Short-Range Nuclear Forces: An Arms Control Perspective

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The views expressed in this paper are those of the author alone and should not be construed as official positions of the Department of Defense, US Air Force, or any other government agency

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Dedication

To Judy, Daniel, and now Diego You have made this last year a pleasure and a delight I thank you
Introduction

With the end of the 1980s, we witnessed truly revolutionary changes to the European political environment. In January 1988, the Commission on Integrated Long-Term Strategy, wrote that we will see, in the next twenty years, a developing, revolutionary environment revealing "new military powers, new technology, new sources of conflict and opportunities for cooperation. To cope with these changes, we will need versatile and adaptive forces." These rifts in the landscape of political and military thought are occurring, driven by a political earthquake never imagined by the current generation of world and military leaders. In Europe, the North Atlantic Treaty Organization (NATO) alliance is faced with questions and challenges to its strategy and force posture across the entire spectrum of political and military sources. Through unilateral and negotiated force reductions, a new security order is evolving. Marxist ideology's predilection to confrontation or conflict has softened and threatening capabilities have been reduced, and in some cases eliminated. The peak East/West confrontation is past and we will see a rapidly declining military posture driven by the combined forces of political realignments, arms control, and budgetary reductions manipulated by partisan political and economic agendas.

This dynamic security environment is driving a more discriminate choice of instruments of political power, and when coupled with the changes in the Soviet approach to defense policy, one can envision tremendous challenges to NATO's political cohesion and therefore its capability to effectively address issues of European security. Although now in the shadow of German unification, the future character and function of nuclear weapons in the deterrent strategy of the Alliance is high among the significant strategic questions challenging the United States and NATO.

This paper focuses on the European nuclear forces. It will briefly review the significant decisions that reflect current force structures and the status of forces and modernization programs. Finally, it will offer an assessment of how selected political forces and arms control efforts might impact future modernization and deployment plans.

Of particular interest in this paper will be the debate over aircraft, especially the "dual-capable" systems. Soviet and NATO air forces play a critical role in their respective alliance's military strategy despite their lower profile when compared to the tanks and missile systems held by both alliances. The importance of their contribution to the security framework of Europe is demonstrated by the difficulties encountered with aircraft reductions during the Conventional Forces in Europe (CFE) negotiation process. While many other issues have been resolved, the fate of aircraft reductions, by the fall of 1990, is still vigorously argued. Even after...
US/Soviet ministerial level meetings and the Bush/Gorbachev summits, there is significant disagreement between opposing parties on aircraft reductions further suggesting the importance and critical role of these forces within each bloc.

The Present Course

Since 1979 NATO has reduced the total number of “tactical use” nuclear warheads in Europe by one-third, the current numbers are the lowest in twenty years. Even before the revolutionary changes in Europe, NATO's 1988 “Nuclear Weapons Requirement Study 1991-1998” proposed a reduced nuclear arsenal of less than 3,000 warheads, a Follow-on-to-Lance (FOTL), new 155 millimeter artillery shells, and an air-to-surface missile. President Mikhail Gorbachev committed the Soviet Union to unilateral nuclear weapon reductions once short-range nuclear forces (SNF) talks are formally initiated and has promised a unilateral 500 warhead reduction without negotiations. In 1989, the NATO Alliance agreed to bilateral SNF negotiations after a CFE treaty and reductions are underway. Additionally, it was decided that modernization questions for the Lance missile system would be delayed until 1992.

By May, 1990, modernization of FOTL and nuclear based artillery was cancelled, and NATO’s Nuclear Planning Group (NPG), while agreeing that there is a diminishing need for nuclear systems of the shortest range, and committed to “reassess the future qualitative and quantitative requirements” of nuclear weapons (especially short-range missiles and nuclear artillery) in Europe, also expressed a commitment to maintain a nuclear deterrent.

These pronouncements on nuclear force reductions in the region of the Atlantic-to-the-Urals (ATTU) have occurred during an anfractuous period, one in which the West is attempting to encourage Soviet reform, promote a peaceful evolution of political change in Eastern Europe, and support the long-standing commitment for the unification of Germany. Reductions in conventional arms, some coordinated, some unilateral, create an ever more complicated view of the European security environment already fraught with issues of allied burdensharing, a diminishing threat, and declining budgets that are individually and synergistically redrawing the European arms control picture. It is a picture attempting to portray a greatly reduced military posture, but one with an enduring balance of military capabilities sufficient for defense and not sufficient for aggression.

Although the probability of war is low, the capability for armed conflict is still very high. If this potent capability were ever exercised, the forces able to maintain air superiority would dictate not only the overall level of air...
operations, but also exercise significant influence on the tempo and success of the overall theater campaign. Given the Intermediate-Range and Shorter-Range Nuclear Forces (INF) treaty (it established precedents for asymmetric reductions in treaty limited items and intrusive verification regimes), the high probability of a CFE treaty, and unilateral reduction in forces throughout Europe, the political importance and combat potential for the remaining dual-capable aircraft and SNF become even greater. These developments make the next level of arms control negotiations particularly challenging (especially from a militarily strategic and tactical perspective), but with the potential to make significant contributions to the enhancement of stability and security in Europe as enormous military capabilities are sized and postured in-line with the professed Soviet intention of a "defensive defense".

**Nuclear Arms and Conventional Forces, The Arms Control Linkage**

That conventional arms control measures and reductions have a significant impact on the role of nuclear forces in Europe is certainly not a novel concept. Bruce George, MP (a Member of the Britain's House of Commons, Chairman of the Political Committee of the North Atlantic Assembly, and editor of *Jane's NATO Handbook 1989-90*), has emphasized this linkage: "Given a lower level of threat and a negotiated balance in conventional forces the French and United Kingdom (UK) nuclear forces could assume a greater importance as a 'European deterrent'". Alexei A Vasiliev, a leading figure at the Institute of the USA and Canada (Moscow) and special advisor to the CFE talks in Vienna, argues that the "role of nuclear weapons is strengthened" given any reduction in conventional arms, and further, this situation does not increase stability and even reduces the significance of any conventional arms reductions or agreements. Arnold Kantner (now on the staff of the National Security Council) agrees on the importance of the shorter-range nuclear weapons, but differs from Vasiliev on their level of influence in the conventional arms control process. He stresses NATO's nuclear deterrent requirements reflect strategic and political roles beyond the military utility, and this makes their importance somewhat more independent of conventional force postures. Stepping beyond the nuances of their debate, a bottom line assessment seems to come from retired Joint Chiefs of Staff (JCS) Chairman, Admiral Crowe. Given the Soviet economic problems and political reforms within Warsaw Treaty Organization (WTO) countries, Crowe says, "the Soviets couldn't fight a conventional war, at least one of any duration [and] the one thing they could still do today, no matter what their problems are, is push the nuclear button."
Intentions or Capabilities?

The idea of addressing military capability as opposed to military intentions generates considerable debate, especially between military oriented leaders and the legislative forces during debates on budget issues. Secretary of Defense Cheney, before the Senate Budget Committee, argued:

As we view what are clearly positive developments, we have a responsibility to distinguish what is done from what is only promised. The Soviet Union remains an extremely formidable military power. Recent events, both in Eastern Europe and the Soviet Union itself have decreased the risk of the Soviets launching a premeditated attack on Western Europe. But the volatility and unpredictability of the situation there has, in many ways, increased the chance of an inadvertent conflict.

We must make our military adjustments with an eye toward genuine reductions in risks, not in anticipation of how we hope global events will evolve.\(^\text{14}\)

Moreover, one can find a similar sentiment in Europe. French Minister of Defense Chevènement expressed this concern when he said the Soviet Union will remain a great power and "states must be judged not according to their intentions, but according to their capabilities."\(^\text{15}\)

NATO's Supreme Allied Commander, Europe (SACEUR), Gen Galvin, in Congressional testimony told US legislators:

as the man responsible for the defense and deterrence in Western Europe from Norway around to Turkey, I cannot look at intentions of the Soviet Union. I have to look at the capabilities of the Soviet Union and the Warsaw Pact. Intentions are like moods. They can change overnight. Capabilities are important. It takes a long time to change capabilities.\(^\text{16}\)

Although an opponent's intentions are essential in the overall calculus of deterrence, operational capability (discussed later in this paper) must be the focus of the military element of any national security system, and for arms control to be effective and contribute to national security, capabilities and potentialities must be reduced, moderated, or stabilized.

