

NATO's nuclear modernization dilemma

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Important deliberations will take place at this spring's NATO summit on the basic elements of a nuclear modernization plan. The modernization problem is driven by the need to replace the *Lance* missile and existing nuclear gravity bombs by themid-1990s. Without modernization NATO faces functional unilateral disarmament of its short-range missiles. Yet significant political opposition exists to NATO's plans, and the outcome of these deliberations remains uncertain¹.

NATO planners must manage three political variables if the modernization programme is to proceed. First, Chancellor Helmut Kohl of West Germany faces both strong public opposition to modernization and a federal election next year. He hopes to delay a final decision on deployment until 1991. Second, the US Congress faces severe budget constraints and may demand a deployment commitment from NATO before appropriating funds for development of new missiles. And third, in January 1989, the Soviet Union reinforced its traditional efforts to denuclearize Central Europe by announcing the withdrawal from Europe of some 24 short-range launchers, by proposing a freeze on modernization of remaining short-range systems, .and by calling for further arms-control negotiations.

Caught between these pressures, NATO has officially maintained an ambiguous posture on both modernization and arms-control for the short-range nuclear force (SNF). Since the June 1987 ministerial meeting at Reykjavik, NATO communiqués have reaffirmed the importance of nuclear deterrence, but on key issues they continue:

...thus a strategy of deterrence based upon an *appropriate mix* of adequate and effective nuclear and conventional forces which will continue to be *kept up to date where necessary*.

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¹ When 'NATO forces' are referred to in this article, it means the NATO integrated command and generally excludes French forces and US forces not based in Europe.

... the comprehensive concept for arms control and disarmament includes... in *conjunction with* the establishment of a conventional balance and the global elimination of chemical weapons, tangible and verifiable reductions of American and Soviet land based nuclear missile systems of shorter range, leading to equal ceilings².

The word 'modernization' is avoided to satisfy West German sensitivities, and the pledge to keep 'appropriate' nuclear forces 'up to date where necessary' could be interpreted either way. Most West Germans interpret 'in conjunction with' to mean simultaneous negotiations, while the United States stresses that the formula means SNF negotiations only after agreement is reached in the conventional and chemical weapons talks.

NATO may not be able to maintain its ambiguity for much longer. Early this year, SHAPE (Supreme Headquarters Allied Powers Europe) completed its latest Nuclear Forces Requirements Study, which recommends both SNF modernization and reductions. NATO planners will try to place these decisions in a broader context this spring by producing a comprehensive concept, which Alliance leaders are expected to endorse at the summit. And the US Congress will debate the issue this year as it considers the fiscal year 1990 budget request.

The stakes are high. A false step could cost Kohl the Chancellorship. A decision not to modernize, as former US Defense Secretary Frank Carlucci indicated in February 1988, could begin a process of denuclearization that could cause Congress to initiate troop withdrawals. Excessive Soviet pressure to denuclearize Europe might even affect the detente process.

This article is intended to serve as a guide for the coming debate. It reviews the rapidly changing strategic landscape which both complicates the decision and makes NATO solidarity particularly important. It assesses the need for nuclear modernization as the current force structure declines in size and capability. It describes the Alliance's modernization plans, discusses criteria for the force's size and disposition, and analyses alternative deployment possibilities. An independent European nuclear force is discussed as a hypothetical alternative to modernizing American weapons. Political problems in both the US Congress and West Germany are examined. Finally, arms-control opportunities are analysed.

² 'Declarations of the Heads of State and Governments Participating in the Meeting of the North Atlantic Council in Brussels' (2-3 March 1988). NATO Press Service, Press Communique M-1(88)13, pp. 2,5. This language was first contained in the 1987 Reykjavik communique. Italicized words are the author's emphasis.

The changing strategic setting

NATO's nuclear modernization decision must be made in the context of a changing strategic setting. The credibility of American extended deterrence is in decline at the strategic and theatre level even as the nature and extent of the Soviet threat may be changing.

A strategy resting on one nation's willingness to risk total annihilation to protect the sovereignty of another has always been suspect. But several events during the past decade have increased doubts in Western Europe about extended deterrence. At the strategic level, Ronald Reagan's 1983 Strategic Defence Initiative and the 1986 Reykjavik super-power summit combined to demonstrate America's unease with strategic nuclear weapons and its willingness to consider alternatives to Mutual Assured Destruction. This was further demonstrated by American liberals who embraced the concept of 'no first use' of nuclear weapons. Former secretaries of state also indicated that they had had no intention of risking 'the destruction of civilization' just to 'execute strategic assurances' to Europe³. Without American willingness to use its strategic nuclear weapons to halt a Soviet conventional attack, extended deterrence could not exist.

NATO has been able to live with these increasing doubts at the strategic level because the United States had deployed enough nuclear warheads in the European theatre to couple European security with US strategic weapons. A Soviet conventional attack on Western Europe would run the risk of theatre nuclear use, which in turn runs the risk of strategic nuclear use. Longer-range theatre weapons aimed at fixed targets in the Soviet Union and Eastern Europe deter the Warsaw Pact by holding at risk items of particular value to Soviet decision-makers. Shorter-range weapons aimed at mobile targets deter by threatening the massive troop concentrations in the first and second echelon that would be needed for a successful Warsaw Pact invasion.

Under current circumstances, both longer-range and short-range nuclear weapons are needed to maintain Alliance cohesion and the strategy of Flexible Response. Long-range weapons alone would limit the capability for battlefield use and could leave the United States with rapid nuclear escalation or losing a conventional war as its only alternatives. Short-range weapons alone could create the impression that a nuclear war might be contained in Europe. Neither deployment on its own would adequately deter a determined

³ See comments by Henry Kissinger in 'The Future of NATO' in Kenneth A. Myers (ed.), *NATO The Next Thirty Years - the Changing Political, Economic and Military Setting* (Boulder, CO: Westview Press for the Center for Strategic and International Studies, Washington OC, 1980).

aggressor with overwhelming conventional superiority or provide the basis for NATO consensus.

