATO is currently undertaking an internal review of nuclear deterrence requirements for the twenty-first century.

The role of nuclear forces and force postures is being evaluated at the national level almost simultaneously 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. The new Administration in the United States is currently carrying out a national review of nuclear policy.

Officials from the United States and Russia are working to prepare the ground for a new round of bilateral nuclear arms control, something that President Barack Obama called for during his election campaign. In 2010 almost 200 countries will come together to review the Nuclear Non-Proliferation Treaty (NPT), regarded as the centerpiece of international efforts to prevent the spread of nuclear weapons to new countries. However, most countries that participate in the 2010 meeting will expect a balanced approach from nuclear weapon states that takes into consideration the need for further steps towards nuclear disarmament and towards a new international framework for the equitable sharing of nuclear technology for peaceful uses.

Based on public documents and extensive interviews with responsible officials there is no reason to think NATO will move away from being a nuclear alliance. NATO 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. However, if no near term change is anticipated from a broad perspective, it might be time to adjust important aspects of NATO nuclear policy.

Can and should nuclear deterrence be tailored to a more discrete and narrower set of circumstances than was the historically the case? Through such a strategy nuclear weapons would no longer be central to deterring any aggression against the Alliance. They would remain as one element in an overall mix of capabilities available to NATO, but in practice their role would be limited to deterring nuclear attacks. The underlying approach on which tailored deterrence is based has not been widely explained or discussed in Europe and neither its feasibility nor its desirability has been debated.

Decisions will also be needed on the future of short range delivery systems for nuclear weapons, including US weapons based in Europe. Although there is no imminent need for a decision on this question, it is the right time for an

inclusive and extensive reflection and analysis that will be the basis for a decision. This reflection needs to consider all available alternatives to current policies in the context of developments in Russia and in the Middle East.

NATO emphasizes that its nuclear forces must be credible and flexible in order to achieve effective deterrence. However, changing circumstances and the passage of time put the credibility and flexibility of existing forces in doubt. Inside NATO the national plans of nuclear weapon states, the enlargement of the Alliance and the aging of dual-capable aircraft earmarked for nuclear weapon delivery are undermining the rationale for maintaining the weapons in Europe: alliance solidarity and trans-Atlantic reassurance.

The configuration of the US nuclear weapon stockpile is under review as Washington debates what an effective, reliable, sustainable and affordable nuclear posture will look like in future. related to ensuring the reliability of its nuclear arsenal. The outcome of that discussion will affect which weapons will remain, how they match available delivery systems and who will be able and willing to buy available delivery systems.

The US nuclear posture review may marginalize the role of short range, dual-capable delivery systems, while streamlining the nuclear weapon production complex may remove some nuclear warhead types from the current inventory. The willingness of the United States to engage in sharing arrangements might also be affected by political aspects of securing its nuclear weapon stocks. If the US sees current NATO sharing arrangements as marginal and inconvenient details within nuclear force planning, their credibility and usefulness may diminish in the eyes of Europeans.

Changes in Europe will also have an impact on thinking. Enlargement has progressively extended the distance between the places where weapons are stored and the periphery of the Alliance, while existing dual-capable delivery systems have limited ranges. Furthermore, these dual-capable systems are aging, and life extension programmes can only do so much to postpone the moment when an expensive modernization will have to be undertaken.

NATO nuclear policy has been characterized by a high degree of solidarity. However, the number of countries directly engaged in the nuclear mission has shrunk continuously since the end of the Cold War. National decisions about modernization of dual-capable aircraft by European Allies could result in one or more additional countries giving up direct involvement. A domino effect as a handful of Allies are left with the nuclear task might become unavoidable.

A number of recent analyses have concluded that US nuclear weapons in Europe have an ‘almost dormant status’.[1] However, there has not been any strong pressure to review current policy from either Europe or North America.

[1] Bruno Tertrais, *The Coming NATO Nuclear Debate*, Real Institut Elcano, 26 September 2008.

No individual ally wants to be seen “rocking the boat”, in particular given the pressing need to address other issues.

As noted above, practical questions will force a decision fairly soon, and there is an opportunity to explore whether a consensus can be found inside the Alliance on the way forward. Reviewing the current nuclear policy can also be a part 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 NATO and Russia. However, difficult challenges would have to be overcome before the benefits of such an approach could be realized.

NATO will have to decide how it views the utility of short-range nuclear delivery systems. In addition, the United States and Russia will have to close the gap in their understanding of the role of nuclear weapons as part of the next round of bilateral nuclear arms control. However, the two countries seem to be moving in different directions on this question, with the United States progressively de-emphasizing the role of nuclear weapons and Russia increasingly reliant on nuclear deterrence.

Ultimately the United States should seek a joint mandate with Russia for an inclusive process leading to a ban on short range nuclear forces in deployment alongside a significant further reduction in the number of strategic nuclear weapons. To achieve that goal nuclear arms control will need to take account of issues that directly affect strategic stability—including the development of advanced conventional weapons and ballistic missile defenses.

As a first step, NATO might consider giving further legal expression to the restrictions on nuclear force deployments in Europe contained in the NATO-Russia Founding Act. In exchange Russia could provide greater clarity and transparency regarding how Russian short range nuclear forces were modified in line with the unilateral undertakings given in the early 1990s.

To implement a phased approach a continuous dialogue would be needed inside NATO including all allies. To achieve a ban on short range nuclear forces France would have to eliminate its existing nuclear capable aircraft as part of an eventual settlement. An important issue for NATO would be how to include France into any dialogue given French self-exclusion from the most relevant bodies.

1. The current NATO context

At the beginning of April 2009 NATO Heads of State and Government will hold a summit on the occasion of the 60th anniversary of the Alliance. The summit will be an important one, not least because it will be one of the first opportunities for President Barack Obama to explain elements of his approach to US foreign relations. At the summit leaders may launch the process of designing a new strategic concept for NATO, updating a document that dates from 1999—something that the NATO Secretary-General has called for.[2]

NATO is currently undertaking an internal review of nuclear deterrence requirements for the twenty-first century.[3] According to the 2006 German White Paper on defence, the results of this debate will be incorporated in a new NATO strategic concept 'at the appropriate point in time'.[4] While there are no specific deadlines for completing the internal review of nuclear matters, it is taking place at a particularly interesting time given other developments both inside the Alliance and internationally.

The objective of this report is to lay out the political, military and technical issues that will have a bearing on the nuclear weapons-related policies of NATO. The paper will try to describe the options and the constraints that set the parameters for nuclear choices that NATO will face in the upcoming years. This is a contribution to a wider pan-European debate that will be needed in the near future over the role of nuclear weapons in European security and which options could be prudent and advantageous in building national, European regional and international security. The paper does not try to predict the outcome of NATO's internal review of nuclear deterrence, nor does it advocate any specific policy direction for NATO or any of its individual members.

During the Cold War NATO's strategic concept was a restricted document focused on military aspects of planning, organization 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 the current Secretary-General has described as a core mission statement for the Alliance.

In an more benign military threat environment defence planning was adapted to take account of the fact that NATO no longer faced a single, uni-directional threat to the territorial integrity and sovereignty of the allies. The new task was

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[2] 'NATO chief calls for new "strategic concept"', *International Herald Tribune*, 11 February 2007.

[3] *Final Communique*, NATO, Ministerial meetings of the Defence Planning Committee and the Nuclear Planning Group, Brussels 15 June 2007.

[4] Federal Minister of Defence, *White Paper 2006 on German Security Policy and the Future of the Bundeswehr*, Berlin 2006, p. 26.

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 using realistic expectations in light of reductions in military spending and the political and legal difficulties of using armed forces in missions other than self-defence.

The post-Cold War iterations of the strategic concept helped sustain the Alliance by explaining the direction that NATO was taking in terms that the public could understand. The 1991 version made it clear that the two principles of defence and detente that were the basis for NATO relations with countries in Central and Eastern Europe after 1967 and the publication of the Harmel Report were now being supplemented with dialogue and co-operation. A broad spectrum of states, including former adversaries, were now to be engaged while NATO maintained a collective defence capability. In 1999 a revision to the strategic concept validated crisis management and crisis response operations, including carrying out operations in partnership with non-NATO countries—summarizing and explaining changes being implemented "on the ground" in the Western Balkans.

The 1999 strategic concept coincided with the 50th Anniversary of the founding of NATO and illustrated that the milestone was not only a celebration of past achievements but also a catalyst for a reflection and an attempt to map NATO's way ahead into the approaching 21st Century. The general tone of the discussion was that on balance there was a good story to tell. In key issue areas the alliance was seen as an organization that was not merely surviving due to bureaucratic inertia. On the contrary, NATO was making a positive contribution to a more integrated Europe through peaceful enlargement, developing new areas of cooperation with Russia and new instruments to organize joint efforts. The alliance was playing its part in containing violence and resolving armed conflicts at the periphery of the enlarging alliance.