To fully appreciate the arms control environment of European nuclear forces, a basic understanding of their role and capabilities is required. Essentially, one must realize how European nuclear forces fit into a coherent military strategy that legitimizes these weapons and accommodates the political reality required for deployment. To do this we now turn to the strategic environment found in the region de Gaulle referred to as Europe, Atlantic-to-the-Urals.
European Nuclear Forces, Opening Perspective

The principles of strategy are simple. Their application is immensely difficult. A strategic doctrine necessary as it may be can never be applied to all situations.

—Robert Strausz-Hupe to the National Military-Industrial Conference
Chicago February 1958

In December, 1988, Soviet President Gorbachev addressed the United Nations and announced his country's intentions to make significant unilateral reductions in the Soviet armed forces. He went on to say the remaining forces are to "become strictly defensive" and "maintain the country's defense capability at a level of reasonable and dependable sufficiency, so that no one is tempted to encroach upon the security of the USSR or its allies." While this one statement is far short of a full strategy of defense, significant political changes and force reductions are occurring in the Soviet Union, Czechoslovakia, Hungary, Bulgaria, and especially in Germany. These developments not only lead military analysts to seriously doubt the capacity of the Soviet Union to mount a successful surprise attack into the Federal Republic of Germany (FRG), but also suggest an impending change in Soviet theater nuclear doctrine. Such a turnabout would mean a shift from a nuclear warfighting capability to a reduced nuclear presence and one with a more defensive, deterrent disposition.

During the late 1950s and early 1960s, NATO and the United States faced a much different threat from the Soviet Union and later the Warsaw Pact. It was a threat buttressed by massive land combat forces and, notably, a growing Soviet nuclear potential. In December 1967, the Defense Planning Committee adopted NATO's new concept of flexible response and moved declaratory deterrent policy away from the threat of massive retaliation (which deterred Warsaw Pact aggression of any form by threatening a large-scale nuclear counter-attack against the Soviet Union) and moved toward a concept stressing the deterrent potential of conventional forces and European-based nuclear weapons. This deterrent potential keyed on the Alliance's ability to react, in kind, or escalate, as a military response, in order to prevent defeat (i.e., NATO kept open the possibility of employing nuclear weapons first, thereby increasing the uncertainty about the time and location of escalation).

Flexible Response and Forward Defense

The document, "Overall Strategic Concept for the Defense of the NATO Area," Military Committee Document 14/3 (MC 14/3), was the culmination of
a five-year formal revision process and an even longer policy debate on the utility and deterrent value of massive nuclear retaliation. The evolutionary process leading to flexible response catalyzed a number of significant changes.

Beyond the French withdrawal from NATO's integrated military command structure, flexible response had, by 1968, placed an even greater operational significance on NATO's 7,000 nuclear warheads deployed in Europe. The idea of flexible response required strong conventional forces and appropriate theater and strategic nuclear weapons in order to deter all potential levels of aggression. According to US Ambassador to NATO Cleveland, MC 14/3 told commanders to "provide for the employment, as appropriate, of one or more of direct defense, deliberate escalation, and general nuclear response, thus confronting the enemy with a credible threat of escalation response to any type of aggression below the level of a major nuclear attack." Flexible response also provided an even tighter bond between the United States and Europe as most of the nuclear deterrent operations would be dependent on US personnel, and the possibility of further escalation linked the fate of Frankfurt with that of New York.

Beyond the problem of defining and maintaining a state of credible extended deterrence, NATO endures a continuing debate on the Alliance's dedicated nuclear forces. To resolve the dispute between the proponents of theater nuclear use to decisively win a European war, and those who argued NATO theater nuclear weapons convey an unambiguous political signal to the Soviets, the Nuclear Planning Group reached agreement in 1986 and promulgated "General Political Guidelines" for the possible use of theater-level nuclear weapons in the defense of the European Alliance. This document did not modify MC 14/3, but it did unequivocally support the concept that nuclear weapon use by NATO must convey a clear political signal of Alliance resolve.

Two other elements of NATO's military force posture, forward defense and follow-on forces attack, also require attention to appreciate the complexity of the debate over European Theater Nuclear Forces. NATO's military planners are currently committed to forward defense, i.e., defending NATO territory with forces on its perimeter, or at least deployable to the border. The commitment to this defensive posture is driven by two factors. First, when attacked, defensive forces can retreat without being totally defeated. This retreat gains time to recover and reconstitute forces required for a counter-attack. The problem with this arrangement is that retreat requires giving up German or other NATO territory, a situation politically unacceptable. Secondly, the alliance does not have the depth of territory to relinquish in order to gain time for building a counter-attack.
FOFA, Follow-on Forces Attack, is designed to counter the WTO threat of an overwhelming break-through offensive. By attacking the follow-on forces before they join the offensive, NATO hopes to reduce them to manageable proportions and delay their arrival at the close battle. It also provides the opportunity to mass fire against concentrations of forces before they hit NATO's defensive line, thereby compensating, at least in part, for NATO's inability to shift its ground forces in response.

Although the specific size and appropriate force structure necessary to execute this strategy are contentious topics, MC 14/3 is still fully supported by the Alliance. Both the 1989 NATO “Comprehensive Concept of Arms Control and Disarmament,” and SACEUR General John Galvin, are fully committed to keeping “flexible response” the cornerstone of NATO strategy. As expressed by General Galvin:

Strategy is always changing, in some form or degree. When we make decisions as to resources—how much of a force to have, where to put it, how to equip it, and at what level to budget it—we are making decisions that affect strategy. All of these have been part of the political process of the West throughout the entire life span of NATO. This political process will continue to adapt. It is more a question of degree than of departure.

Even in this time of turbulent military force structure planning, General Galvin argues for the importance of maintaining flexible military capability. He highlights having the aircraft and missile capability to attack reinforcement avenues, such as the Union of Soviet Socialist Republics (USSR)/Non-Soviet Warsaw Pact (NSWP) railroad transloading zones, roads, other railways, and nuclear forces, in order to “assure yourself—and transmit to the enemy—that you are not about to lose cohesion on the battlefield, and you’ll use nuclear weapons if you have to.”

Despite the firm commitment to Flexible Response and Forward Defense, neither concept seems militarily or politically feasible in the near future, especially given the combination of unilateral alliance and CFE driven force reductions. Even General Galvin has conceded force reductions beyond CFE would force significant changes in NATO planning. Although it is unlikely the remaining conventional capability of NATO or the Warsaw Treaty Organization would allow for a quick offensive, it is also unlikely NATO will have the in-place forces to maintain its current “layer-cake” alignment of multinational corporation responsibilities along the (soon to be changing) inter-German border. These force reductions, driven by a lessening military threat, popular demands for a less provocative military posture, economic, and demographic trends, lend one to envision the rejection of, or significant change in NATO’s Flexible Response strategy.
The Future Tasks of the Alliance

Besides MC 14/3, 1967 yielded another document that continues as a significant source for NATO guidance, The Harmel Report, titled "The Future Tasks of the Alliance," stressed two functions for the Alliance. The first was "to maintain adequate military strength and political solidarity to deter aggression and other forms of pressure and to defend the territory of member countries if aggression should occur." The second function was driven by the inherent instability and uncertainty found in Europe, and the crisis potential of the "central political issues in Europe, first and foremost the German Question." The Harmel Report also stressed the importance of concurrently pursuing, "the search for progress towards a more stable relationship in which the underlying political issues can be solved. Military security and a policy of detente are not contradictory but complementary." These key passages were invoked by the Alliance during 1989 in their "Comprehensive Concept of Arms Control and Disarmament." With this document, NATO reiterated its commitment to "arms control as an integral part of the Alliance's security policy.

Also in this document, which centers on NATO's concept of arms control, one finds important pronouncements on the purpose and function (and, as noted earlier, the extremely political nature) of theater nuclear weapons.

Conventional defense alone cannot, however, ensure deterrence. Only the nuclear element can confront an aggressor with an unacceptable risk and thus play an indispensable role in our current strategy of war prevention.

The fundamental purpose of nuclear forces is political to preserve the peace and to prevent any kind of war. Such forces contribute to deterrence by demonstrating that the Allies have the military capability and the political will to use them, if necessary, in response to aggression. Should aggression occur, the aim would be to restore deterrence by inducing the aggressor to reconsider his decision, to terminate his attack and to withdraw and thereby to restore the territorial integrity of the Alliance.