There is, however, considerable pressure to reduce or remove both longer-range and short-range US theatre nuclear weapons. The Intermediate-range Nuclear Forces (INF) Treaty bans the most capable longer-range weapons. And in West Germany there is growing opposition to both nuclear artillery and short-range missiles. If these trends continue, either through arms control or lack of modernization, NATO planners fear that European security will be decoupled from the US strategic arsenal.

The nature of the Soviet threat may also be changing just as extended deterrence comes under further challenge. Soviet President Mikhail Gorbachev's speech to the United Nations on 7 December 1988 gave some initial substance to his concepts of 'reasonable sufficiency' and a 'non-offensive' posture. While fundamental asymmetries remain in Europe, NATO may gain critical warning time as six Soviet tank divisions, bridge-building equipment and some assault units leave the front lines. When combined with Gorbachev's INF concessions and his willingness to agree to deep cuts in strategic forces, one may at least now hope for additional changes in the Soviet force posture. This changing perception of the threat will make the NATO nuclear modernization decision more difficult but it may also give the Alliance a wider margin for error.

The current NATO nuclear force

NATO's nuclear force is declining in size and capability. During the past decade, NATO has reduced its theatre nuclear weapons arsenal by nearly 40% (see Table 1).

The first reduction came in 1979 as part of the INF dual-track decision, when 1,000 weapons were unilaterally removed. The second decision was made in October 1983 at the Nuclear Planning Group meeting in Montebello, Canada, where NATO planners agreed to further reductions on 1,400 weapons in exchange for modernization of the remaining weapons. The 1985 SHAPE Nuclear Weapons Requirement Study proposed removing the remaining obsolete *Honest John* missiles, atomic demolition mines and *Nike-Hercules* air defence weapons. Those reductions were completed in 1988, but most of the corresponding modernization has been delayed. The third reduction decision was part of the 1987 INF Treaty, which will cut NATO nuclear forces by the 572 systems planned as part of the INF deployment. NATO's long-range delivery capability will be significantly reduced by the Treaty.

Table 1. Theatre nuclear weapons in Europe

Year	Number of nuclear warheads
1979	7,000
1983	6,000
1988	4,600
1991	4,000

Compared with the wide media credit received by the USSR in January 1989 for announcing withdrawal for only 24 SNF launchers, the NATO unilateral reduction of about 2,400 warheads over the past decade has received little public notice. NATO has allowed the USSR to appear to be the only party making unilateral arms reductions, while in fact Alliance reductions in this area are much more significant. By 1991, about 4,000 US theatre nuclear weapons will remain in Europe. Those US warheads plus British and French weapons are carried by the systems listed in Table 2.

Virtually every element of the remaining US theatre nuclear force needs modernization. The older W-33 (8") and W-48 (155 mm) artillery shells have an unacceptably short 15 kilometres range and in the case of the W-33, a less than desirable yield selection. Modernization of both these shells is under way. The F-111 strike aircraft are twenty years old and have limited lift capability. Delivering nuclear gravity bombs, the F-111s would have considerable difficulty penetrating improved Soviet air defences, as would other nuclear-capable NATO aircraft not equipped with stand-off missiles. The *Lance* surface-to-surface missile was first deployed in 1972 and is now experiencing metal fatigue and problems with liquid fuel corrosion. Extending its service life beyond 1995 would be extremely costly and would require opening old production lines for spare parts. *Land's* 110 km range limits its utility, as does its four-hour reload time and its poor (400 metre circular error probable) accuracy. US sea-launched ballistic missiles (SLBM) are being modernized, but because they are part of the US strategic deterrent force as well, they lose most of their credibility for theatre missions short of general nuclear release. Use for theatre missions would not only reveal the location of the submarine, but it would not be distinguishable from a strategic nuclear strike.

Table 2. Nuclear capable systems in Western Europe (1988)⁴

	Number of systems	Range
Artillery		
US	644 tubes	short
Other NATO	2,378 tubes	short
<i>Sub-total</i>	<i>3,022 tubes</i>	
Aircraft		
US F-111	152 aircraft	longer
Other US land-based aircraft	216 aircraft	medium
Other NATO land-based aircraft	1,014 aircraft	medium
US/European maritime aircraft	614 aircraft	medium
<i>Subtotal</i>	<i>1,996 aircraft</i>	
Missiles		
US SLBM assigned to SHAPE	32 missiles	longer
US GLCM (a)	309 missiles	longer
US <i>Pershing</i> II (a)	132 missiles	longer
French SLBM	96 missiles	longer
French S-3D	18 missiles	longer
UK SLBM	64 missiles	longer
FRG <i>Pershing</i> IA (a)	72 missiles	medium
US <i>Lance</i> (36 launchers)	700 missiles	short
European <i>Lance</i> (52 launchers)		
French <i>Pluton</i> (32 launchers)	32 missiles	short
<i>Sub-total</i>	<i>1,455 missiles</i>	

(a) Will be eliminated with the INF Treaty

⁴ *The Military Balance: SLBM Lance 1988-1989* (London: IISS, 1988), pp. 220-1; plus interviews with US and NATO officials. This includes only those systems based in Europe or European waters. Longer range includes 1,000-5,500 km, medium range is 500-1,000 km, short range is up to 500 km. The US SLBM assigned to SHAPE are generally described as being 400 warheads.