As a result, the Allies were able to state 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'. While choices over specific matters will always be debated, in 1999 few observers fundamentally disagreed with that overall assessment.

On the occasion of the 60th Anniversary it will be more difficult for friends of NATO to make the same arguments in a convincing way. The Secretary-General has outlined four goals for the strategic concept:

1. 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.
2. As an instrument to underline for the public why NATO remains essential for their security.

3. To engage a new US Administration in thinking about NATO early on in its tenure.
4. Finally, to give clear priorities and a clear sense of the resources needed to be successful.[5]

The problem for NATO is that the activities that are currently the main pillars of trans-Atlantic military cooperation are 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 evolved to the point where action is possible anywhere in the world. However, rather than demonstrating the military effectiveness of NATO, Afghanistan has underlined just how hard it has been for NATO to adapt to new missions. Second, 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.

Within NATO national representatives currently seem to have accepted the case for a revised strategic concept, and some have even given rather strong backing to the idea.[6] Therefore, it seems likely that 2009 will see NATO initiate a process to develop a new iteration of the strategic concept.

As part of the broad discussion it will be necessary to revisit the issue of the role of nuclear weapons because the current strategic concept outlines the basic NATO approach to that question using language that suggests indefinite retention of nuclear weapons. According to the 1999 NATO strategic concept, 'to protect peace and to prevent war or any kind of coercion, the Alliance will maintain for the foreseeable future an appropriate mix of nuclear and conventional forces based in Europe and kept up to date where necessary, although at a minimum sufficient level. ... [T]he Alliance's conventional forces alone cannot ensure credible deterrence. Nuclear weapons make a unique contribution in rendering the risks of aggression against the Alliance incalculable and unacceptable. Thus, they remain essential to preserve peace.'

While this approach was perhaps justified in 1999, in 2009 there is a hope and an expectation that the political context for nuclear arms reductions has changed in a positive direction. In the United States the newly inaugurated President campaigned on a platform that included making the goal of eliminating all nuclear weapons a central element in his nuclear policy. This

[5] NATO Secretary General, Jaap de Hoop Scheffer, *Beyond the Bucharest Summit*, Brussels Forum, Brussels 15 March 2008, URL http://www.nato.int/docu/speech/2008/s080315a.html.

[6] For example, the Ministers of Defence of the United Kingdom and Hungary have written that a new Strategic Concept would be welcome if it could focus on three key priority areas: 'well-planned, well-managed and well-executed operations; on delivering the key capabilities needed to support them, now and in the future; and on a framework of partnerships that allow us to work with all those who share our interests and can contribute to them as part of a comprehensive approach'. Des Browne and Imre Szekeres, 'Transatlantic Renewal', *Washington Times*, 23 September 2008.

programme shared some features with arms control proposals advanced by European NATO Allies, including France and the United Kingdom. The recent governmental proposals recommend an incremental approach based on urgent, practical steps in order to realize a longer term vision for the complete elimination of nuclear weapons. A similar framework has been advocated by senior and experienced former government officials in both North America and Europe as well as a range of expert non-governmental groups.

Within NATO the discussions leading up to a new strategic concept could further contribute to the positive political context by taking a fresh look at how the Alliance views the use of force, including the potential role played by nuclear weapons.

During the Cold War great effort was put into minimizing 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 crises in relations between states in the Euro-Atlantic area in 1999 and in 2003.

The discussion of the strategic concept could play a useful part in clarifying and explaining how NATO can reduce the probability of force being against Allies and at the same time employ force to support positive outcomes in scenarios of crisis and conflict.

The changes that were reflected in past strategic concepts inevitably had an impact on the nuclear dimensions of NATO policy, and at the end of the Cold War the need to adapt the nuclear force posture of the Alliance was recognized immediately. NATO’s nuclear forces played a central role in the Alliance’s strategy of flexible response, but after 1991 they were among the first areas subject to review and underwent some of the most radical changes.

Prior to 1991 NATO contingency plans included pre-identified targets for standing nuclear forces, but with the end of the Cold War this type of planning was discontinued, and nuclear forces no longer targeted any specific country in peacetime. During the Cold War it was considered useful to maintain a high degree of redundancy in the number of nuclear weapons available. However,

after 1991 there were major reductions the number and types of NATO nuclear forces.[7]

The three NATO allies with nuclear weapons—France, the United Kingdom and the United States—have all recently either undertaken or initiated internal assessments of their nuclear forces. These assessments have been made with a greater degree of consultation and transparency than was the case in the past. By deciding to publish more information in a form that is easily accessible, the governments of all three countries have provided a platform for an inclusive public discussion.

In December 2008 the Congressionally mandated Commission on the Strategic Posture of the United States delivered an interim report. The Commission, led by two former Defense Secretaries (William Perry and Janes Schlesinger) is examining the long-term strategic posture of the United States in all of its aspects—including military capabilities, arms control initiatives, and nonproliferation strategies.

The 2008 National Defense Authorization Act Congress stipulates that the Secretary of Defense, in consultation with the Secretary of Energy, should conduct a review of the nuclear posture of the United States for the next 5 to 10 years and submit the results of the review to Congress in December 2009. The review should include an assessment of the role of nuclear forces in United States military strategy, planning, and programming, including an examination of the role that missile defence capabilities and conventional strike forces play vis-à-vis nuclear forces.

In France and the United Kingdom recent official documents have given a clear indication of the future nuclear force structure, including the types of delivery platform that will be used to carry nuclear weapons and a fairly precise assessment of the numbers of weapons to be carried. In the United States the broad outline of the transformation of strategic forces has been described in public documents and this is unlikely to change very significantly, although there will be a nuclear posture review in 2009 that could lead to modifications in the numbers and types of strategic forces.

In general there is less clarity in national assessments regarding the medium and longer term picture for the future development of dual-capable delivery platforms and the weapons that could be carried on them—and this part of the force structure is one of the most relevant from the perspective of NATO. For this reason too it will be necessary to consider the role of nuclear weapons in NATO through a process no less transparent than the one being used in its member states.

[7] Federal Minister of Defence, *White Paper 2006 on German Security Policy and the Future of the Bundeswehr*, Berlin 2006, p. 26.

Apart from these studies several non-governmental organizations are engaging the expert community in discussions on the future of United States nuclear strategy and doctrine. It is likely that 2009 will see a wide-ranging debate in the United States about the future role of nuclear weapons in national security in parallel with analyses of the potential to take additional steps in nuclear arms control.

Nuclear arms reductions have been taking place on a more or less continuous basis since the end of the Cold War, albeit often outside the framework of a formal legal structure. France and the United Kingdom have recently published their thinking on the next steps to create the conditions for further nuclear arms reductions.

Outside government, several initiatives led by experienced former officials and experts have tried to focus attention on the need for nuclear weapon states to make clear how they are going to meet their nuclear disarmament obligations. The WMD Commission chaired by Dr. Hans Blix delivered its report *Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms* to the UN Secretary General on 1 June 2006. The Commission fully recognized how difficult it will be to extend the prohibitions on chemical and biological weapons to include nuclear weapons, but recommended that states should work towards general agreement on the principle that nuclear weapons should be outlawed, and explore the political, legal, technical and procedural options for achieving this within a reasonable time.

In his preface to the WMDC report Dr. Blix underlined the special role that only the United States can play in achieving both short term objectives (such as bringing the Comprehensive Nuclear-Test-Ban Treaty into force and negotiating a global treaty to stop the production of fissile material for weapons) and in any broader effort to return to a cooperative multilateral system in the sphere of arms control and disarmament. This would obviously extend to future bilateral arms reduction efforts engaging the two countries that own the lion’s share of nuclear weapons, the United States and Russia.

The findings of the WMD Commission report—a consensus document prepared by a experts from many nationalities—is evidence that the international community wants to engage the USA in the international system on the basis of responsible leadership within a common framework. In 2007 further recognition of the leadership role that the United States will have to play came in the form of a bipartisan call from four leading former statesmen for a global effort to reduce reliance on nuclear weapons, to prevent their spread into potentially dangerous hands, and ultimately to end them as a threat to the world. The four statesmen, George Shultz, William Perry, Henry Kissinger and Sam Nunn, worked in 2007 and 2008 to build general support in the United States and won the public backing of an impressive array of former officials with extensive experience of nuclear policy including Madeleine Albright, Richard V. Allen, James A. Baker III, Samuel R. Berger, Zbigniew Brzezinski, Frank Carlucci, Warren Christopher, William Cohen, Lawrence

Eagleburger, Melvin Laird, Anthony Lake, Robert McFarlane, Robert McNamara and Colin Powell.