Nuclear forces below the strategic level ensure that there are no circumstances in which a potential aggressor might discount the prospect of nuclear retaliation in response to military action; thus [they] make an essential contribution to deterrence.

This emphasis on the political purpose for nuclear forces is also highlighted in Air Force Basic Doctrine (Air Force Manual 1-1) and the 1986
Army Operations (FM 100-5) Manual  In discussing forms of warfare, AFM 11 states, “National policy and objectives will guide the use of nuclear weapons rather than the tactical effect a particular employment might produce.” As expressed by FM 100-5

Even though the primary purpose of nuclear weapons is to deter their use by others, the threat of nuclear escalation pervades any military operation involving the armies of nuclear powers. US nuclear weapons may of course only be used following specific directives by the National Command Authorities (NCA) after appropriate consultation with allies. Even were such authority granted, however, the employment of nuclear weapons would be guided more by political and strategic objectives than by the tactical effect a particular authorized employment might produce.

One must keep in mind that while the aggressor must consider nuclear escalation or retaliation as possible responses, NATO’s “initial decision to use nuclear weapons would be excruciatingly difficult and made only after careful considerations,” especially as the SNF and battlefield weapons force allied decision-makers contemplate their use on NATO territory.

NATO’s political direction on nuclear forces was further defined at the close of the July 1990 meeting of the North Atlantic Council. Drawing on the “prospects of further changes” and the “total withdrawal of Soviet stationed forces and the implementation of a CFE agreement, the Allies concerned can reduce their reliance on nuclear weapons.”

The French Deterrent

Before turning to the description of European Nuclear Force capabilities, a short summary of French nuclear thinking is appropriate. In addition to Alliance nuclear forces, France maintains a full range of nuclear capabilities outside of the integrated NATO military structure. The French longer-range systems, especially the Sea Launched Ballistic Missiles (SLBM)s, are the foundation of France’s deterrent defense policy and force posture. French shorter-range forces (“pre-strategic” as described by the French) link with the longer-range forces to form a small, but versatile force. These “pre-strategic” forces perform an ultime avertissement (a last warning) mission, in NATO parlance they might be described as conflict escalation controls.

Although French nuclear forces (summarized in the next section of this paper) are experiencing qualitative expansion in order to meet their criteria of sufficiency, it is still a force whose command and control system does not truly support any extended nuclear operations or warfighting capability. Therefore, employment is likely characterized as a “signal-barrage doctrine” that is credible and makes the French forces a true “wild card” (also described as a “free agent”) in the nuclear balance of power in Europe. As
detailed by Jerôme Paolini, French nuclear doctrine is not a true form of "massive retaliation" nor of "flexible response."

French nuclear strategy rejects both concepts. Nuclear use is to be initiated as a test of the aggressor's will to jeopardize France's vital interests—not strictly defined as the country's national territory—in the form of a once-and-for-all last warning counterforce "pre-strategic" strike, opening the way to subsequent full-blown strategic escalation directly on the adversary's sanctuary. The strategy thus explicitly rejects fighting a prolonged conventional or nuclear battle in favor of minimum, yet sufficient deterrence, strictly oriented towards conflict prevention. All French nuclear forces are thus understood to be of a strategic nature, hence the use of the term "pre-strategic" for what might otherwise be considered theater or tactical weapons.

In an arms control context, one must address the fact, France is a nation with a strong national commitment to nuclear forces and weapons programs.

France's independent nuclear policies and national commitment to remain outside the integrated military structure of NATO hold some potential to complicate future European nuclear forces arms control efforts. However, France's active participation and support during the CFE negotiations show a willingness to engage the arms control process as a means to shape security concerns, and further, this suggests France's participation in the inevitable arms control negotiation over European nuclear forces, probably addressing the short-range battlefield weapons. This potential participation does not go so far as to suggest an attitude like that found in the German decision to remove their Pershing IA missiles as part of the INF treaty, even though the negotiations were strictly dealing with US and the Soviet missile systems. More specific French attitudes on European nuclear forces and arms control are discussed in a later section.

Modernization and Disarmament

Given that a significant reduction in theater nuclear forces in Europe is inevitable, it is necessary to have a concept of the forces involved and their military and political utility. This discussion cannot be limited to just US and Soviet forces. With the reduction of the US nuclear presence in Europe will come a shift in the burden of deterrence to British and French nuclear forces. To appreciate the British and French potential for a greater role in the European nuclear equation, one must also examine the current capabilities of these nuclear weapon systems and how they fit into the NATO deterrence paradigm.
Nuclear Forces—Atlantic-to-the-Urals Capabilities

We must consult our means rather than our wishes and not endeavor to better our affairs by attempting things which for want of success may make them worse

—George Washington to Lafayette 1780

These forces go by many names. Among arms control cognoscenti, there are tactical weapons with ranges of 150-500 kilometers or battlefield weapons having ranges from 0-150km. The INF Treaty differentiates between shorter-range nuclear missiles (500-1,000 kilometers) and intermediate-range missiles (1,000-5,500 kilometers). Adding to the lexicon of these European nuclear forces, are US, British, and French "strategic" systems, and French "pre or sub-strategic" forces. For our purpose those weapon systems dedicated to the theater, planned for use in Europe, and controlled by NATO or the Warsaw Pact, without consideration of potential range, will be addressed, for if we limit our focus to weapon system's ranges, an overly simplified picture of the European nuclear forces would emerge.

Western Forces

Throughout the Alliance one finds a variety of air-, land-, and sea-based systems. These systems include dual-capable fighter aircraft (land and carrier-based), some with all-weather capability and extended range capacity, and other systems with marginal night-time/adverse weather capabilities and having rather "short legs." Dual-capable aircraft (DCA) garner this classifying identification by their ability to deliver either conventional or nuclear munitions. As the INF Treaty eliminates an entire class of missile systems, it is the DCA providing NATO with the preponderance of its capability to deliver weapons beyond the immediate battlefield.

In the longer-range area all-weather category, NATO employs US F-111s forward based in the UK and Tornado GR1 strike aircraft in the UK and the FRG. With the addition of a small number of F-15Es (a newer, two-seat, long-range interdiction fighter-bomber version of the F-15) and F-16s equipped with Low Altitude Navigation and Targeting Infrared for Night (LANTIRN), NATO will greatly expand its night and adverse weather operational capability. It is the F-16s and old F-104s of Greece, Turkey, Belgium, Italy, the Netherlands, and forward based US F-16s (such as those of the 401st Tactical Fighter Wing, Torrejon, Spain) that round out the Alliance's shorter-range dual-capable aircraft.

Carrier based strike forces include the Mediterranean-based US 6th Fleet (470 aircraft a notational potential), sixty-four French Super Etendard, and forty-six British Harrier jump jets. Despite perceived advantages of
carrier-based aircraft (e.g., operations independent of bases on foreign soil), a significant disadvantage of these carrier-based nuclear capable aircraft is their vulnerability and lack of efficacious deterrent effect. To be the least bit credible, carrier-based aircraft drive the carrier into an increasingly vulnerable position (where they could be at risk from Air-Launched Continental Missiles [ALCM] equipped Soviet bombers) in order to launch the strike forces. Beyond this disadvantage, carrier-based aircraft are subject to the same competing mission requirements of land-based DCA.

Excluding missile systems eliminated under the INF Treaty, NATO's land-based missile systems (all short-range systems) include thirty-six US Lance launchers and fifty-eight Lance launchers controlled by other NATO countries (fifty-two of these launchers in the ATTU). For these ninety-four launchers, there are an estimated 690 missiles available to US and non-US NATO Lance launchers. Lance missiles are intended as a corps level weapon system enabling commanders to hold at risk, deep battlefield targets.

Although not a part of the integrated NATO military targeting and command structure, France maintains eighteen intermediate range, silo-based missiles, and thirty-two battlefield level missile systems, all nuclear equipped. These systems will be detailed when French nuclear forces are discussed.

To address the threat in the immediate battlefield, the Alliance strategy of flexible response relies on nuclear-capable artillery. These forces “deny the enemy a sanctuary to mass forces behind the immediate battle zone and provide the capability to break the momentum of an offensive.” They consist of a new 8-inch (203 millimeter) artillery-fire atomic projectile (AFAP) with longer range, greater safety and accuracy, and 155 millimeter artillery shells. It should be noted that there is a 1984 congressional mandated limit of 925 on the number of new 155/203 millimeter AFAPs that can be produced, which does restrict the level of modernization to the artillery forces.