NATO's nuclear modernization plans

NATO is considering several plans to modernize its theatre nuclear forces and to adjust to the post-INF Treaty environment. At longer ranges, the Alliance may ask the United States to assign perhaps 200 nuclear sea-launched cruise missiles (SLCM) to the NATO command. Assignment of the missiles would not breach the technical terms of the INF Treaty, but the European public might consider it a violation of the 'spirit' of the agreement because of the missiles' range. The impact on deterrence of such an assignment to NATO might be marginal because, even under US command, a comparable number of SLCM would probably be in NATO waters anyway. NATO must weigh the value of assigning an existing weapon to SHAPE against the cost of public charges of treaty circumvention.

The Alliance is also considering two ways to introduce more capable longer-range bombers to the European theatre. Some of the FB-111s now deployed in the United States could be forward deployed, but the British government is likely to insist that this be done on a replacement basis for the F-111s currently based in the United Kingdom. The strategic value of a FB-111 over a F-111 is marginal in any event. More important, deployment in Europe of 72 modern F-15Es could begin in the early 1990s. These would increase the size of NATO's long-range nuclear capable bomber force by nearly 50 per cent

Most important for NATO's ability to maintain a longer-range nuclear capability in the wake of Soviet air defence improvements and the INF Treaty is development of a stand-off missile. Stand-off missiles can perform tactical and, if necessary, strategic missions with great accuracy. In September 1988, the US Defense Department decided that the short-range attack missile II (SRAM II) would become the US candidate for the NATO nuclear tactical air-to-surface missile (TASM). The new missile would be called SRAM-T (for tactical). Like SRAM II, the SRAM-T would be a smaller, more accurate and faster version of the SRAM I. It would be supersonic, incorporate stealth technology, contain advanced navigation systems, have ranges of well over 200 km at low altitudes, and be ready for deployment in 1995. It would be compatible with F-111, the F-16, the F-15, *Tornado* and most other modern combat aircraft in the NATO inventory. Its mission would be to 'penetrate advanced defensive threats from stand-off ranges, and strike hardened, defended, and mobile targets⁵.

⁵ Based on interviews with US government officials. Also see Marvin Leibstone, 'Short Range Attack Missile II: How Feasible?', *NATO'S Sixteen Nations*, December 1985.

But the SRAM-T has competition from France. The *air-sol moyenne portée* (ASMP) has a range at low altitudes of about 100 km. Its supersonic Mach 3 engine combines solid-fuel rocket technology for rapid acceleration with a ramjet engine for cruising speeds. It went into service in 1986 and is now deployed with the *Mirage-IVP* and the *Mirage 2000N*.⁶

The United Kingdom intends to deploy a stand-off missile and is currently inclined towards the SRAM-T. The Royal Air Force favours the American model because of its longer range, accuracy and stealth technology. Other British officials prefer co-development of a newer ASMP as a way to enhance nuclear cooperation with France, but that would require the UK to bear major development costs. Prime Minister Margaret Thatcher is thought likely to support the US missile for political, technical and financial reasons. While the stand-off missile is less controversial than *Lance* modernization, there will be opposition to it in the UK, the Netherlands and Belgium, with the charge being levied that it circumvents the spirit of the INF Treaty. In fact, the SRAM-T is primarily a response to Soviet air defences and its deployment is fully consistent with the INF Treaty.

At shorter ranges, the modernization programme for the artillery fired atomic projectile (AFAD) is under way, with about 200 W-79 shells for 8" artillery already deployed. It has been produced as both a nuclear and enhanced radiation weapon, although only the former are being deployed in Europe. European deployment of the W-82 shell for the 155mm artillery is to be completed by 1993. The new shells double existing ranges to about 30 km, they significantly improve accuracy, and they improve the lead response time from one hour to 15 minutes. What is most surprising is that opposition to these weapons has come primarily from the Right rather than the in West Germany.

The Follow-on-to-*Lance* (FO²L) will be more difficult to sell in Europe. Tentative plans call for deployment of a new nuclear missile on the M-270 multiple launch rocket system (MLRS). It will reportedly have a range of about 450 km, which would address West German concerns about very short-range systems. It is not expected to be a nuclear version of the conventional army tactical missile system (ATACMS), which will address Congressional concerns that nuclear ATACMS would drive conventional ATACMS out of existence. Each launcher would hold two FO²L missiles, but externally it might look just like the conventionally armed MLRS. The missiles would contain the newest permissive action links and special on-board disabling devices, thus providing additional safeguards against unauthorized release.

⁶ 'Anglo-French Nuclear Missile Under Study', *Science*, 12 February 1988. pp. 239-40.

The new missile will not require much new technology, and could be built in a few years' time. The US Army hopes to conduct full-scale engineering by 1990. To meet that timetable, it will seek Congressional approval in the spring of 1989. But the new missile is not needed to replace *Lance* until the mid-1990s, so there may be some flexibility in the schedule to allow for political adjustments.

The FOTL missile could be fired from any one of about 1,000 M-270 launchers to be deployed in Europe. This provides several advantages from the NATO perspective. First, the USSR would not easily know in which of the MLRS launchers the nuclear missiles were deployed, so that the mobile launchers would be highly survivable against preliminary attacks. Second, manpower requirements would be significantly reduced with a dual-capable system widely deployed by many NATO nations. And third, arms-control efforts to limit missiles fired from dual-capable launchers will be more difficult to negotiate and verify than missiles fired from dedicated nuclear launchers, thus reducing the risks for NATO of a 'third zero'. These arms-control complications, however, have some West Germans concerned. Another drawback to deployment on MLRS launchers is that Belgium has not purchased MLRS⁷.