In 2008 four former Ministers of Defence and Foreign Affairs from across the main parts of the political spectrum in the United Kingdom produced their own statement in which they argued that there is a powerful case for a dramatic reduction in the stockpile of nuclear weapons. They recommended that states should work for this collectively and through multilateral institutions, including NATO. In their article the UK statesmen pointed specifically to a role for Britain in NATO, namely working through existing mechanisms to promote discussion of nuclear arms control options with key countries inside and outside the alliance.

In January 2009 four senior German statesmen published a joint article in which they not only endorsed a new phase of nuclear arms control but also expressed their opinion that all remaining US nuclear warheads should be withdrawn from German territory.

2. The current status of nuclear weapons in NATO

To achieve the fundamental purpose of preventing coercion and any kind of war nuclear forces 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 security of all of the NATO allies. Nuclear forces based in Europe and committed to NATO are also considered necessary by the Alliance in order to provide an essential political and military link between its European and the 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 a credible and effective element of the Allies' strategy in preventing war.'[8]

Adapting nuclear policy and forces has been a continuous activity for NATO since the meeting in London in July 1990, where the Heads of State and Government agreed on the need to transform the Alliance to reflect the new conditions in Europe.

The 1991 strategic concept recognized that NATO no longer faced a situation of numerical inferiority in key conventional weapon systems and acknowledged the dramatic improvement in the political climate. Therefore, the view about the appropriate mix of nuclear and conventional forces based in Europe evolved rapidly. The main role of nuclear forces remained the prevention of war by rendering the risks of any aggression against NATO incalculable and unacceptable to any aggressor. However, Allies agreed to move away from the concept of forward defence and to modify the principle

[8] *The Alliance's Strategic Concept*, approved by the Heads of State and Government at the meeting of the North Atlantic Council, Washington D.C. April 23–24 1999, paragraph 63.

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, NATO member states agreed that the numbers of strategic nuclear forces as well as the numbers of weapons based in Europe could safely be drawn down. Subsequently the total numbers of nuclear weapons at the disposal of NATO have fallen dramatically. The rapid and progressive consolidation, rationalization 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 reduced the number of sub-strategic nuclear weapons in Europe by more than roughly 90 percent since 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 7000 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 be fewer than 500.

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'.[9]

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 modernization 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 in the traditional form of a direct challenge through arms racing and military competition or in armed conflict is considered to be low

[9] *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.

and is likely to decrease further in the coming decade as Moscow implements an extensive military reform programme.

While the course of political relations are unlikely always to run smoothly, Russia will have to continue to eliminate the residual overhanging military capability remaining from the Cold War at a pace far greater than it deploys any new systems. As a result, Russian nuclear forces will continue to shrink for at least the next decade. Russia is still close to the start of a process of transforming its force structure that is expected to unfold over a fairly extended period and appears to be mainly aimed at preserving the effectiveness of its own strategic deterrent capability. Moreover, 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 and the US is willing to share much of this technology with allies.

Therefore, threat assessments conclude that for the foreseeable future, no state or alliance will have both the intent and the capability to pose a threat 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 what disruptive capabilities—using technology or methods that can "capsize" a superior military force through, for example, cyber attacks, exploitation of cultural and social fissures inside NATO countries or economic instruments. 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 recognized inside and outside governments, but it is worth trying to establish some perspective around the probability of proliferation. For example, eight countries have been in one way or another 'de-nuclearized' in the fairly recent past. Iraq and Libya were certainly aiming for nuclear weapons but were deprived of their capabilities in different ways. After the end of the Cold War South Africa voluntarily abandoned its nuclear weapons and both Argentina and Brazil voluntarily abandoned programmes of research and development that were leading them towards a nuclear weapon potential. 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 recognized since the 1970s. The two cases of greatest current proliferation concern are Iran and North Korea, the latter arguably 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.

It is debatable whether there has been any net increase in the number of nuclear weapon states in the recent past, and near term proliferation concern is heavily concentrated on two countries. However, there is a widespread view that the failure to contain the projects that pose the greatest current concern might lead governments to embark on programmes that will raise new nuclear concerns in the medium term future.

Elements of this view can been traced in the threat assessments made by nuclear weapon states. For example, looking out at the potential security environment between 2020 and 2050 the United Kingdom government highlighted underlying trends that give rise to significant causes for long-term concern. The White Paper noted that 'we cannot discount the possibility that the number of states armed with nuclear weapons may have increased by 2050'.[10]

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'.[11]

A dominant feature of the current threat assessments being made inside governments and in the non-governmental sector has been their work to analyze current and future technical capabilities. The assessments have pinpointed programmes that are of potential concern because of their technical characteristics—notably the steady progress made by Iran to assemble the technical wherewithal to produce fissile material that could be used in a nuclear weapon. The assessments also spotlight that several countries have made a long-term and sustained investment to develop ballistic missiles that would be suitable to deliver nuclear weapons. Step-by-step these programmes are creating nuclear weapon systems with longer ranges.

There has also been extensive analysis of the changing patterns of behaviour in 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. There is also a cycle of action-reaction as the countries that seek access to controlled materials, goods, technology and know-how adapt their procurement practices in response to changes in the regulatory framework in the countries where the relevant items can be obtained. The results suggest that new approaches to procurement by

[10] *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.

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

proliferators, combined with the emergence of new and different suppliers may have collapsed the time frame of programmes of concern.

A concern that might have been expected to unfold over a 25 to 30 year timeframe, as countries put together the many different parts of this complex jigsaw, might now reach fruition in something closer to a decade. The view that proliferation may be closer than we think reflects recent information about technical assistance that is available from places that do not participate in (and in fact work to undermine) the international non-proliferation effort. Analysis of how progress was made by Iran in developing the most sensitive parts of its nuclear fuel cycle would support this view. The activities at what is believed to have been a nuclear-related site in Syria have not yet been fully explained in public, but could further reinforce the view that previously unknown weapon programmes could emerge in a relatively short time.

There are now a significant number of cases where 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 these 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 in spite of the massive 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. Proliferation provides compelling evidence of the inadequacy of non-proliferation regimes and the need to reinforce them.

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 are 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. Instead the approach 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 spill-over impact from conflicts in which NATO is not directly involved. In addition, the reckless behaviour of states that have sheltered terrorists and helped them to enhance their capabilities has led directly to attacks on NATO. In cases where there is no direct intent, states

that are not able to perform basic functions of government can become a source of instability if they 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 have increasingly come to see issues as diverse as chemical waste control, efforts to combat infectious disease and nuclear fuel cycle management—all of which might previously have been thought peripheral to the central military/security concerns—as part of a diffuse 'threat' requiring a common response.

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 the 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.

The risk that a non-state actor would be able to use infectious disease as a weapon has also been analyzed 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.

The broad range of potential future risks has led government threat assessments to conclude 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 between 2020–50. 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.

At the same time, the kinds of contingencies that the threat assessments point to as future scenarios seem very contemporary and many future threat assessments seem to be a simple forward extrapolation of 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 this international boundary. The United States and some of its allies are extremely concerned that the governments with nominal sovereign control over this territory are either unable or unwilling to take action against the terrorists and their infrastructure. Therefore, external powers feel justified in reaching into the countries concerned in self-defence, using their own military capabilities against identified targets whenever they have actionable intelligence.

Although military action is already being taken against a state with nuclear weapons (Pakistan) by a nuclear weapon state (the United States), nuclear weapons seem to play no role at all in the thinking on either side. 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 authorized 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 necessary in legitimate self-defence.

Possession of nuclear weapons is sometimes said to immunize a state from attack by conventional means, and in particular from attack by the most powerful country in the world. The fact that available resources (human, administrative and material) could never provide an effective conventional deterrent to US military action is said to be an incentive to acquire nuclear weapons. However, Pakistani nuclear weapons do not provide this immunity, and in this case events would tend to support the US declaratory nuclear policy that all options remain "on the table".

Another line of thinking which influential 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'.[12] However, in creating 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 UAVs), 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

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

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.

There is no evidence that the military would be interested in additional nuclear options in the form of weapons with smaller yields. Even if using nuclear weapons could significantly increase the probability of killing high value terrorist targets in difficult terrain, actually employing them seems absurd from any perspective, including that of field commanders.