Sea-based systems consist of sixty-four (non-multiple independently targetable re-entry vehicle [MIRV]) UK submarine launched ballistic missiles (Polars A3-TK Chevaline) with an estimated range of 4,700 km. The British Chevaline warhead systems include penetration aids to counter the Moscow “Galosh” antiballistic missile system. It should be noted that these SLBM weapons, and all British nuclear forces, are “assigned to NATO but controlled by Britain, and can be employed independently when supreme national interests are at stake.” Other systems include 400 US SLBM warheads dedicated to the SACEUR in support of NATO’s General Strike Plan. Their utility to the NATO deterrent efforts is likely limited to ‘general” rather than “selective” release as their execution.
execution reveals the location of the submarine and presents a picture to the Soviets that is difficult to distinguish from a strategic attack. This would certainly hamper any effort to control escalation, and very selective or limited strikes with eight (100 kT) or ten warhead (40-50 kT) missiles seems farfetched. (This does not seem to be a problem with the French SLBM force-de-frappe given their declared policy of strategic response with a countervalue rather than counterforce targeting.)

France’s Nuclear Forces

France’s independent nuclear forces contribute to their concept of “proportional deterrence” developed by General Pierre Gallois and implicitly endorsed by de Gaulle in 1964. This level of deterrence is based on the idea that Moscow would not risk the potential destruction of Soviet cities by the French forces for whatever gain the Soviets might think to obtain by the conquest of France.

French land-based air forces account for approximately 90 to 95 nuclear weapons delivered by their four strike aircraft systems assigned to the strategic air forces, Forces Aériennes Stratègiques (FAS), and the prestrategic fighters assigned to the Force Aérienne Tactique (FATAC). Among these aircraft are approximately eighteen Dassault-Breguet Mirage IVP long-range fighter bombers modified to carry the French nuclear air-to-surface stand-off missile, Air-Sol, Moyenne-Portee (ASMP). French shorter-range systems (grouped in a category the French describe as “sub-strategic” or “prestrategic”) include the Mirage 2000N (a two-seat all-weather fighter with terrain-following radar) and Mirage IIIIE fighters, the former equipped to carry the ASMP and the latter limited to gravity weapons, AN-52 variable yield bombs. A sign the French are also subject to the changes in the security environment, can be found in their decision to eliminate two of the five “sub-strategic” strike squadrons previously scheduled for upgrades to the more capable Mirage 2000N and the ASMP nuclear air-to-surface missile. This move will accommodate continuing modernization of other French nuclear forces. Also included in the French sub-strategic arsenal are over forty carrier-based Super Etendard aircraft equipped to deliver the ASMP.

Land-based nuclear forces are assigned to both the FAS and the Army. The FAS control of eighteen S-3D intermediate range missiles (approximately 3500km) equipped with single warheads (one megaton estimated yield). These missiles, designed, developed, and produced by France, are silo-based and located on the Albion Plateau in southeastern France. France currently deploys the battlefield level missile system, Pluton, which has a 120 km range and a single 10/25 kT fission warhead. The Pluton’s tracked carriers are divided among four artillery regiments stationed in northern and northeastern France, and are under corps-level command.
France’s sea-based deterrent forces belong to the Force Oceanique Stratégique (FOST) and consist of six nuclear powered submarines (one M-4 equipped boat currently being overhauled) with each boat carrying sixteen missiles. This fleet, operating from Ille Longue in Brittany, carries thirty-two M-20 submarine launched ballistic missiles (equipped with single, one MT warheads with an estimated range of 5,000 km) and forty-eight M-4 SLBMs (six multiple, independently targeted warheads, with 150 kT yields and estimated 6,000 km range). 56

Eastern Forces

The European theater nuclear forces have a somewhat different character than the Alliance. There is certainly less emphasis on SLBM forces, and when compared to NATO, a far greater number of short-range, land-based systems are held by the Warsaw Pact. Even when French launchers are included in the Alliance totals, Warsaw Treaty published figures show an 11:8 to 1 Pact advantage in “tactical missile launch systems west of the Ural Mountains.” 57 The Soviet theater forces, especially battlefield and short-range nuclear systems, hold at risk much of NATO’s critical command, control, and communications capability, airfields, and weapons. With the INF Treaty, however, the bulk of the “quick-strike” weapons that threaten these critical NATO forces (and WTO forces) are being removed.

Nuclear capable missiles systems, after the INF Treaty eliminations, consist of Free Rocket Over Ground (FROG), Scuds, and SS-21s. National numbers for ATTU missile systems are over 1,200 launchers in the Soviet Union and under 400 in the non-Soviet Warsaw Pact, with the numbers decreasing in the NSWP. 58 Older, less accurate FROG forces have been continually upgraded to SS-21 systems (120 km versus 70 km range of FROG) and reorganized into brigades under Army level control in order to take advantage of the faster launch times, increased reliability of the system, and more centralized control. 59

In the artillery area, there are more contentious assessments. The IISS reports a slight Pact advantage in “theoretically nuclear-capable [artillery] weapons” in the Atlantic-to-the-Urals region (5517 Warsaw Pact to 5209 NATO artillery pieces) while Soviet Military Power 1989 reports a 4:1 Pact advantage in the ATTU. 60 The Western European Union reports a Warsaw Pact advantage that has developed in the 1980s, the Warsaw Pact with 3,800 dual-capable systems between 152 and 240 mm versus 1,200 NATO 155 mm or 203 mm artillery systems. 61 With the CFE treaty, reductions in nuclear-capability is inevitable, yet the prospects of the CFE process ameliorating the debate on aircraft and surface-to-surface missiles are dim.
The WTO does not have any forces equivalent in European character to the SACEUR 400 warheads or the French and British SLBM forces. With the announcement by Gorbachev to remove the Golf II submarines from the Baltic Sea, the closest equivalent to a European committed SLBM for the WTO was eliminated.

**Aircraft Systems and Air Power**

As with NATO, the WTO maintains a robust theater level dual-capable aircraft force. The Soviet Union's dual capable aircraft (DCA) work in concert with the conventional air operations to destroy enemy aircraft both on the ground and in the air, dispersal airfields and main operating bases, operational and tactical level missile systems, command and control facilities, and weapon storage areas (both conventional and nuclear). This goal, at the operational level, as with NATO, is to maintain control of the air, i.e., air superiority, in order to provide direct and indirect support to ground operations as part of the "all-services" war. From the Soviet perspective, air operations must address the element of NATO that carries approximately 50 percent of NATO's firepower, the Alliance's air force.

Like NATO, the size of the Warsaw Pact's dual-capable aircraft inventory will probably not be significantly affected by CFE reductions until the older and/or more specialized aircraft are destroyed in accordance with the expected treaty. The Warsaw Pact has 360 Tu-16 Badgers, Tu-22 Blinders and Tu-22m Backfires (excluding approximately 230 aircraft dedicated to naval missions). These aircraft need to be considered theater threats despite their inability to fly the low profile missions of NATO F-111s or Tornados or the Pact's Su-24 Fencers. Although these larger systems are vulnerable to current surveillance systems and interceptors with standoff missiles, these systems make significant contributions to the Soviet capability of holding European targets at risk from bases well within Soviet national territory.

This shift to standoff nuclear missiles for the larger platforms has also occurred in the Su-24 Fencer DCA. This fighter is capable of greater than 24,000 lb payloads of nuclear weapons and a wide range of Soviet air-to-surface missiles (e.g., AS-7 Kerry, AS-10 Karen, AS-11 Kilter, AS-12 Kegler [an anti-radiation missile for defense suppression], AS-13 Kingbolt, the US Maverick-like AS-14 Kedge, and possibly a new nuclear-tipped air-to-surface missile, the AS-16 Kickback). Besides this stand-off missile capability, an increasing number of Fencer aircraft (approximately 500 total Fencers deployed) are gaining air refueling capability. Additionally, the Soviet Union has placed these aircraft under a more centrally controlled structure, specifically "into VGK-subordinate air armies which enhances responsiveness and the ability of the system to meet theater requirements" especially deep-interdiction capability.
Besides an appreciation of weapons capability, knowledge as to the employment schemes of forces is necessary throughout the arms control process. This knowledge contributes to a more effective negotiation process (if, that is, the process is not inundated with esoteric background issues meant to block progress in talks) and ensures the ultimate security of each negotiating party if not unduly compromised. This knowledge of capabilities and employment schemes reminds the arms control process of its potential central role in shaping and influencing the future definition of stability, security concepts, and force structure in Europe, at both a domestic and international level. Even more specifically, this process must attempt to accommodate, and possibly sculpt, the force structure required to defend (NATO or the Warsaw Treaty Organization) against evolving “defensive” military doctrines and associated force structures.