Criteria for sizing the nuclear force

Despite the emergence in 1986 of NATO's 'General Political Guidelines for the Employment of Nuclear Weapons in the Defense of NATO' (GPG), there remain considerable differences even within official NATO circles concerning the minimum size the nuclear force needed to deter the Soviet Union.⁸ These largely subjective judgments are shaped by at least five different criteria: the nature of extended deterrence; the nature of the targets; the size of the conventional military threat; the need for diversity; and the capabilities of the weapons involved.

Strategic thinkers in the West differ markedly over the nature of nuclear deterrence. Some believe that the mere existence of a nuclear capability provides 'existential' deterrence⁹. Some distinguish between 'general' and 'immediate' deterrence, in which 'general'

⁷ Based on interviews with US government officials. Also see 'MLRS - The New Artillery', *Military Technology*, Special Supplement. vol. XII, no. 9, 1988.

⁸ For an excellent discussion of historic differences concerning NATO'S targeting policy, see Ivo. H. Daalder, 'NATO Nuclear Targeting and the INF Treaty'. *The Journal of Strategic Studies*. vol. 11, no. 3, September 1988.

⁹ See Lawrence Freedman, 'I exist: Therefore I Deter', *International Security*, Summer 1988; and McGeorge Bundy, 'The Bishops and The Bomb', *The New York Review*, 16 June 1983.

deterrence requires only the 'conveyance of a sense of risk to a potential adversary to ensure that active hostilities are never seriously considered'.¹⁰ NATO's more conservative philosophy as expressed in the GPG is closer to 'immediate' deterrence, which involves planning for 'an active effort to deter in the course of a crisis' and hence emphasizes militarily effective use of theatre nuclear weapons. Thus NATO has accepted the 'traditional American view that militarily effective nuclear use' is required to send a credible political signal to the USSR both for initial and subsequent nuclear use.¹¹ The force size required to satisfy these contending views of deterrence differs significantly.

Force planners must also decide whether NATO's theatre nuclear inventory requires the capability to cover (i) a full array of mobile and fixed targets; and (ii) targets for both selective use and general nuclear response. NATO now has the capability to attack some 2,000 fixed targets with nuclear weapons, about half of which are in the Soviet Union. It can also attack a similar number of mobile targets, such as tank divisions and command posts. The Alliance retains the capability not only for selective nuclear use to make the enemy halt his immediate attack, but it also has the capability to participate in an all-out general nuclear response executed in cooperation with the US Single Integrated Operational Plan. As more accurate US strategic warheads such as the *Trident* D-5 missile are produced, the general nuclear response requirement for NATO's theatre nuclear force may be significantly lightened.

The conventional force balance also has a considerable impact on the number of SNF weapons required by NATO. The shortest-range systems targeted against mobile forces are particularly important as long as large conventional asymmetries exist. But as asymmetries are reduced through unilateral Warsaw Pact cuts and conventional arms control, NATO's SNF systems might be reduced on a proportional basis down to a minimal level. Thus the recent Warsaw Pact unilateral tank reductions of more than 25 per cent in the so-called 'Jaruzelski area' might warrant modest reductions in NATO's SNF inventory because the number of targets has been reduced. If conventional parity is ever reached, NATO can rely more heavily on conventional forces to blunt an immediate attack. Under those circumstances, NATO's nuclear deterrent force might safely consist of solely longer-range systems needed to couple US strategic forces to European security by threatening selective use against fixed targets deep in Eastern Europe and the Soviet Union.

¹⁰ Lawrence Freedman, 'The Evolution and Future of Extended Nuclear Deterrence'. IISS Annual Conference Paper, September 1988, p. 2.

¹¹ Daalder, *op. cit.* in note 8, p. 271.

Another critical factor in determining the size and composition of NATO's nuclear force is the need for diversity. As the United States retains a strategic nuclear triad to complicate a coordinated Soviet attack, so NATO retains a variety of delivery systems. Attacking NATO's theatre nuclear arsenal would be a primary wartime goal for the Warsaw Pact. To avoid a disarming first strike, NATO's nuclear forces include mobile missile and artillery shells that could be fired from multiple locations. As NATO's nuclear weapons are reduced, the survivability and geographic flexibility of the remaining force should be preserved. The FOTL would provide the Alliance with an additional measure of survivability, reliability and flexibility.

The last criterion is the capability of weapons in the inventory to strike a wide range of targets with a high degree of assurance and accuracy. The FOTL and W-79/W-82 artillery shells will significantly increase the range and accuracy of the systems they replace. The SRAMT's stand-off capability, stealth and accuracy will provide much greater reliability than gravity bombs. As reliability increases, the need for redundancy declines. Nuclear modernization therefore will allow NATO to be confident that key targets are reliably covered at a much lower number of warheads.

The number of Soviet theatre nuclear weapons is not a major factor in sizing the NATO nuclear force. If it were, the current NATO force would have to be much larger to match the more than 1,400 Soviet SNF missile launchers. Soviet SNF launchers are certainly targets, but they generally travel with divisions and armies which are targeted anyway. If all Soviet SNF systems were removed but conventional asymmetries remained, there would still be a need for a NATO nuclear force capable of both dissuading the massing of Pact forces and of coupling European security to the US strategic deterrent.