Managing the potential spill-over effects from civil wars at the periphery of the enlarged NATO does not seem a hypothetical future concern, but rather a very current contingency in light of Russian intervention into 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 Saakashvilli 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.[13]

While there is no clear insight into Russian planning for the specific operations, the Russian armed forces have a range of dual-capable delivery systems at their disposal in the Caucasus. However, Russia found that current conventional capabilities allowed it to achieve all of its military objectives. Nuclear options were not 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 how other countries and organizations (including NATO) responded to the events as they unfolded. However, it is clear that there was never any 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 for the population (including civilians of Abkhaz, Ossetian and Georgian origin). Russia's nuclear status did not prevent the international

[13] 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.

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.[14]

A third theme noted in contemporary threat assessments is the risk that states that acquire nuclear weapons could be more free to pursue regional hegemony and intimidate other countries in their close proximity. The domestic political effect of the weapons might help lock in place intransigent regimes that might otherwise be more vulnerable to removal by their own population. A newly emboldened nuclear regime, believing that the risk of an external response had been lowered or removed, might take steps that would not previously have been considered.

An inter-related related theme that can be found is a potential preventive aspect to the possession of nuclear weapons by existing weapon states willing to offer extended deterrence. There could be fewer incentives for a country to acquire nuclear weapons if it knows in advance that the degree to which their possession can be translated into meaningful policy is very limited. Again, this is not a future contingency but one that is faced very directly in the crisis that has been unfolding in slow motion in Iran.

Officials from NATO countries have voiced serious concerns about aspects of Iran's national nuclear programme. 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 space of time (though it is not possible to be very precise about that time frame). The high degree of concern about the most sensitive parts of the current Iranian programme is shared by states that believe Iran is working to develop a nuclear weapon capability and by others who have not yet reached that judgement.

Iran is developing capabilities that could threaten the interests of NATO, its member states and its partners. This is not only because of steady progress in the nuclear programme, but also because a similarly determined long-term Iranian programme to develop missiles with several different range and payload characteristics has begun to bear fruit.

Iran and the United States have had a difficult and, at times, hostile relationship since 1979. This can be considered a constant background factor to Iranian decision making over that period—though it is not the only factor and may not be the most important. However, over the same period there has been a significant deterioration in relations between Iran and other countries that would not normally have been seen as adversaries. For example, the revelations about the overall scope of Iran's nuclear policy and programme

[14] At one step removed, one of the main international outcomes of the Georgian conflict has been to revitalize thinking about other "frozen conflicts" to ensure that there is not any repetition. This has included constructive and reassuring statements about some of the potentially most difficult potential future cases, including the status and conditions in Crimea, Ukraine.

and the difficulty of finding an effective means to alter Iranian choices has led to a deterioration of relations between Iran and European countries.

Concern about Iran's nuclear and ballistic missile programmes have also been one factor in a deteriorating regional security environment. Perhaps the most significant negative trend has been the growing hostility between Iran and Israel. Iran and Israel cooperated with each other when each was mainly concerned with threats from Arab states. In the 1980s a developing strategic cooperation between Egypt, Iraq and Jordan (the latter a somewhat unwilling partner) created room for pragmatic cooperation between Israel and Iran. However, with concern about threats from Arab states now reduced, systematic progress in Iranian nuclear and missile programmes has heightened Israeli concern about putative Iranian hegemonic regional ambitions across the wider Middle East. Israeli perception of an existential threat from Iran has been symbolized in Israeli minds by the statement by President Ahmadinejad in October 2005 that 'Israel must be wiped off the map. And God willing, with the force of God behind it, we shall soon experience a world without the United States and Zionism'.

Several countries with which Iran has deteriorating relations are nuclear weapon states—albeit not always openly. However, there is no evidence that facing several nuclear weapon states arrayed in opposition to its nuclear policy has led to any significant modification of Iranian decision making. On the other hand, being confronted by nuclear armed states might have helped create the conditions for the serious proliferation challenge posed by Iran today. The revitalization of Iranian interest in nuclear programmes, including the more sensitive parts of the nuclear fuel cycle, coincides in time with the period in which Iran was the victim of battlefield use of chemical weapons by Iraq after 1982. Iranian authors often draw attention to the impact on their own force planning of being left alone in the face of Iraqi chemical weapon and ballistic missile attacks. Furthermore, the full extent of the Iraqi activities in the WMD field, which so shocked the international community after being revealed by the United Nations after 1991, were probably less of a surprise in Tehran.

The discussion of whether and how nuclear weapons might be relevant in specific scenarios was perhaps of limited utility in conditions where the overall approach to deterrence depended on a deliberate ambiguity about when and how they might be used. However, the situation in the Middle East underlines the validity of the underlying concern expressed in initiatives like that launched by the four senior US statesmen, namely that nuclear policies designed to strengthen deterrence might not only be less and less effective, they might become positively hazardous.

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 another case in point. Since the purpose of such attacks would be to undermine social cohesion as well as inflicting 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 to exist and feel justified in resorting to desperate measures, lead 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'.[15] Nevertheless, NATO statements have underlined that the circumstances in which they might have to contemplate any use of nuclear weapons are extremely remote.[16]

At the national level in Europe there is also evidence that 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. In both France and the United Kingdom the process of transforming nuclear policy and to update and reconfigure capabilities in response to the wider range security threats that could damage nuclear powers has attracted negative comment whenever it seems to be moving away from presenting nuclear weapons as weapons of very last resort.

Commentaries on the changing US strategic capabilities by current and recently retired official representatives have also emphasized that changes to strategy are not intended to lower the threshold for nuclear use.[17] Peter Flory, Assistant Secretary of Defense for International Security Policy, has written that the force posture of the United States 'is designed to make clear to any adversary that might contemplate a first strike against the United States that in the aftermath of such an attack the US military would retain the ability to respond with such devastating force that an aggressor could not stand to gain.'[18]

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[15] *NATO's position regarding non-proliferation, arms control and disarmament and related issues*, NATO Fact Sheet, URL http://152.152.94.201/issues/nuclear/position.html.

[16] *NATO's Nuclear Forces in the New Security Environment*, NATO Fact Sheet, URL http://www.nato.int/issues/nuclear/sec-environment.html.

[17] For example, Thomas K. Scheber, 'US Nuclear Policy and Strategy and the NPT Regime: Implcations for the NATO Alliance', *Comparative Strategy*, Vol. 26, 2007.

[18] Peter C. W. Flory, 'Nuclear Exchange: Does Washington Really Have (or Want) Nuclear Primacy?', *Foreign Affairs*, September–October 2006.

4. Military-technical issues

The national nuclear doctrines as well as NATO statements indicate that the credibility of nuclear deterrence rests partly on being able to use the weapons. Therefore, although the role that nuclear weapons might play in conflict situations tends to be downplayed, 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 therefore 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.

Therefore 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 accident involving a nuclear warhead or the loss of custody over a weapon could be so severe. The perception that the main potential risk to society stems from our own arsenal rather than from the actions of a possible adversary would be a serious blow to public support for maintaining stockpiles at all. Public acceptance of nuclear weapons depends on assuring the safety and security of stockpiles in peacetime, which also requires NATO to publish enough information to provide reassurance without compromising security.

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 shorter range dual-capable delivery platforms 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 response to both national decisions about force transformation on the one hand and arms control treaties and voluntary undertakings on the other. 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.[19]

This consolidation and rationalization meant that by 2007 the multiple types of delivery system that characterized 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).[20]

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 modernization.

In 2010, the M-51 intercontinental ballistic missile will be brought into service on a new generation 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.[21]

The United Kingdom has progressively consolidated its nuclear forces so that only a seaborne component remains, to consist of four SSBNs that will 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 (Vanguard-class) 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.

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[19] For a summary, see Amy F. Woolf, *US Strategic Nuclear Forces: Background, developments and issues*, CRS Report for Congress RL33640, April 3 2007.

[20] Shannon Kile, Vitaly Fedchenko and Hans Kristensen, 'World Nuclear Forces 2008', *SIPRI Yearbook 2007: Armaments, Disarmament and International 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.

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

In summary it can be said that the NATO allies have reduced their nuclear forces to a relatively small number of weapons (in comparison to Cold War arsenals) carried on a smaller range of delivery systems. The remaining weapons and delivery systems are fairly modern and there is no risk that the integrity or effectiveness of these nuclear forces will be compromised in the near or medium term future.

While neither NATO nor its individual members discuss the disposition of nuclear forces in detail, official documents 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 in 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.[22] 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 that 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—although in practice it might be that only Greece falls into this category—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.

While the current status and future plans for dual-capable nuclear forces are not as easy to summarize as the case for strategic weapons, the same characteristic of progressive reduction in the numbers and types of weapons can be seen in regard to these forces. Because strategic weapons only have a nuclear mission it has been sufficient to identify and catalogue the numbers and types of delivery systems to establish the broad parameters for military-technical aspects of modernization. However, because by definition dual-capable aircraft could play either a nuclear or a non-nuclear role, it is more

[22] *NATO's Nuclear Forces in the New Security Environment*, NATO Fact Sheet, URL http://www.nato.int/issues/nuclear/sec-environment.html.

difficult to isolate modernization decisions that are specific to the nuclear mission.[23] Furthermore, strategic systems are under the control of units in the armed forces that specialize in nuclear missions. However, for dual-capable systems it is harder to pinpoint the nuclear mission of military units that train for and can expect to be asked to perform non-nuclear tasks.