**Air Power—East and West**

One can use the air forces of each alliance as a paradigm to exemplify this critical element of the arms control process. First, examining the doctrine and employment capabilities potential for each alliance, it is evident that while both air forces are organized and tend to place different emphasis on certain missions, the fundamental goals of both alliance air forces have been similar. At the center of their air campaign's “operational art” are the missions of counter-air, air interdiction, and offensive air support.

There are numerous Western documents explaining these missions and their role in combined forces operations. NATO’s airpower focuses on maintaining air superiority and supporting the ground/theater campaign in both a short-warning and prolonged crisis/mobilization scenario. NATO’s tactical level airpower takes advantage of its inherent characteristics (speed, range, concentration of firepower, and flexibility) to accomplish missions common throughout NATO's Tactical Air Doctrine, US Army Operations (Field Manual 100-5), and Air Force Basic Doctrine (US Air Force Manual 1-1). These missions require operations that yield air superiority and stop an enemy offensive by attacking not only the “forces in contact, but enemy forces held in reserve.”

Borrowing NATO Tactical Air Doctrine verbiage, the arms control process is likely more concerned with offensive and defensive counter air operations and the air operations against enemy surface assets than with what NATO describes as tactical transport and supporting air operations (e.g., air refueling, search and rescue, electronic warfare, and suppression of enemy air defense). Offensive counter-air operations attempt to destroy, disrupt, and limit enemy airpower as close to its source as possible. Defensive counter-air attempts to reduce the effectiveness of hostile air action that threaten friendly
forces/installations These counter-air missions stress the advantage of destroying enemy air forces on the ground before they can be a hostile, airborne threat, but at the same time these missions are moderated by political considerations These political considerations enter the airpower employment scheme equation as planning factors addressing the potential provocative nature of the attacks, e.g., could a particular mission lead to an inadvertent attack on the enemy’s tactical nuclear capability and unintentionally escalate the conflict 68

However, these counter-air missions might be moderated by political considerations, their importance to establishing air superiority is in no way diminished. The side possessing air superiority has the freedom to execute all other ground and air operations without fear of significant interference by hostile air forces Conversely, without air superiority the theater campaign will certainly face interdiction type attacks limiting maneuver potential and overall effectiveness of both forward and reserve forces/supplies

Once air superiority is established, prosecution of an effective air campaign against enemy surface assets can begin. This element of the campaign will focus on destroying, delaying, or neutralizing an enemy’s military potential before, and/or, after it enters the battle area. The location of the targets (whether they are outside the battle area, inside the battle area but not in direct contact, or combat forces in direct contact) drives the level of operational air forces/ground forces coordination and integration 69

Although the Warsaw Treaty Organization air forces are most certainly experiencing changes in their doctrine necessary to accommodate a defensive posture (for the Soviet Union, one capable of repelling an aggressor without the advantage of “buffer states”), they have traditionally stressed the importance of airpower in carrying through an initial attack and maintaining the “frontal” size offensive. As with NATO, the “air supremacy” mission is critical, but the support of ground theater operations is also an essential element of the air forces’ charter and focuses on battlefield air interdiction (BAI), Close Air Support (CAS), and tactical reconnaissance, according to traditional Soviet doctrine (and until the new defensive doctrine is developed and forces employed opposing military forces and arms control processes that must also address the older, traditional doctrines) as described by National Defense University consultant Ted Greenwood.

Any Warsaw Pact military offensive in Europe would be initiated by an air operation employing Soviet medium-range ground-attack aircraft, their escorts, and probably short-range ballistic missiles armed with conventional or perhaps chemical warheads. The attacking aircraft would include, most importantly, Backfires and Fencers, but also Badgers and Blinders, belonging to the Soviet air armies under control of the Supreme High Command, frontal aviation, and possibly also Soviet naval aviation. Preparation for such an air operation could be faster
and less obvious than preparation for ground attack. Moreover, if fully successful, it would cripple NATO's airpower and area air defense capability, eliminate NATO's theater nuclear assets, disrupt its command and control, and significantly impede its mobilization for war. NATO's conventional and nuclear capability would be gravely jeopardized. Soviet medium-range ground-attack aircraft and their escorts, therefore, pose the most urgent and the most serious element of the traditional short-warning or surprise attack threat to NATO.

The importance of airpower to the Soviets is further expressed by Dennis Gormley:

Changing force ratios on the ground are surely reason for concern. But they have drawn so much analytic and emotional attention in the West as to overshadow an equally or perhaps even more important feature (in the Soviet view) of the initial period: that of the air war. Put simply, Soviet military planners calculate that success on the ground—tank asymmetries notwithstanding—cannot happen without decisive success first in the air.

The Soviet Union and NATO maintain potent medium-range ground attack/strike aircraft. The Soviets employ Badgers, Blinders, Backfires, and especially Fencers, while the West relies heavily on F-111s and the GR-1 Tornado supplemented by shorter-range F-16s and the French Mirage IVs. These aircraft provide offensive counter-air, deep interdiction, and nuclear strike capability. Despite airpower's significant offensive potential in Europe's military balance, and recalling the mandated objectives of the Conventional Forces in Europe negotiations to strengthen stability and security in Europe through the establishment of a stable and secure balance of conventional armed forces, which include conventional armaments and equipment, at lower levels, the elimination of disparities prejudicial to stability and security, and the elimination, as a matter of priority, of the capability for launching surprise attack and for initiating large-scale offensive action.

It seems unlikely that a negotiated reduction in nuclear strike capability will occur. Current CFE proposals allow reductions without necessarily reducing strike aircraft, and although major combat capability rests with ground force, the importance and potential impact of airpower (especially the DCA) on the dynamics of a military confrontation (or the military balance) suggests their inclusion, if not now in the CFE, then certainly in the next round of negotiations addressing nuclear forces in Europe.

At this juncture, it is appropriate to shift the discussion to the direction taken by the current European nuclear forces. Just what are the modernization efforts and what are the potential constraints on NATO deployment options for US, British, and French nuclear weapons in Western Europe in the wake of the denuclearization wave?
deployment options for US, British, and French nuclear weapons in Western Europe in the wake of the denuclearization wave?

Building Up or Building Down?  
The Politics of Modernization and Disarmament

In arriving at this decision and resolving not to go to war the Lacadaemonians were influenced not so much by the speeches of their allies as by the fear of the Athenians and their increased power
—Thucydides History of the Peloponnesian Wars c 404 B.C

Modernization Between Scylla and Charybdis

To compliment the discussion on current capabilities, a survey of modernization proposals and efforts is needed to appreciate the approaching arms control potential of European nuclear forces and the political variables/drivers of the NATO nuclear program. By the summer of 1989, NATO's debate on the direction of modernization for its nuclear forces seemed resolved by the "Comprehensive Concept of Arms Control and Disarmament." This declaration established a direction and time table for modernization, and firmly linked hardware improvements to a reduction in total weapon numbers. By the fall of 1990, this position had been assaulted by toppling governments in Eastern Europe, a significant reduction in the WTO's military potential, souvenir fragments of the Berlin Wall (some having traveled into the central US), and the impending unification of Germany. All of these events reflect the changes in the military character of what remains of the Warsaw Pact. Despite valiant attempts to maintain this dual-track methodology (modernize in order to reduce), reductions without modernization seem inevitable.

As to the specific modernization efforts, NATO originally programmed improvements for the entire range of nuclear capabilities. The upgrade for the DCA included the addition of F-15E strike aircraft and LANTIRN equipped F-16s. Although DCA systems may be qualitatively improved, quantitative expansion to compensate for a loss of ground-based INF systems is not likely, especially given the decreasing threat and potential CFE mandated reductions.