In addition to these analytical criteria, there are naturally various political criteria that will help to determine the final SNF deployment. These include budgetary pressures, public attitudes, cohesion in coalition governments, transatlantic relations in general, and reactions to unilateral concessions being made by the Warsaw Pact. They will be discussed in subsequent sections.¹²

Alternative NATO nuclear force postures

As NATO's nuclear force posture evolves in the 1990s, it could proceed towards any one of several lower overall ceilings. Three alternatives which reflect the views of prominent

¹² Some information in this section is taken from interviews with NATO and US government officials.

positions in the debate are outlined in Table 3. The 1988 base-line shows that nearly 75 per cent of existing warheads are either artillery shells or gravity bombs. That percentage is reduced in all three alternatives. INF missiles are also deleted in all three options. A nuclear-free Europe is not considered, since that could result in the withdrawal of US conventional forces and changes the fundamental nature of the Alliance.

Table 3. Alternative NATO nuclear force structures¹³

System	Future alternatives			
	1988	A	B	C
INF missiles	500	0	0	0
Stand-off missiles	0	800	800	600
Gravity bombs	1,600	500	500	400
<i>Lance</i> /FO TL	700	900	400	0
Artillery shells	1,600	800	300	0
Total	4,400	3,000	2,000	1,000

Alternative A is an estimate of what is likely to be SHAPE's view of the requirement. It provides a full array of modern weapons capable of inflicting militarily significant damage by striking both longer- and short-range targets. The numbers are large enough to accommodate initial and follow-on selective strikes as well as participation in a general nuclear response. The systems are diverse, mobile and dual-capable, providing a high degree of survivability. The overall posture shifts to relatively longer-range systems, consistent with the GPG, but shorter-range systems remain numerous enough to counterbalance conventional asymmetries. And modernization would allow for further nuclear force reductions of about 33 per cent, providing public relations gains in Europe.

¹³ All figures are rounded estimates and are based on interviews with NATO and US government officials. They exclude British and French strategic nuclear forces, US carrier-based-bombers and US Navy SLCM and SLBM. NATO currently operates under a ceiling of 4,600 warheads. Other sources show a 1988 land- and air-based theatre nuclear force of 4,055; to include 493 INF weapons, 692 *Lance* missiles, 1,470 AFAP and 1,400 gravity bombs. (See Daalder, *op. cit.* note 8, p. 291.)

Under Alternative A, the stand-off missile and the new surface-to-surface missile (the FOTL) would dominate the force structure. The FOTL missile might be deployed in numbers equal to or larger than *Lance* because from a military perspective it is by far the most reliable and useful system. The number of artillery shells might be halved, while gravity bombs might be cut by two-thirds.

Alternative B is based in part on comments by conservative and moderate West German officials such as Volker Rühle, Deputy Chairman of the Christian Democratic Union/Christian Social Union parliamentary group. They would cut the existing warheads by more than half and reduce nuclear artillery shells by 80 per cent¹⁴. This alternative would focus on cutting the shortest-range systems, since those would explode on German territory. It reinforces the role of longer-range systems, which favours West Germany's preference for encouraging deterrence through the threat of rapid escalation rather than nuclear warfighting. It also retains a role for a smaller number of modern surface-to-surface missiles which (i) enhances survivability of the overall force; (ii) provides some capability to strike Warsaw Pact troop concentrations; and (iii) reduces the risk of a political confrontation between the US and West Germany. The major drawbacks to Alternative B are that (i) it may cut too deeply into short-range capabilities given the remaining conventional weapons disparities; (ii) there is little room left for any subsequent SNF arms-control negotiations with the USSR.

Alternative C is based on the views of those who believe in the adequacy of 'existential' or 'general' deterrence. They are more likely to accept a 'third-zero' ballistic missile outcome to an arms-control negotiation with the USSR.¹⁵ The third zero for SNF missiles would quickly make nuclear artillery politically unacceptable to West Germany. The resulting force would have to rely solely on stand-off missiles and some gravity bombs carried by NATO aircraft. As such, it would be quite vulnerable to preemptive attack on NATO airfields and to adverse weather conditions¹⁶. It also ties up dual-capable aircraft with nuclear missions,

¹⁴ 'Rühle: Nukleare Artillerie einseitig abrüsten', *Frankfurter Allgemeine Zeitung*, December 1988. Also Ronald D. Asmus, 'West Germany faces Nuclear Modernization' *Survival*, November/December 1988, p.504.

¹⁵ See Lawrence Freedman, 'The Next Nuclear Debate', *The Independent*, 3 February 1988. The 'third zero' refers to the fact that the INF Treaty included 'zero solutions' for both longer-range INF and short-range INF weapons. Thus if all SNF missiles are removed as a result of new arms-control agreements, it would be a third zero.

¹⁶ Peter Wilson of RAND has suggested that some of these disadvantages of the stand-off missile could be offset if it were deployed on *Harriers*. They could be more widely dispersed, thus increasing their survivability, and they can take off in adverse conditions. Their payload carrying capability, however, is limited. See 2 October 1988 letter from Peter Wilson to Hans Binnendijk.

thereby reducing NATO's conventional capabilities. The principal targets of the force in Alternative C would be long range; and though some short-range mobile targets could be accommodated, there would be a significantly reduced NATO nuclear warfighting capability. Given the current conventional force imbalance, this would cause a major revision of NATO strategy and could create serious political pressures for US troop withdrawals. If, on the other hand, the conventional arms-control process creates near parity on the ground, then NATO might look at Alternative C with greater favour. Until then, Alternative C would prove highly divisive within NATO, and would seriously weaken the Alliance's deterrent posture.

Growing independent nuclear forces

As America's commitment is questioned and US theatre nuclear forces are reduced, analysts ask whether British and French independent nuclear forces might reinforce and eventually supplant US extended deterrence. (The current British and French nuclear inventories are included in Table 2 on p. 141.)