In its own 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 (the US gravity bombs carried on dual-capable aircraft).[24] 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 thermonuclear bombs, a type that was first produced in 1966 and that has subsequently been modified a number of times.[25] Between 2006 and 2009 the Department of Energy's National Nuclear Security Administration (NNSA) is expected to refurbish B-61 Mod-7 and Mod-11 bombs in the current stockpile. The purpose of the latest refurbishment is to extend the useful life by 20 years (the B-61 bombs are the oldest weapons in the nuclear stockpile and many of them were originally produced in the late 1960s and early 1970s).

The B-61 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 down its progress and it can be detonated either by air burst or ground burst.

One piece of information that is used to try and assess the current status and future prospects for dual-capable assets has been to focus on the bases where the B-61 bombs are believed to be stored. The Federation of American Scientists (FAS) has recently estimated the air bases at which the B-61 is in storage. The information compiled by FAS (presented in table 1, below) suggests that the weapons are stored under the full control of the United States Air Force, either at bases operated under the terms of bilateral status of forces agreements with host countries or at bases operated by the air forces of some allies.[26] After the table below was produced the FAS reported on their website that some additional changes were being made to the system of base storage in 2008, though this information should be seen as preliminary. According to FAS the B-61 warheads stored at the US Air Force base at Lakenheath in the United Kingdom have been removed (moreover, this may have occurred as long ago as 2004–05) and it is also reported the warheads stored at the Italian

[23] Plans to place conventional warheads onto what have traditionally been seen as strategic nuclear delivery systems are criticized on the grounds that they further blur the transparency and understanding of the number and disposition of nuclear forces, undermining preditability and strategic stability.

[24] *NATO's Nuclear Forces in the New Security Environment*, NATO Fact Sheet, URL http://www.nato.int/issues/nuclear/sec-environment.html.

[25] Earlier modifications were made to the B-61 in 1975, 1977, 1979, and 1991.

[26] The table can also be found on the Federation of American Scientists website at URL www.fas.org/programs/ssp/nukes/_images/Europe2008.pdf (2008)

air force base at Ghedi will move to the US Air Force base at Aviano, also in Italy.[27]

Table 1. Status of US Nuclear Weapons in Europe, 2008

Country	Air Base	Custodian	Delivery	Deployment	
				W53 vaults	Est. Weapons
Belgium	Kleine Brogel	701 MUNSS	Belgian F-16s	11	10-20
Germany	Büchel	702 MUNSS	German Tornadoes	11	10-20
Holland	Volkel	703 MUNSS	Dutch F-16s	11	10-20
Italy	Aviano	31st Fighter Wing	US F-16s	18	50
	Ghedi[a]	704 MUNSS	Italian Tornadoes	11	20-40
Turkey	Incirlik[b]	39 Air Base Wing	Rotational US aircraft from other wings	25	50-90
United Kingdom	Lakenheath	48th Fighter Wing	US F-15Es	33	50-110
Total					200-350

Notes: *a* Rumoured decision to withdraw 704 MUNSS and consolidate weapons at Aviano
b No permanent Fighter Wing at base. National Turkish nuclear strike mission in doubt.

Source: Hans M. Kristensen, USAF Report: 'Most' Nuclear Weapons Sites in Europe Do Not Meet U.S. Security Requirements, June 19 2008

If correct (and the information is not likely to be confirmed by the authorities in the United States) then the deployment of US nuclear weapons earmarked in plans for use by its own forces overseas is now limited to only two US Air Force Bases (Aviano in Italy and Incirlik in Turkey). Even if it was to be confirmed by NATO itself or by the countries concerned, the information about where weapons might be stored is unlikely to give the fullest picture because there are probably air force squadrons in European air forces that retain a nuclear task even though there are no longer any weapons based in their country. Comparing the information available about exercises involving nuclear-capable units and aircraft might help to give a broader view.

One piece of information that can be combined with the information about base storage is the pattern of annual exercises that are organized by the 'dual capable aircraft' partners. The annual exercise is known as Steadfast Noon (it used to be called Able Gain) and the main purpose of the four day exercise is to train ground crews in the procedures and routines for hand-over of nuclear weapons and the loading of the weapons on to dual-capable aircraft.[28] It is believed that nuclear weapons were removed from the Araxos air base in

[27] The information was reported by the Federation of American Scientists at URL www.fas.org/blog/ssp/2008/06/us3d entertainment-nuclear-weapons-withdrawn-from-the-united-kingdom.php; and www.fas.org/blog/ssp/2008/06/usaf-report-%E2%80%9Cmost%E2%80%9D-nuclear-weapon-sites-in-europe-do-not-meet-us-security-requirements.php (accessed 28 October 2008).

[28] The training of the ground crews is probably more important. Whereas the flying skills required by the pilots are common to many air forces and a range of non-nuclear missions, the procedures for handling and change of custody for nuclear weapons are unique to the nuclear mission.

Greece in 2001. However, Greek F-16s from the 340 Mira squadron based at Souda participated in Steadfast Noon in 2008, suggesting that the Hellenic Air Force (HAF) may still have a nuclear task, though this is uncertain. In all, 14 aircraft, including representatives from Belgium, Germany, Greece, Italy, the Netherlands and the United States participated in the 2008 exercise. The 2008 exercise was noteworthy because of the participation of US Air Force F-16s from Aviano for the first time—supporting the rumour that the B-61 bombs believed to be at stored Ghedi will be transferred to Aviano in the near future if they have not already been moved.

As regards Turkey, which also flies F-16 fighter aircraft and that had dual-capable aircraft in the past, it is believed that Turkish Air Force equipment and personnel are not currently certified for the nuclear mission, which was probably relinquished in the mid-1990s.[29] The information from FAS about storage sites is combined with information about nuclear-related exercises in table 2, below.

Table 2. Dual-capable aircraft: nuclear weapon storage and nuclear mission

Country	Airbase	Air Force affiliation	Aircraft type	Remarks
Nuclear storage and nuclear mission				
The Netherlands	Volkel	Netherlands	F-16MLU	
Germany	Buchel	Germany	Tornado IDS	
Belgium	Kleine Brogel	Belgium	F-16MLU	
Italy	Ghedi	Italy	Tornado IDS	
	Aviano	United States	(F-16C)*	Could be delivered by aircraft based at Lakenheath.
Turkey	Incirlik	United States	(F-15E and/or F-16C)	Would probably be delivered by aircraft based at Lakenheath and/or Aviano.
Country	Airbase	Air Force affiliation	Aircraft type	
Nuclear mission only				
United Kingdom	Lakenheath	United States	F-15E	
Greece	Souda	Greece	F-16C/D	

Note: * Although 12 dual-capable F-16Cs were transferred to Aviano in 1994, after the US Air Force left Torrejon in Spain, the aircraft may not have a nuclear task. Aviano has also received some F-16C aircraft previously stationed in the United States at Cannon Air Force Base, but it is not known if these were dual-capable.

In the United States a process for Base Realignment And Closure (BRAC) has worked to rationalize the structure of bases in the US and elsewhere. To

[29] Jeffrey Larsen, *The Future of U.S. Non-Strategic Nuclear Weapons and Implications for NATO: Drifting Toward the Foreseeable Future*, www.nato.int/acad/fellow/05-06/index.html p 75.

summarize the impact on units with dual-capable tactical aircraft, it appears that US-based fighter wings have all lost their nuclear mission in the period after 2005, meaning that only squadrons based in Europe now have a nuclear task. 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 also a warhead 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. Two units known to have had a nuclear mission in the past were based at Seymour Johnson Air Force Base in North Carolina and Cannon Air Force Base in New Mexico. However, the first lost its nuclear task while the second unit has been disbanded and the base will close in December 2009.

As a final note, although there has been a significant rationalization of air bases in Europe after the end of the Cold War, it is possible that in a number of cases the ground infrastructure at former weapon storage facilities still remains even if it is not being used. Given that there is a periodic need to update the routines and equipment at facilities to ensure that safety and security is not compromised, this might be particularly true for bases where nuclear weapons are believed to have been located until fairly recently. The places where changes are believed to have occurred in the fairly recent past include the US Air Force base at Ramstein in Germany (where it is believed B-61 bombs were removed in 2005) and the HAF base at Araxos in Greece (where it is believed B-61 bombs were removed in 2001).