To lend further credibility to the deterrent capacity of DCA, NATO is pressing forward with a nuclear tactical air-to-surface missile (TASM). The US air-launched Short-Range Attack Missile (SRAM-T), conceptually similar to the current French ASMP, is under development. Receiving $54 million in FY 90 with $118.6 million requested for FY 91, the SRAM-T (equipped with the W91 warhead said to incorporate two potential yields of 10 kt or 100 kt) gives the DCA a stand-off capability to attack targets more quickly from a less
threatening environment, and to strike hardened or relocatable targets at ranges greater than 250 km. The SRAM-T is a strong contender for NATO’s DCA and as a potential replacement (in competition with the ASLP, Air-Sol Longue Portée, a 1,000 to 1,200 km range derivative of the current French medium range air-to-surface missile, ASMP) for Britain’s obsolescent WE177 gravity bombs. However, TASM deployment is still years away. According to officials at the US Air Force’s Aeronautical Systems Division, delivery of operational SRAM-Ts to F-15E units in the US Air Forces, Europe (USAFE) currently are not scheduled until the second quarter of 1995, and at the rate of changes in the political environment surrounding nuclear weapons procurement and planning, much can happen by 1995.

Despite potential controversy, the SRAM-T seems to have the longest half-life. Even in this semester of denuclearization both sides of the issue show support (or at least no vigorous opposition) for an air-launched system with the necessary range allowing strikes on the Russian homeland. Within the US, air-launched systems have broad political endorsement. Besides the US Executive and NATO level support for deploying the shorter-range (shorter than say, the Air Launched Cruise Missile being negotiated in the Strategic Arms Reduction Treaty [START]) missile launched from aircraft, Senator Sam Nunn, chairman of the Armed Services Committee, also argues for the air launched nuclear system, especially as a bargaining chip to accompany the removal of land-based systems in Germany. “Air-delivered weapons allow significantly greater flexibility for military planners, permit basing of nuclear capabilities in several NATO countries, and do not pose the significant security and political problems that accompany systems that have a far more limited range.” A general NATO consensus on the TASM seems to exist. “Military officials and experts say NATO leaders likely will approve a plan to replace the Lance follow-on with TASM because the air-launched missile is less visible, both politically and physically.” Despite this statement, TASM deployment in Germany is still in question. One of the “assurances” President Bush made to President Gorbachev during the May 1990 summit on the issue of German unification, provided for a West German reaffirmation of “its long-stated commitment not to produce or possess nuclear, biological, or chemical weapons.” Acknowledging the concern over unification and the politically sensitive issue of nuclear weapons based in Germany, the FRG’s Foreign Minister Hans-Dietrich Genscher has already stated TASM cannot be deployed in Germany, but air-delivered nuclear gravity bombs would be permitted to serve as a nuclear deterrent based on German soil.

Until May 1990, ground based modernization was centered on missiles with ranges less than 500 km (to comply with the INF Treaty and expand and/or enlarge the missile capability available to a corps level commander) and battlefield artillery. The Follow-on-to-Lance (FOTL) was planned with increased range and reliability so as to hold a wider range of targets at risk.
(e.g., echeloning forces) while at the same time being farther from the forward edge of battle. The FOTL coupled with safer, more reliable, longer-ranged artillery would have, even without a negotiated arms control agreement, allowed reduction in the number of European deployed artillery shells. Programmed improvements for artillery systems (limited to 925 worldwide by a Congressional restriction) stressed increased range (doubling the 155 mm range to approximately 30 km), reliability, accuracy, and safety.

The US endorsement for a FOTL was not unanimous. Before a very skeptical US Congress, SACEUR General Galvin argued FOTL’s virtues and importance to NATO nuclear modernization plans. FOTL provides the capability to attack moving or stationary targets with the SRAM-T emphasizing holding at risk stationary targets, and General Galvin rejected a force posture emphasizing air-launched weapons as negatively impacting NATO deterrent capability. He dismissed that posture because potential nuclear strike aircraft operate from about twenty easily targeted air bases in Europe and still face air defenses which make strike missions “the toughest mission that there is for a pilot today in Europe.” He went on to argue that while popular support for ground-based systems in the FRG is particularly contentious.

The Germans want to be in NATO, and they want to be part of the strategy, and they want to be a decision-maker when it comes to nuclear weapons. And if it [the FRG] doesn’t stay on the team, it might be a little hard to stay in on all the decisions.

Despite these arguments, the US Army Missile Command was soon directed not to issue a final request for proposals from contractors for the FOTL. This was followed, approximately two weeks later, by President Bush’s decision (endorsed by NATO) terminating the FOTL and European nuclear artillery modernization. This action strongly suggests the political environment in Europe is being addressed by Washington and signals a shift toward a less intrusive nuclear presence (e.g., DCA and Sea Launched Continental Missile [SLCM], one with a deterrent potential but without being an intrusive political irritant to NATO governments.

The initial Eastern response to President Bush’s proposal was warmly received, but not without some reservations. TASS military analyst, Vladimir Boyachev, wrote:

The Soviet Union welcomes Washington’s decision to accept, at long last, the Soviet proposal on talks on nuclear tactical weapons. Let us hope that, accepting in principle the Soviet proposal on talks on tactical nuclear weapons and suspending the modernization of land missiles and nuclear artillery, Washington does not intend at the same time to give a go-ahead for the deployment of more dangerous air-based nuclear missiles in Western Europe.
This response focusing on the weapons, does not fully illustrate the complexity of the linkage between weapons and political changes in Europe. A more blunt characterization of the European nuclear forces modernization and arms control debate is expressed by a senior State Department official saying, "Only in the most remote sense is this a military discussion. It is basically a political question about anchoring a unified Germany to Western Europe."  

The longer-range/strategic European nuclear forces seem to endure less political conflict, but are certainly not issue free. Modernization of European "strategic" systems focus on SLBMs. Britain is driving for a new class of Vanguard hulls (four total with two under construction, the Vanguard and Victorious, and a third, the Vigilant, to be ordered in 1990) equipped with sixteen Trident D5 missiles (regularly attributed with eight warheads when deployed according to Strategic Arms Limitation Treaty (SALT) and START counting rules) These 512 MIRV warheads (150 to 600 kt) are a significant increase from their current 128 (40 kt) Chevaline warheads, which are not each independently targetable.

The requirement of four nuclear submarines has long been established by the British Ministry of Defense as the minimum necessary force to ensure one "boat" on patrol to maintain an "acceptable level of deterrence." As in 1988 after the INF Treaty, 1990 has seen dialogue between French and British officials on coordinating nuclear policy. The results, so far, have prompted a British "review of options," and among the options being considered is the cancellation of the fourth British Vanguard class submarine. British officials are also examining the potential of coordinating targeting assignments and patrol schedules for French and British nuclear powered submarine (SSBN)s, and evaluating how this integration might eliminate the need for the fourth British SSBN. The potential for further British and French cooperation in this area of military affairs may be reflected in Prime Minister Margaret Thatcher's statement during a joint news conference with President Francois Mitterrand following President Bush's announcement on the FOTL cancellation, "As independent nuclear deterrent powers we feel we should cooperate more closely on security and defense matters." Beyond these discussions, current UK government policy (based on the 1990 "Defense White Paper") is to continue replacement of the Polaris SLBM system with new SSBNs and the Trident missile.

The French missile refit program is moving forward with five of six SSBNs being equipped with the MIRV M4 (six warheads per missile). Current plans call for the first two Le Triomphant class SSBNs to be equipped with M-4 missiles (six MIRV warheads) and the third and subsequent boats would carry the twelve warhead M-5 SLBM.
The upgrades to the intermediate range, silo-based, system on the Albion Plateau (a new S4 missile) no longer receive the priority resources so that the sea-based systems can stay on track in this time, even for France, of tight defense budgets.

France's new Hadès missile system is programmed to replace the Pluton regiments by 1992. This 500 km range surface-to-surface tactical nuclear missile will maintain the capability to support the French deterrent concept of the "prestrategic strike." With a variable yield warhead that will be limited to 80 kt and a range just under the INF Treaty limits, the Hadès will be deployed, beginning in 1992, as a division consisting of three regiments, each with five batteries for a total of sixty launchers. The first regiment is to be activated at Suippes in northeastern France followed by a regiment garrisoned in Mailly. The launcher systems will be disguised to resemble a typical European transport semi-trailer with each launcher capable of firing two missiles equipped with the variable yield TN90 warhead. France still insists there will be no significant change in the deployment of this system and no chance it will come under the umbrella of any arms reduction discussions, but, according to a late 1989 report from the French Senate's defense committee, the deployment of the third regiment is under review.

Despite the solid French stand, the Soviet Union is continuing to press for early "SNF" negotiations to include the French short-range nuclear weapons, a proposal not likely endorsed by the Alliance.