British and French short-range nuclear forces standing alone would not provide much of a deterrent against a determined Soviet attack. British ground-based short-range nuclear capable systems are controlled by dual-key and they include only 14 ballistic missiles and about 125 artillery pieces. French ground-based systems rely primarily on 32 short-range *Pluton* missiles. Both nations have combat aircraft capable of flying tactical nuclear missions. British systems are integrated into the NATO command structure. French systems are not integrated and rely on a different nuclear doctrine.

British and French strategic range missiles are more formidable. Both nations are building more reliable, survivable, capable and accurate forces. By the end of next decade, the UK will replace its existing *Polaris* submarines with four quieter *Trident* submarines carrying the highly accurate D-5 missile. By 1995, France will upgrade its nuclear submarines and replace existing missiles with the M-4 carrying six warheads each. Eventually, it plans to introduce the 8-12 warhead M-5 submarine-launched missile. France further plans to modernize 18 S-3 intermediate range missiles with the S-4. (Table 4 outlines the impact the UK and French long-range missile modernization programmes will have on their force posture.) After the modernization programmes are completed, the number of UK and French missile warheads capable of striking Soviet territory will more than double. The number carried on alert submarines could more than triple. By the year 2000, the two

nations together might have a nuclear submarine (SSBN) force more than half the size of the likely post-START American SSBN force.¹⁷

Table 4: French and British long-range missile forces¹⁸

	Systems	Number of warheads	
		1988	After modernization
French	6 SSBN	256	576 or more
	18 IRBM	18	18 or more
UK	4 SSBN	192	512
	Total warheads	466	1,106 or more
	(Total on alert)	(176)	(544 or more)

Even so, these more formidable strategic forces may not be able to provide the rest of Europe with the kind of extended deterrence that the United States has provided. First, it will not be a single force but two different ones with separate political processes and military doctrines. Second, both forces lack the significant independent short-range battlefield nuclear capability necessary to provide a higher degree of deterrent credibility. Third, unlike the United States, neither nation could hope to gain credibility by retaining the possibility of confining nuclear war to the theatre. Both are in the theatre. Fourth, neither nation has a sophisticated command-and-control system that might hope to survive a first strike. And, finally, neither nation has a significant strategic counter-force capability or doctrine which might enhance deterrent credibility.¹⁹ If US extended deterrence was not credible to General de Gaulle, how could a French doctrine of extended deterrence based on massive retaliation be credible to Bonn? Thus, the British and French independent nuclear forces will continue to complicate the strategic equation for Moscow, and could act

¹⁷ The British and French would have a total of ten modern SSBN, while under START the US SSBN force could be reduced from 36 to about 18.

¹⁸ *International Defense Review*, March 1988, p. 235; and *UK Statement on the Defense Estimates 1988*, pp. 18 and 40. Also see François Heisbourg, 'The Role of British and French Nuclear Weapons', unpublished paper on 'Ways Out of the Arms Race', London, 4 December 1988. Today's alert rates assume a minimum of one British submarine and three French submarines at sea. Future alert rates assume a minimum of two British and three French submarines on station.

¹⁹ There has reportedly been some discussion by Michael Quinlan, Permanent Secretary of the British Ministry of Defence, about shifting British targeting away from its current counter-city strategy towards more of a counter-force strategy, but no decisions have been made.

to detonate exchanges between the super-powers. But, standing alone, they are unlikely to replace the US extended deterrent unless inventories are further expanded and doctrine is changed.

US Congressional perspectives

The technical and strategic rationale for nuclear modernization must be presented to the American and European publics, where considerable problems await NATO planners. This year, the US Congress will consider several proposals related to SNF modernization that could stimulate wider debate. An estimated \$US 32.8 million is needed in 1990 to continue FOTL research and development, while \$67.5 million has been requested for SRAM-T. Ceilings of 925 warheads and \$1.1 billion must be raised at least 25 per cent to continue production of the W-82 artillery shells at desired rates.²⁰

While initial appropriations are not large, budget pressures will probably force Congress to seek its own comprehensive concept. Congress will want to know in advance what kind of theatre nuclear deployment it can look forward to in the year 2000. The key issue will be the degree to which Congress will want Chancellor Kohl and other NATO leaders to commit to deployment in advance. Sam Nunn and Les Aspin, chairmen of the two Armed Services Committees, have each indicated the need for a commitment which is significantly stronger than that contained in past NATO communiqués. But they appear willing to accept a NATO commitment in principle rather than a specific deployment commitment from Kohl. The position to be taken by the two Appropriations Committees is more problematic, since the key subcommittee in each body is under new leadership. Once the issue of a deployment commitment has been settled, the provision of additional funds, higher ceilings and new authorities should not pose serious problems.²¹

Kohl's problems and the comprehensive concept

While NATO contends with pressures in one direction from the US Congress, there is considerable resistance to nuclear modernization in the Federal Republic of Germany. Mikhail Gorbachev is extremely popular there. A poll showed last year that Gorbachev had

²⁰ See the 1990 *Report of the Secretary of Defense*. The total cost of FOTL over 8-10 years is estimated at \$1.2 billion. The 1990 SRAM-T costs are \$59 million for research and development and \$8.5 million for aircraft integration. Existing Congressional restrictions on development of nuclear ATACMS may be rendered moot if the FOTL is indeed a new missile. The ceiling of 925 AFAP is a worldwide ceiling and applies only indirectly to Europe.