From the information above it appears that although many aircraft types could in theory carry the B-61 bomb, in reality only a limited number currently have this task: the Tornado IDS operated by Germany and Italy, the F-16C/D and MLU versions operated by Belgium, Greece and the Netherlands and the F-15E and F-16C operated by the US Air Force. 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.[30] While this seems unlikely to be an issue during the coming ten years, there do seem to be genuine doubts over the medium and longer term prospects for European air forces retaining dual-capable aircraft.

The future capacity of Greece to continue to play a role in the nuclear mission has been questioned because Greek A-7 dual-capable aircraft are apparently no longer certified to carry out nuclear missions and will be withdrawn from service by 2010. However, the role of Greece is not certain. After 1998 Greece examined assigning the nuclear mission to F-16 units, given that the A-7

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

aircraft were already aging. In August 1998, Greece agreed to buy 20 second-hand F-16s that could then be upgraded and assigned the nuclear task. That deal was cancelled, and it was reported that the F-16s operated by Greece would not be modified to carry the B-61 bomb. However, as discussed above in relation to NATO exercises, this may be untrue and the HAF might still have a nuclear task.

In Belgium and the Netherlands it is probable that F-16 fighters will only begin to be withdrawn after 2015 and can certainly expect to fly until 2020 or beyond. The aircraft were delivered between 1979 and 1991 and the Belgian aircraft gone through a service life extension programme that Dutch aircraft are also slated to receive. This means that there is no imminent need for either country to take a decision on a specific replacement aircraft.

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-16s. 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 are the test and evaluation of aircraft does not indicate that the F-35 will certainly be acquired.[31]

In 2004 the prototype of the F-35 (then still known as JSF) is said to have completed its initial nuclear certification requirements plan.[32] 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, it is also not currently envisaged. The decision is said to depend on whether 'enough foreign orders come in to justify the additional cost'.[33] 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.

Belgium is said to be evaluating a decision to stop operating fighter aircraft altogether and work with France and the Netherlands to secure Belgian air space. 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.[34] A decision not to operate fighter aircraft at all would almost

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[31] Discussed at URL www.stopwapenhandel.org/projecten/jsf/JSFartikelen/odjsfnukes.html.

[32] *RDT&E Budget Item Justification Sheet*, Defense Technical Information Center, http://www.dtic.mil/descriptivesum/Y2004/AirForce/0604222F.pdf p. 782.

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

[34] 'Belgium's Interim Government Reveals NATO Secret', *Brussels Journal*, January 21 2008, www.brusselsjournal.com/node/2899.

certainly in effect end Belgian participation in the nuclear task. In such an eventuality Belgium would make a commitment to invest more of its military spending into capabilities that could provide services to European partners in other areas, such as 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 400 (a transport aircraft) perhaps points in this direction.

The future nuclear mission in Germany is more difficult to evaluate because the Typhoon aircraft that will enter the German air force and that will be used in a ground attack role is very unlikely to be dual-capable. However, in February 2008 the German government stated that it would keep part of its Tornado fleet in service until 2020, including dual-capable aircraft.[35] Therefore, although Germany will begin withdrawing some Tornado IDS aircraft after 2010 or 2011, other aircraft of the same type are scheduled to remain in service for a longer time.

In Italy the withdrawal of the Tornado IDS is expected to begin after 2015, though here as well 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 is not yet signed, and in Italy the participation in the programme has been 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. Although it could carry the B-61 bomb, 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 currently intend to certify the Typhoon to carry nuclear weapons.[36]

Even if they do not follow through with purchasing the F-35, the nuclear mission does not seem to be at any short term risk in Germany, the Netherlands or Italy. Similarly, Greece has only recently received block 50 F-

[35] Cordula Meyer and Alexander Szandar, 'Berlin Holds on to Obsolete Weapons', *Spiegel Online*, July 1 2008, URL http://www.spiegel.de/international/germany/0,1518,563137,00.html.
[36] Thomas Newdick, 'Germany Debates Nuclear Future', *Defense News*, July 14 2008, available at URL http://www.defensenews.com/story.php?i=3637173.

16C aircraft that would allow the HAF to carry out the nuclear task for another 20–30 years. While the situation in Belgium is not quite so clear, there does not appear to be any technical barrier to continuing to participate in nuclear sharing arrangements for the next decade.

In the United States the arguments laid out above would suggest that none of the F-15s and F-16s based in the US have a nuclear task. The US forces that are based in Europe operate aircraft that were ordered over the period 1987–2001, so that the oldest of these (which are based at Aviano) are probably approaching 20 years in service. However, a significant number of the aircraft (particularly those based at Lakenheath) were built in the past 10 years and have many years of service life remaining. It seems highly likely, therefore, that the F-15E aircraft at Lakenheath will come to play a more central role in the nuclear task.

Although the retirement of dual-capable aircraft is not imminent on technical grounds, the countries that participate in nuclear tasks are all currently evaluating future aircraft modernization options. After a period of significant rationalization in the aircraft industry and given the growing cost of developing new aircraft types, the alternatives available to countries seeking dual-capable options are fairly limited. In all of the cases the choices could have significant consequences for the future option to participate in nuclear missions.

The United States is currently grappling with a series of difficult issues related to the future of the domestic nuclear weapons complex. The Secretary of Defense has commented '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'.[37] 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.

An incoming Administration will have to grapple with the Reliable Replacement Warhead issue, and it would be premature to suggest that a clear path is visible today. However, if the outcome of any discussion was a new warhead that could be accommodated in a stand-off weapon compatible with the future generation aircraft Europeans are contemplating buying then the military-technical aspects of the nuclear sharing issue would have changed significantly.

Security

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

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 6 non-nuclear and 6 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.[38]

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.[39]

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.[40]

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.

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[38] *Air Force Blue Ribbon Review of Nuclear Weapons Policies and Procedures*, February 8, 2008. A versoin of the report is available at URL 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 June 19, 2008 report entitled *USAF Report: 'Most' Nuclear Weapons Sites in Europe Do Not Meet U.S. Security Requirements*, also available at the website http://www.fas.org.

[39] 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.

[40] Zachary K. Johnson, *Bin Laden's Striker: The Case of Nizar Trabelsi*, Chronology - The Plots, by, PBS Frontline at URL http://www.pbs.org/wgbh/pages/frontline/shows/front/special/cron.html.

The responsibility for safe and secure custody of the nuclear weapons assigned to NATO rests with US units (Munitions Support Squadrons (MUNSS)) that 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 authorized 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.

If the immediate security concerns about the way in which nuclear weapons are managed in Europe are contested, there are nevertheless questions 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'.[41]

Some non-governmental commentators have reached similar conclusions, and one observer recent wrote that 'the bureaucratic home of nuclear weapons policy at DOD is SO/LIC&IC, short for Special Operations/Low-Intensity Conflict & Interdependent Capabilities. ... this actually says a lot about the diminishing bureaucratic footprint of nuclear weapons policy'.[42]

Secretary of Defense Robert Gates has indicated that some of these issues are being addressed urgently in the United States. Gates has reported that the US Air Force is standing up a new headquarters office that will focus exclusively on nuclear policy and oversight and report directly to the Air Force chief of staff. The Air Force has also proposed a Global Strike Command that will bring all nuclear weapons and materiel supporting U.S. Strategic Command under one entity that can focus solely on the nuclear enterprise.[43]

The implications of these new proposals cannot yet be evaluated, but one potential concern would be that the arrangements could push issues related to dual-capable aircraft and nuclear weapons that do not have a strategic role to the periphery of planning. If nuclear weapons issues are handled by groups that lack the necessary organizational capacity and authority to deal with them

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[41] 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.

[42] Andy Grotto, *Tipping the Bureaucratic Scales*, Arms Control Wonk, September 5, 2008, available at URL http://www.armscontrolwonk.com/.

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

effectively then 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 emphasize that the level of nuclear forces need to be calibrated to reflect existing strategic realities. While consistent with the goal of a worldwide abolition of all weapons of mass destruction, this approach rejects the idea that reducing nuclear force levels represents a goal in and of 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.

For NATO planners a significant divergence among the nuclear weapon states would complicate the task of finding a meaningful common approach. If this was matched by an ever more diverse set of views among the overall NATO community there must be a point at which differences would no longer be possible to contain within a coherent common approach. At that point the credibility of the common policies and plans regarding nuclear weapons would be undermined.

This approach has been articulated most clearly in the United States, where the Bush Administration has worked to move 'away from a "one size fits all" deterrence to tailored deterrence for rogue powers, terrorist networks, and near-peer competitors'.[44]

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 signaling to actual or potential adversaries.[45] Current NATO policies are not based on the idea of 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 is raising 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 to tendencies that are present in NATO thinking about the current and future threat environment.