**Reductions and Disarmament?**

With the "Gramm-Rudmann-Hollings-Gorbachev" driven budget, and changing European environment, it is almost certain the Alliance's earlier modernization goals will not be realized. An increase in the number of DCA is doubtful, although there is the possibility of older systems being removed and replaced by newer, more capable systems, e.g., F-104s replaced by F-16s. President Bush's cancellation of European nuclear artillery modernization and the FOTL are but the first in a series of steps to significantly reduce nuclear weapons in Europe. The artillery weapons, even with improved range, face a public perception of a "use it or lose it" deployment posture and potential targets of other Alliance countries and the emerging democratic countries of Eastern Europe.

The political and emotional arguments against short-range battlefield systems have been complimented by military critics addressing planning factors and procedures for tactical nuclear employment. There are considerable difficulties in maintaining and balancing the use of these weapons in a tactically effective manner and, at the same time, ensure escalation control, "decisive use," or maintain Alliance cohesion during the
consultation process that appears to be "ill-suited to deal with the tactical uncertainty inherent in a request to release these weapons." These types of arguments, when considered with the emotional and political sentiment found in Europe, will probably force the removal of a significant amount of the Alliance's battlefield nuclear capability, and cut short most of NATO's modernization plans.

These hurdles to modernization were not recognized in the original US research and development budget request for FY 91. This Department of Defense request included a 247 percent increase (to $112.2 million) for the FOTL and a 117 percent increase (to $118.6 million) for the SRAM-T. The funds were requested when it was highly unlikely any ground-based missile system or artillery would be deployed in Europe, especially recalling the statements made by European members of the Alliance. Additionally, Congress, under severe budget constraints, has, and will continue to attack these increases and attempt to influence weapon system choices and arms control propositions. This pressure, from both Congress and the exigency of a unified Germany in NATO, certainly contributed to President Bush's termination decision well before any SNF arms control negotiations or a CFE agreement.

These impediments to a decision on the course of nuclear weapons modernization, coupled with a declining threat will, at least, give NATO a wider margin for tactical deployment errors and arms control negotiations. Even a third zero that removes the significant WTO advantage and lessens the threat against NATO's airfields (in conjunction with conventional forces postured at a negotiated parity), could be supported. The trend for modernization seems to be summed up by a statement written in 1988 by authors discussing the impact of the INF Treaty on the defense structure of NATO.

Given current sentiments about nuclear weapons among allied publics, the most that NATO probably can hope to do with regard to nuclear forces in Europe is to avoid a further slide toward denuclearization.

The Warsaw Treaty Organization nuclear capability was growing and improving until 1989. The Defense Intelligence Agency released figures to Senator John McCain (R-AZ) reporting an increase from 3,780 to 8,095 nuclear capable artillery pieces for the period 1980-1989. In the same period, SS21 launchers went from five to 195 with the total Warsaw Pact nuclear weapons increasing from 7,994 (1980) to 12,315 (1989). Despite recent improvements and growth in the number of systems, the trend line is on a decline for the Warsaw Pact nuclear forces. Withdrawal of Soviet nuclear forces and capabilities from the Pact countries and certain Soviet republics is occurring. What is being done is a redeployment of weapons and not a shrinking of nuclear capability.
The Soviets Building Down?

For the Soviet Union, denuclearization proposals reinforce their preference for a lower nuclear weapons profile in Europe along with the implicit loss of nuclear capability and requirement for some substantial, asymmetric reductions. Arms control initiatives are certainly influenced and driven by the substantial internal Soviet debate on the burden of defense on the Soviet economy. There appears to be recognition by the civilian leadership that past Soviet military threat assessments and resulting force postures (or, using Soviet terminology, their measurement of the "correlation of forces") exceeded the Soviet Union's needs and economic capabilities by a debilitating margin.

The predominant disarmament position on theater nuclear weapons espoused by the Soviet Union has been for a third "zero," where the first two "zeros" referred to the two classes of missiles eliminated with the INF Treaty and the third zero represented SNF weapons. In 1981, Brezhnev called for the elimination of all nuclear weapons from Europe, as did Gorbachev in 1986, but new Soviet thinking on the concept of a minimum nuclear deterrent in Europe seems to be emerging. This may suggest a Soviet concern that conventional parity and defensive doctrine without some nuclear capability makes conventional war appear that much more calculable, and with the loss of its buffer territories and expansive land borders, a denuclearized Soviet Union might not be more secure.

In April, 1989, then Marshal of the Soviet Union Sergi Akhromeyev, argued against FOTL and the French Hadès system. He saw these systems, with ranges just under the 500 km INF lower limit, running counter to the spirit of the INF Treaty and representing not modernization efforts but an actual "build-up of nuclear might." Akhromeyev called for talks between the alliances to drastically reduce current inventories of theater level nuclear weapons to include land- and air-based missiles, aerial bombs, and artillery shells.

Soviet Deputy Minister Karpov, as reported by TASS, considers a gradual withdrawal of tactical nuclear weapons an appropriate goal given the expected breakthrough in conventional arms reductions. He also noted complete elimination of tactical nuclear weapons is the Soviet preference, but for now they are ready to reduce and not eliminate weapons, as an appropriate intermediary step.

The former Soviet ambassador to the FRG, member of the Supreme Soviet, and a key adviser to President Gorbachev, Valentin Falm, has said the Soviet Union "does not rule out" a phased reduction of tactical nuclear weapons, and a report from the Soviet Institute of Europe of the USSR Academy of Sciences even posits a treaty that allows 500 to 1,000 European-
based nuclear warheads. This idea is not very far from a NATO nuclear force posture proposed by Hans Binnendijk, the editor of the IISS journal, Survival. His alternative suggests significant reductions in conventional arms that creates parity on the ground and the acceptance of a less flexible and more existential/general deterrence (possibly bolstered by the expanding French and British SLBM capacity) based on 1,000 air-delivered weapons (stand-off missiles and gravity bombs). The third zero is then negotiated eliminating the ground based missile systems which lead to the removal of nuclear artillery driven by German political forces.

In a Pravda piece, Karpov further reminds the reader of the Soviet's unilateral removal of 500 nuclear warheads from allied territory (166 air-launched warheads, 50 artillery warheads, and 284 missile warheads) in 1989. "The USSR is not modernizing or replacing its tactical nuclear missiles and intends, in the event of an accord [i.e., CFE] on beginning talks, to embark on further major unilateral reductions in tactical missiles in Europe." This was followed by Foreign Minister Eduard Shevardnadze's announcement that the Soviet Union would withdraw 60 tactical missile launchers, 250 atomic artillery units and 1,500 nuclear warheads from Central Europe.

Whether this stance is making a virtue from a necessity (given the major level of negotiated withdrawals of Soviet forces from the NSWP countries), or is just tied to their negotiation tactics, remains to be seen.

Building Down in the West

The debates and arguments on nuclear weapons in Europe are subject to the vicissitudes of the revolutionary political changes in Eastern Europe and the Soviet Union, and the concurrent reduction in the military threat associated with the Warsaw Pact. Within the Alliance there is a general trend supporting some modernization and concurrent bilateral arms control agreements. But this approach must also consider the various elements of NATO security to include dynamic conventional and nuclear capabilities, a degenerating threat, and maintenance of Alliance political cohesion. It is an involved and complicated process that greatly affects the fabric of European security and suggests the importance of a political consensus to ensure that the stability and security objectives of arms control are effectively prosecuted. There is evidence NATO does appreciate the "cohesion" element of the security and disarmament question.

NATO's Nuclear Planning Group, meeting at the Ministerial level, released a communiqué in October 1989, reaffirming the Alliance commitment to the ideals of the Harmel Report and the need to "keep NATO's nuclear forces responsive, survivable and effective across the required spectrum of ranges at the lowest possible levels consistent with our security requirements," and at the same time noted, "that the removal of the
imbalance in conventional forces would provide scope for further reduction in the sub-strategic nuclear forces of NATO, though it would not obviate the need for such forces."  

The specific sentiments expressed by individual countries, however, tend to be slightly different from the tone established by the NPG's communiqué. Although overshadowed by the debate and discussions on German unification, open argument on the future direction of the European nuclear forces has become more prevalent. The topics tend to focus on the issues of modernization and reduction of forces, and certainly not strategy or tactics. The center of the political controversy rests in West Germany. Once the political forces get a hold on the unification process, nuclear arms will resurface as a contentious point of debate and division throughout the European political environment.