²¹ Discussions with members and staff of both Congressional Committees, December 1988.

a 1.5 rating while Ronald Reagan scored - 0.2 and Margaret Thatcher trailed at - 0.5 That was before Kohl's visit to Moscow, Gorbachev's UN speech, the A-10 crash at Remscheid, and the Imhausen-Chemie affair. Gorbachev's scheduled visit to West Germany this June will probably enhance this favourable impression. CCCP sweatshirts and Aeroflot underwear are the rage in West Germany. The sense of threat from the Warsaw Pact has dropped correspondingly. A June 1988 poll indicated that 68 per cent of West Germans are opposed to modernization of NATO's short-range missiles, while only 14 per cent were in favour. An even larger majority of 79 per cent would like to see the withdrawal of all nuclear weapons from Germany.²²

The Social Democratic Party (SPD) is, according to some polls, the most popular party in West Germany. Their policies of nuclear-free zones, defensive and common security are in many respects closer to Soviet than Alliance policy. They oppose replacement of the *Lance* missile, but privately claim they might support airborne stand-off missiles. They have been relatively silent about the modernization of nuclear artillery shells.²³

Kohl's conservatives in the Christian Democratic Union (CDU) are also concerned about nuclear modernization issues. They believe West Germany's security rests with shared nuclear risks within NATO. They further believe that the INF Treaty reserved NATO's previous trend towards longer-range nuclear systems, and hence concentrated the Alliance's nuclear risks in the Federal Republic. They thus seem to be particularly anxious to reduce dramatically the number of short-range nuclear artillery shells before they agree to any further nuclear modernization.

Foreign Minister Genscher from the Free Democratic Party (FDP) dominates West Germany's political centre. A consummate politician, he is in no hurry to make a decision on modernization and wants to avoid making it in isolation. He was particularly influenced by Gorbachev's 7 December UN speech, and stated that Soviet cuts would further marginalize the question of modernization.²⁴ Since then, Genscher has run into political difficulties with the Imhausen-Chemie affair and FDP electoral losses in Berlin. Observers expect him to resist nuclear modernization as one way to regain public support. Genscher might eventually support elements of nuclear modernization as a compromise, but his price

²² For the Gorbachev popularity poll see *The Guardian*, 19 October 1988 (based upon a Sinus Poll in October 1988). For data on nuclear weapons and public opinion, see the Allensbach Institute poll of June 1988 published by Professor Elisabeth Noelle-Neumann, *Frankfurter Allgemeine Zeitung*, 22 July 1988.

²³ For a detailed description of SPD policies, see Matthew A. Weiller, 'SPD Security Policy', *Survival*, November/December, 1988.

²⁴ See 'Cuts Force NATO to Think Again on New Nuclear Arsenal', *The Guardian*, 10 December 1988.

is likely to be early arms-control negotiations with the USSR on short-range nuclear weapons.²⁵

Chancellor Kohl supports nuclear modernization, but not necessarily at the cost of his government. By February 1989, his CDU had suffered five consecutive setbacks in regional elections. Kohl has received plenty of outside advice, with Margaret Thatcher urging him to proceed quickly and French Foreign Minister Roland Dumas cautioning him to wait until after West Germany's December 1990 federal election. Both pieces of advice were scorned in Bonn.

Kohl appears to have pieced together an elaborate effort to allow him to contain major confrontation on the modernization issue. First, he can use the dramatic reductions in short-range systems inherent in SHAPE's requirements study to demonstrate that overall weapons numbers are being reduced and that average ranges of weapons are again being shifted to the longer ranges. Second, he will probably wish to have several other European countries accept modernized weapons so West Germany appears to be sharing the nuclear risk. Third, he will try to place the decision in a broader context, called NATO's *Gesamtkonzept*, or comprehensive concept. The comprehensive concept is currently being drafted by the Alliance and is expected to be finished in time for the NATO summit. Kohl would agree to this comprehensive concept along with other leaders at the NATO summit. But Kohl's cabinet has reportedly agreed not to make decisions in the near future on the details or timing of deployment.²⁶

The wording of the comprehensive concept may prove critical to NATO's ability to balance US Congressional and West German interests. It is to provide a broad NATO plan to co-ordinate security policy and arms-control priorities. Success of the comprehensive concept may depend upon agreement on two items. It must contain a commitment to the principle of modern short-range ballistic missile deployment which is firm enough to satisfy the US Congress, but not specific enough to undermine Kohl's election prospects. And second, to gain Genscher's support for its concept, NATO will probably have to

²⁵ Genscher told *The German Tribune* (4 December 1988, no. 1,349) that 'we feel there is an urgent need for a Western negotiating position on short-range missiles'.

²⁶ In mid-February 1989, Kohl surprised the Allies by announcing that he would like to delay a final decision by two years. *International Herald Tribune*, 11-12 February 1989. Also see 'Wehrkunde Examines SNF Modernization Issues', *Jane's NATO Report*, 31 January 1989, vol. 4, no. 20, p. 1. For a good discussion of this general issue, see Asmus, *op. cit.* in note 14.

advance the prospect of an earlier SNF arms-control negotiation and may need to define a mandate for these talks.²⁷

Kohl's plans for the comprehensive concept have been carefully laid, but the US may not be willing to budge on SNF arms control and Kohl may resist a firm enough commitment to the principle that modern short-range ballistic missiles are needed in Europe. US-FRG relations are souring over a series of security and economic differences. Those overall differences may affect willingness on either side to compromise. A collapse of the comprehensive concept would add more fuel to the fire.