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

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

Tailoring deterrence would require the different potential "deterees" to be identified, analyzed and characterized. It is only in this way that specific threats can be defined in ways that facilitate a tailored response.[46] However, as discussed earlier, NATO has rather tended to emphasize a combination of capabilities and general international tendencies rather than developing a more precise matrix of capabilities and intentions of specified actors. This would explain statements that there are no immediate specific threats from identified enemies at the level of the alliance.

The underlying emphasis in tailoring capabilities would be to provide a mix of systems that could be available in any given scenario. However, it was noted above that the tendency within NATO has been towards rationalization, concentration and reduction in nuclear forces to the point where there is one nuclear delivery system (a gravity bomb dropped by a dual-capable aircraft). Furthermore, this system would be difficult to deploy forward in an enlarged NATO and extremely difficult to take 'out of area'. Reversing this process to expand the set of capabilities by developing new or modifying old weapons and platforms would have to be accomplished in circumstances where resources are scarce and there are many competing priorities. It would also have to be consistent with arms control obligations.

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. After 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 to the same degree. 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. As discussed above, any connection between nuclear forces and the operations that NATO forces are currently undertaking (either nationally or collectively) seems to be at best remote and probably does not exist at all.

The United States already put a premium on what was called 'adaptive planning' in its 2001 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'.[47]

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[46] 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, December 14, 2005.

[47] *Nuclear Posture Review Report*, 8 January 2002, p. 29 available at URL http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm.

This way of thinking has only been reinforced by 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 Quadrennial Defense Review (QDR) spelled out clearly the challenges at the national level involved in moving from a focus on nation-state threats to a focus on decentralized network threats from non-state enemies. It is difficult to plan to conduct operations in countries where the United States is not at war but where enemies find safe haven. According to that review, changes at the national level would not be sufficient and the report from the 2006 QDR noted that it could only be implemented 'by maintaining and adapting the United States' enduring alliances' including NATO.[48] Moreover, achieving tailored deterrence would probably depend more on the further development of non-nuclear components rather than nuclear forces. The QDR report emphasized 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 is not alone in thinking about how to step back from any tendency to emphasize the role of nuclear weapons. 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 paralyze 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 like 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 television current affairs programme, Hoon told presenter Jonathan Dimbleby 'if there is a threat to our deployed forces, if they come under attack by weapons of mass destruction, and by that specifically chemical

[48] *Quadrennial Defense Review Report*, February 6, 2006 available at URL http://www.globalsecurity.org/military/library/policy/dod/qdr-2006-report.htm.

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.'[49]

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 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.'[50]

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.'[51]

At the end of the Cold War France also began to make 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.[52] In January 2006 President Chirac made a speech explaining contemporary French thinking.[53] 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'.[54]

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[49] 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 URL http://cndyorks.gn.apc.org/news/articles/uknukepolicy.htm.

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

[51] Hoon's response to a parliamentary question is reproduced in the House of Commons, Hansard Debates for 29 Apr 2002.

[52] President Jacques Chirac, *The New Style Armed Forces*, Speech to the Military Academy, February 22, 1996.

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

[54] David S. Yost, 'France's New Nuclear Doctrine', *International Affairs*, Vol. 82, No. 4 2006, 701–721.

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 the scenario could only come if there was 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'.[55]

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'.[56]

The underlying logic of these positions seems to 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.'[57]

Therefore the published documents of European countries do not suggest that nuclear weapons are currently being integrated into plans to achieve tailored deterrence. Instead, they spell out that 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'.[58]

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 to monitor one another on a continuous basis as well as direct and

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

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

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

[58] 'NATO's Nuclear Forces in the New Security Environment', *NATO Nuclear Fact Sheet*, June 2004, available at URL http://www.nato.int/issues/nuclear/sec-environment.html.

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 signaling 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 decentralized extremist networks would be even greater given that deterrence would have to send signals to multiple actors at several different levels in the terrorist organization. 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 to evolving nuclear policy

While the previous section has 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. For the most part, this solidarity has extended into the nuclear realm—one exception being the special nature of

the relationship between one NATO member (France) and 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 as well as mass impact terrorism. The second aspect is the potential role of NATO in crisis management and stabilization 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 decided in the framework of the Alliance. However, the Nuclear Planning Group is one of only two multilateral bodies within NATO where 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.'[59]

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'.[60] 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 main French objective—strengthening 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 at risk solidarity.

A similar, but perhaps even greater potential problem, arises from the need to manage the impact of choices made in the United States on NATO nuclear policies. The US nuclear posture review is evaluating a wide range of issues

[59] *The French White Paper on Defence and National Security*, (Odile Jacob: New York, 2008), p. 102.
[60] *The French White Paper on Defence and National Security*, (Odile Jacob: New York, 2008), p. 104.

that could have a direct impact on nuclear thinking within the Alliance. The review, which will take place over roughly a one year period, will take place at the same time as the Alliance is examining what deterrence in the 21st Century might look like from a NATO perspective.

The size and configuration of US nuclear forces and the rationale for the choices made about whether and how to go to lower numbers of weapons will ultimately be decided by the United States. With two processes running in parallel, this will be an early test of the willingness and ability of the new US Administration to develop its national security and foreign policy in a transparent manner in consultation with Allies. The willingness of a new Administration to at least brief Allies on evolving thinking as the nuclear posture review progresses (in particular on aspects that have an impact on extended deterrence) will be an early signal of the approach being taken to trans-Atlantic relations.

It was noted above that official and non-governmental analysts in the United States have taken up the question of whether and how nuclear posture has to be tailored to a discrete and narrower set of circumstances, rather than the more traditional approach. Apart from the important issue of how the discussion is managed, the perspectives of nuclear weapon states may diverge over the utility of tailored deterrence.

In the United States the prevailing view appears to be that nuclear weapons will be integrated into a deterrence capability as part of an overall mix including advanced conventional forces as well as missile (and other) defences complemented by enhanced resilience in case deterrence fails. This might include modifying what have always been regarded as strategic nuclear delivery systems to carry conventional munitions—something that critics have argued erode the "firewall" separating nuclear from conventional military operational planning. While stopping short of any commitment never to use nuclear weapons first, the most recent official statements of France and the United Kingdom appear to place nuclear weapons into a deeply recessed role, and suggest that the only nuclear mission is to response to a nuclear attack.

The retention of a nuclear presence in Europe has traditionally been seen as having a critical political dimension. In 2005 the 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.'[61] 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

[61] 'Europe has the lead on Iran. Now lead!', *Der Spiegel*, October 31 2005, available at URL http://www.spiegel.de/international/0,1518,382527-2,00.html.

very comfortable with the arrangements that we have today'.[62] A statement issued by the Secretary along with his erstwhile colleague Samuel Bodman, the then Secretary of Energy, claimed that 'Allied participation in NATO's nuclear responsibilities and decision making have played a major role in assuring NATO members of the reality of the U.S. commitment to the common defence.'[63]

Nevertheless, several underlying factors related to US nuclear weapons in Europe are changing and the political impact of these changes is not yet clear. The 2006 White Paper 2006 on German Security Policy and the Future of the Bundeswehr noted that Germany makes a contribution towards nuclear participation partly out of a commitment to the fair sharing of burdens among allies. In general, achieving an equitable sharing of roles, risks and responsibilities has been an objective inside the Alliance.

The section above on military-technical issues illustrates that achieving this equitable sharing of roles, risks and responsibilities has become progressively harder as the conditions in Europe have evolved since the end of the Cold War. Engagement in the nuclear task has progressively shrunk along with the rationalization and reduction in dual-capable forces and the realignment of military base structures and in future the main burden of the nuclear task may fall on even fewer countries.

The presence of US conventional and nuclear forces in Europe has also been regarded as vital to the security of Europe because it demonstrates an inseparable link to North America. The most important way to demonstrate 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 United States 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 U.S. nuclear deterrent has been critical to allied security and removed the need for many key allies to develop their own nuclear forces'.[64]

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

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

[63] *National Security and Nuclear Weapons in the 21st Century*, September 2008.

[64] *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.

acquired from another state or from a domestic source, which would involve setting up an enrichment or reprocessing capacity. The probability 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 must be 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 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 our without the presence of US nuclear weapons and forces in Europe. Should NATO move away from a strategic concept based in part on nuclear deterrence the probability of a proliferation scenario developing might be different. However, as noted elsewhere in this paper, there seems to be no proposal for such a change inside the Alliance.

One conclusion drawn from the previous section was that it is unclear whether dual-capable aircraft will be available to perform the nuclear mission in the medium term future. If that option is no longer available the question will arise how to sustain the trans-Atlantic solidarity these weapons, combined with sharing arrangements, are believed to have provided in the past. Are there alternatives that could compensate for the withdrawal of the remaining weapons and, if so, what kinds of compensating measures could be envisaged?

For example, compensating military-technical approaches might be based on the provision of 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 be validated and the validation data (some of which was classified by the Bush Administration in May 2002) would have to be shared with the relevant Allies.

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 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.[65]

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 over 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 wants to be in alliances where assistance comes in the very first hours of any possible conflict'.[66]

A different type of compensation arrangement could be based on strengthening and modernizing the infrastructure needed to return weapons to Europe in a crisis. However, this approach might undermine the underlying objective of ensuring and preserving stability. The timing of any decision to return nuclear weapons to Europe in a crisis would entail a difficult judgement. Before taking any decision it would be necessary to evaluate the risk that an increase in the physical movement of nuclear weapons would exacerbate a dangerous situation rather than contribute to stability. On the other hand, when weapons are already in place there is no need for sudden and new activity that would be visible in a crisis in order to remind an adversary that the capability is in place.

The military credibility of current NATO nuclear policies could also suffer if the pattern of exercises involving states involved in nuclear sharing arrangements was disrupted. If the removal of nuclear weapons from Europe back to the US complicated the holding of regular exercises then this might also have an effect on the willingness to certify units to undertake nuclear tasks. The certification process depends on a demonstrated capability to handle nuclear weapons safely. Therefore the process takes into account not only the technical characteristics of dual-capable aircraft used to deliver weapons but also evaluates the professionalism of air and ground crews.

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[65] Associated Press, 'US, Poland OK missile defense base, riling Moscow', *ABC News*, August 20 2008, URL http://a.abcnews.com/International/WireStory?id=5614785&page=3.

[66] Quoted in Associated Press, 'Poland, U.S. Reach Deal on Missile Shield', August 14, 2008 available at URL http://www.nysun.com/foreign/poland-us-reach-deal-on-missile-shield/83904/.

A theoretical approach to addressing any potential threat to solidarity would be to revise burden sharing arrangements among NATO member states. One option would be to extend the sharing arrangement by including additional nuclear forces—in practice by altering the basing arrangements for the airborne component of French nuclear forces. This option is effectively excluded by current French policy and is no more than hypothetical.

A second option would be to redistribute 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 dual-capable aircraft in the air forces of European countries as well as a new examination of the process of base realignment. The current and expected threat environment would not justify these decisions.

Among NATO member states there is a third category of countries 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.[67]

Among the newer members of NATO that can't participate in sharing arrangements the Baltic states and Poland are believed to particularly strong adherents to the view that US nuclear weapons are still needed in Europe. However, for countries to have strong views on arrangements in which they cannot participate itself underlines the difficulty in reconciling solidarity and burden sharing with current conditions. Analyzing the debate in the Baltic states two Lithuanian analysts have noted, 'they take part in NATO's political consultations pertaining to nuclear posture and policy. Moreover, 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.'[68]

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

[68] Vaidotas Urbelis and Kestutis Paulauskas, 'NATO's Deterrence Policy—Time for a change?', *Baltic Security and Defence Review*, Vol. 10, 2008, p. 98.

6. Nuclear policy and nuclear arms control

The discussion in the previous sections suggest that the loss of US nuclear weapons in Europe would make little impact on NATO from a military-technical perspective but that it would be difficult to find alternative arrangements that could compensate for any negative political consequences felt by Allies.

Discussions of arms control have been an active component of NATO's effort to manage nuclear threats in the past and, as a number of analysts have noted, this helped the Alliance maintain internal cohesion and stability in its external relations by balancing decisions about modernizing forces or expanding membership.[69] At the Bucharest summit NATO reaffirmed that arms control, disarmament and non-proliferation will continue to make an important contribution to peace, security, and stability and, in this regard, to preventing the spread and use of Weapons of Mass Destruction and their means of delivery.

In the United States President Obama campaigned on a platform that included making the goal of eliminating all nuclear weapons a central element in his nuclear policy. The general approach outlined by the then-candidate Obama is broadly consistent with a number of other recent proposals that propose practical steps that are not major achievements in themselves, but that aim at realizing an ambitious long term vision of eliminating all nuclear weapons.

It would be in line with this approach if NATO was to keep its nuclear strategy under review in order to further the objective of reducing the role of nuclear weapons in international politics to the greatest degree possible, leading to their eventual complete elimination.

As the United States and Russia begin a new round of bilateral arms control negotiations 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.

Ideally the issues should be taken up in a timely way and more emphasis will be placed on discussions before positions are finalized. This high level of transparency and consultation within NATO should be a feature of any future bilateral discussions that the United States engages in with Russia.

The contribution of NATO to arms control and whether the Alliance is doing all that it can in this area has been an area of extensive internal study and reflection, leading to some limited recommendations related to how NATO's

[69] Alyson Bailes, *The TransAtlantic Partnership of the Future and NATO's Role In It*, Presentation to the Security and Defence Committee, NATO Parliamentary Assembly, Reykjavik October 5–7 2007.

profile in the field of arms control could be raised. One recent initiative has been to seek new opportunities to promote dialogue on the role of arms control through meetings with the extended range of partners with which NATO now interacts in different forums and formats. The meetings with Mediterranean dialogue partners are an example of NATO taking advantage of one such opportunity for general dialogue.

At the same time, NATO has to take into account that its members are prominent participants in many other forums contributing to international arms control, disarmament and non proliferation efforts. Therefore, it is necessary to avoid duplication or redundancy in efforts, which might cause more confusion rather than leading to progress. NATO itself is not likely to emerge as an actor in arms control discussions, but is more likely continue to evaluate how its actions can contribute to creating a positive environment that could help ensure the success of arms control initiatives.

In looking for specific positive contributions NATO has pledged to lend its support to the implementation of UN Security Council Resolution 1540 in those technical areas where the capacities available in the Alliance can be of practical value. NATO has also examined what contribution could be made to the interdiction of illegal international shipments of sensitive goods and materials.

In summit documents NATO has also underlined that the partnership with Russia was originally conceived as one element intended to foster deeper cooperation in building security and stability in the Euro Atlantic area. The nuclear dimension of the NATO-Russia partnership is one area that has delivered concrete projects of value to both sides.

While the NATO-Russia Council is unlikely to emerge as a significant multilateral forum for arms control, it also has the potential to address a range of issues that will have a bearing on the future success or failure of bilateral nuclear arms control. For example, the future role of the Treaty on Conventional Armed Forces in Europe (CFE Treaty) is an issue that will have a bearing on the willingness of Russia to engage on nuclear issues.[70]

NATO itself has argued that in general the potential of the NATO-Russia Council is not fully realized. More use could be made of the Council to discuss the relationship between plans for missile defence and strategic stability. NATO countries have argued that it is necessary to continue to develop the technologies that enable missile defence systems. However, the incoming US Administration has recognized that the elements of a ballistic missile defence system and the wider system itself should not be deployed before it is technologically mature and rigorously tested.

[70] The linkage between the wider basket of issues facing NATO and Russia with nuclear arms reductions 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.

Russia has voiced serious concerns about plans to replace nuclear warheads on strategic delivery systems with conventional warheads, rather than retiring the delivery systems completely. The Council, or a working level subsidiary body, might be a place where discussions on these and other topics that engage the broader interests of the Euro-Atlantic community could be organized.

It would be valuable to try and engage with Russia to consider the role of short-range delivery systems for nuclear weapons given the new strategic geography of Eurasia. Given that the end of the Warsaw Treaty Organization and dissolution of the Soviet Union changed the strategic and political geography of Eurasia it must also have changed the calculations regarding short-range delivery systems from a Russian perspective. However, it has not proved possible to engage with Russia to discuss how these issues affect strategic thinking in relation to Europe, Asia and the southern rim of Russia.

While the degree of transparency over NATO's nuclear policies and force posture has expanded 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 into 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 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 into a legal obligation might be a reassuring and welcome development. For NATO such a legal commitment might be explored in the context of discussions over 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.

Opening a new evaluation of the current role and future prospects for 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.[71]

[71] 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.

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.[72] The position does nothing to unlock the entrenched and ideological positions into which countries have regrettably fallen into in the NPT context.

A reinvigorated bilateral arms control process in which the United States and Russia discuss further reductions in their strategic arsenals would facilitate a new effort to provide leadership in the NPT context in 2010. However, 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.

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 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 reductions 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 whether or not to retain current arrangements is a political judgment that takes into account strategic realities, and therefore that NATO countries continue to be open to change.

[72] 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 URL http://www.bits.de/public/researchreport/rr00-1-1.htm.