The arms-control dimension

The Warsaw Pact proposed as part of its 11 June 1986 Budapest Appeal that 'operational-tactical nuclear arms' be included in the conventional arms talks.²⁸ The Pact has since then agreed to separate the conventional negotiations from nuclear talks,²⁹ but has nonetheless kept up pressure for SNF nuclear arms control. For example, East German President Erich Honecker pressed for removal of nuclear weapons in his 16 December 1987 letter to Chancellor Kohl.³⁰ In January 1988, Soviet Foreign Minister Eduard Shevardnadze called for the global elimination of tactical nuclear weapons.³¹ A year later he shifted his approach somewhat and proposed a modernization freeze and negotiations on SNF weapons. A freeze would be convenient for the USSR, since its SS-21s are about ten years younger than the American *Lance*. The USSR has also attempted to limit theatre nuclear weapons in the Strategic Arms Limitation Talks (START) by (i) including all air-launched cruise missiles over 600km in the START limits: and (ii) putting strict limits on SLCM. Observers differ as to how anxious the USSR really is to abandon its large SNF inventory. Privately, some Soviet officials do not give the SNF negotiations high priority, but denuclearization of Europe has been long-term Soviet goal.

²⁷ *Atlantic News*, n. ° 2,083, 13 January 1989.

²⁸ The 'Budapest Appeal', *Pravda*, 12 June 1986. Translated in *Foreign Broadcast Information Service*, Daily Report, Soviet Union, 13 June 1986.

²⁹ Communique issued at the Session of the Committee of Ministers for Foreign Affairs of the States' Parties to the Warsaw Treaty. Sofia, 29-30 March 1988.

³⁰ Letter from Erich Honecker to Chancellor Kohl, 16 December 1987. See also 'Honecker Letter Put Kohl on Spot', *Financial Times*, 11 February 1988.

³¹ 'Shevardnadze Calls for "Triple-Zero option"', in *Arms Control Today*, March 1988, p. 24.

Table 5: Warsaw Pact - short-range missile launchers³²

	Atlantic to the Urals		Total
	Soviet	Other Pact	
<i>Scud A/B</i>	506	158	664
<i>PROG/SS-21</i>	534	234	768
	1,040	392	1,432

NATO is deeply divided on the question of SNF arms control. The US and the UK are strongly opposed, while the FRG and the Benelux countries want early talks. American and UK concerns stem from the fact that a third-zero solution for SNF missiles might be difficult to avoid. The Warsaw Pact has an estimated 1,432 SNF missile launchers in the Atlantic-to-the-Urals area, compared to 88 for NATO (see Table 5).

From an accountant's perspective, the West would appear to have a much better deal with a third-zero solution in terms of systems to be destroyed. In addition, the short-range Soviet missile threat against NATO airfields would be removed. But a third zero would lead to a NATO force posture similar to Alternative C, one that would not be safe to adopt without parity in conventional forces.

Pressure from West Germany may make it impossible to delay the talks indefinitely. West German Foreign Ministry officials believe a third zero can be avoided by adopting a minimal requirement and refusing to negotiate below that level.³³ If NATO heads of government could publicly agree on a specific for minimal deterrence below which they would not negotiate, that might reduce US and British fears. Other measures might also be taken to preserve NATO's Flexible Response strategy. For example, the Soviet Union might be required, before any SNF mandate talks begin, to agree to the legitimacy of nuclear deterrence in Europe. NATO needs to begin to consider possible alternatives to just saying 'no'.

³² *The Military Balance* 1988-1989, *op. cit.* in note 4, p. 220. Note that 24 of the 1,432 Soviet launchers will be removed as part of the Soviet withdrawals announced on 7 December 1988. Other estimates of Soviet SNF missiles launchers have been lower, at about 1,365. The Warsaw Treaty Defence Ministers' Statement of 30 January 1989 (Novosti Press Agency PRO2489) indicates that there are 1,608 Warsaw Pact tactical missile launchers as follows: Bulgaria 72, Hungary 27, GDR 80, Poland 81, Romania 50, USSR 1,221, Czechoslovakia 77. The statement did not clarify if those forces were located in the Atlantic-to-the-Urals area. Assuming a reload capability of 3-4 missiles per launcher, the USSR probably has 5,000-6,000 nuclear-tipped missiles in its SNF inventory. This compares with about 700 *Lance* missiles for NATO.

³³ Conversations with West German officials, 1988. Some privately suggest an SNF launchers limit of about 50.

Conclusion

The case for NATO's nuclear modernization programme rests on the need to enhance the credibility of the US extended nuclear deterrent. That credibility diminished as American leaders discussed the desirability of a non-nuclear world and as its theatre nuclear forces declined in size and capability. Development of a follow-on to the *Lance* missile and of an airborne stand-off missile would strengthen the credibility of extended deterrence, while allowing for reductions by at least one-third in the number of NATO theatre nuclear warheads. A total NATO theatre nuclear force with 2,000 to 3,000 warheads is justified as long as Warsaw Pact conventional forces significantly outnumber those of NATO. If conventional parity is ever attained in Europe; a much smaller NATO nuclear force would provide adequate deterrence.

Gorbachev's announcements of unilateral force withdrawals have not thus far significantly altered the justification for a modern NATO nuclear force, but they have created a political environment in Western Europe which will make it difficult to proceed with modernization. Opposition to the FOTL and to new artillery shells is strongest in West Germany because of the weapons' short range, while the stand-off missile will create problems in the UK, the Netherlands and Belgium because it will be perceived as violating the spirit of the INF Treaty. NATO hopes to overcome this opposition by placing the modernization decision in a broader security and arms-control context. This comprehensive concept is to be completed in time for approval at this spring's NATO summit.

Finding the right balance between commitment to deployment and support for arms control in the comprehensive concept may be difficult. In the current political environment, NATO must not make deployment a public loyalty test Bonn. Such a loyalty test could easily backfire. The US Congress may thus have to settle for less than a clear West German commitment to deploy. On the other hand, West Germany may have to settle for less than a clear commitment to early SNF arms control. In the longer run, however, NATO must develop more imaginative ways to protect its Flexible Response strategy from the perils of SNF arms control. Walking this tightrope in the comprehensive concept will require dose transatlantic co-operation.