Within the FRG there is growing popular opposition to nuclear capable artillery and short-range nuclear missiles. A similar concern on aircraft does not seem prevalent, presumably because of the greater range capability that places potential targets for those weapons more on the attacker's territory. In December 1989, German Foreign Minister Hans-Dietrich Genscher discussed future disarmament directions and admitted the need for nuclear weapons as a deterrent, but added that he could not "imagine anyone could still propose to acquire new short-range missiles, which are only aimed at the democratized German Democratic Republic, Czechoslovakia, or at Poland, and, as noted earlier, nor could he support TASM deployment in Germany. Such statements by NATO as, "Short-range nuclear weapons are not aimed at the Poles or the Hungarians. They're aimed at attacking armies," are very accurate and do try to convey an objective or apolitical perspective on the topic, but these pronouncements fail to contradict the popular/emotional element of the debate.

West German Defense Minister Gerhard Stoltenberg's earlier pronouncement that reduced nuclear forces would be discussed by the three nuclear powers in Western Europe shifted in March 1990. Now, according to Stoltenberg, German unification and the subsiding East-West tensions dictate the removal of all nuclear artillery. Even Mrs. Thatcher has come to accept that short-range nuclear weapons, including artillery, should be phased out. General Galvin, SACEUR, has characterized the deployment of a pre-positioned Lance in Britain as not politically tenable, and the Chairman of the NATO Military Committee supports the reduction of short-range nuclear forces, after a CFE agreement.

The earlier US position was a commitment to the "Alliance decision" on modernization, and deployment decisions to occur after CFE. President Bush, in June 1989, said the US would agree to "lower, equal, and verifiable" levels of short-range nuclear missiles, but some short-range nuclear weapons...
would be required for a credible deterrent "for the foreseeable future." By May 1990, as noted earlier, the political climate led the Bush administration to terminate FOTL and stop modernization of European-based nuclear artillery.

A potential hurdle to reductions is the French government's stance on nuclear forces and their role in the grand strategy of the Fifth Republic. They express concern on the preponderance of WTO tactical weapons that need to be eliminated before any Alliance reduction is considered. France also supports NATO's commitment to the possibility of negotiations on short-range theater nuclear forces, but France's "deterrence is a global deterrence, its character is strategic and our pre-strategic weapons cannot be separated out from this concept." Current policy pronouncements suggest French nuclear aviation and SLBM forces, and all short-range weapons are excluded from future negotiations. "At the present state of affairs, France will never accept the inclusion into negotiations of her deterrent force which is minimal and which has, essentially, a political and stabilizing role."107

France does, however, enthusiastically support reduction in the US/USSR strategic arsenals as, "the reduction of these two nuclear Himalayas constitute for us the real priority on the arms control agenda."108 Given the strong national support for their strategic and pre-strategic forces, it seems doubtful any unilateral reductions will occur in France. If any significant changes in French modernization efforts or nuclear policy and strategy do occur, they will be generated at the highest executive levels of the French Fifth Republic and precipitated by reductions in US and Soviet strategic arms, reductions well beyond the numbers available under START.

Much like the French, the UK argues that if the US and USSR were to make substantial cuts in their strategic arms and no significant improvements in Moscow's ABM capabilities were to occur, they would certainly contribute to arms control given the change in threat. As expressed in Britain's 1990 "Defense White Paper," "Reduction in US and Soviet strategic arsenals would have to go much further before we could even consider including the British deterrent in any further negotiations on strategic nuclear weapons."109

NATO's continued "dual-track" commitment to modernization and discussion on short-range nuclear force reductions after a CFE agreement might just be "overcome by events." The scales of modernization and arms reductions are tipping in the direction of reduction, without continued modernization. The lessening threat may very well force an Alliance decision to reduce the number of theater warheads from 4,000 to 1,000 (mostly aircraft delivered) without the assurances and security of a negotiated agreement.110

Although NATO's specific direction is to develop a military strategy consistent with a reduced reliance on sub-strategic nuclear weapons once a
Although NATO’s specific direction is to develop a military strategy consistent with a reduced reliance on sub-strategic nuclear weapons once a CFE agreement is signed, the US and the Soviet Union should begin negotiations to reduce the number of SNF. After these negotiations begin, the Alliance will propose, in return for reciprocal action by the Soviet Union, the elimination of all of its nuclear artillery shells from Europe.”

Conclusion

_We are not dealing simply with a military or scientific problem but with a problem in statecraft and the ways of the human spirit._

—Report on the Control of Atomic Energy 1946

The momentum for reductions in European nuclear forces is substantial. The “intent” variable of the deterrent equation is making modernization of NATO’s nuclear forces politically risky, especially in this time of rapid change in European governments. Threat perceptions have dropped to levels which encourage the citizens of Europe to truly question the utility of a theater nuclear capability.

On the other hand, the “capability” element of deterrence is more problematic. Force reductions and posture changes have all but eliminated the quick-strike threat of the Warsaw Treaty Organization, but even with a CFE Treaty and its inherent reductions, there will remain in Europe a great military capability, especially nuclear.

The prospects for maintaining deterrence and escalation control could certainly be served by a lower balance of theater nuclear forces. The economic, political, social, and demographic forces all suggest a significant shrinking of military capability throughout Europe and an equilibrious deterrent equation. The best, most secure path to effect this reduction is a negotiated treaty with appropriate levels of verification designed to confirm and validate the status of treaty limited items, but even with a verifiable reduction in capability, the potential for conflict is not eliminated, it is only reduced. Cognizance of this dilemma is demonstrated in pronouncements from the East and the West, and is highlighted by the West’s continuing commitment to some (specific numbers and types of weapons still to be determined by NATO’s NPG) nuclear deterrent, albeit greatly reduced and certainly less “flexible,” and the Soviets backing away from an earlier commitment to a “third zero”.

The paths to these reductions may either be negotiated or unilateral. Weapons with lessening relevance, e.g., artillery, are prime candidates for unilateral reduction, if the numbers are small. As the weapons relevance or
combat potential increases (or the raw numbers involved become too militarily significant) negotiated agreements offer important advantages over unilateral reductions, e.g., verification provisions, ratified treaties make reversals to previous force postures politically more difficult, and negotiated agreements have a stronger potential for channelling reductions in a direction contributing to increased stability. As the security risks and costs rise, so should one's caution and deliberateness.

The scope of the next bilateral (or multilateral) talks will most likely address ground-based missile systems, especially if a verifiable weapon-to-launcher ratio is established. This area holds the greatest potential for significant and verifiable reductions. Negotiating the battlefield and/or theater level missiles implies an asymmetric reduction by the Soviets and also offers the potential to exclude the French systems from negotiations, at least until a more equivalent level of parity is reached in this particular weapons arena. For the West, reductions in these Soviet systems would lower the risk from preemptive attacks and contribute to a mutual shift to a "minimum deterrent" based on air-launched systems augmented by existential sea-based systems and aircraft. This greater-than-zero objective for the negotiations, while making verification more difficult (i.e., when compared to verifying destroyed missiles as under the INF Treaty) does maintain some potential for maintenance of a "flexible response," albeit one explicitly and implicitly modified from the current version.113

Likely advantages for the Soviets are a bit more problematic, but do exist. An agreement leading to a phased reduction of Soviet battlefield missile capability does not, at first, seem likely because of the asymmetry involved, but when one considers the Soviet drive for "reasonable sufficiency," certain coherent objectives emerge. An agreement would reduce the number of nuclear weapons and possibly lead to savings through reductions in conventional forces, outside of CFE. A more important objective might consider this treaty as a means to moderate western European nuclear force modernization and "decrease incentives for the creation of an independent Western European nuclear force structure."114 Additionally, Soviet reductions have a somewhat moderating (some say weakening) effect on NATO's political cohesion (possibly NATO's greatest asset) by increasing the contentious debate on Flexible Response, FOFA, and Forward Defense.115

As to the remainder of European nuclear forces, reduction will be moderated by a variety of concerns. First, there is a general consensus against a totally denuclearized Europe. Motives for this position range from fears of conventional deterrence failing to make the risk of war incalculable, to national perceptions that the capacity to deploy nuclear weapons is a significant testimony of power and influence. Second, the changing threat and the public perception of the threat suggests a nuclear force posture significantly smaller, but one with a credible delivery capability, recalling the
significantly smaller, but one with a credible delivery capability, recalling the words of Under Secretary of Defense for Policy, Paul Wolfowitz, “Under the new conditions we face today, a greater reliance on dual-capable aircraft and sea-based systems would be appropriate,” and, as expressed in *Soviet Military Power 1989*, “if large numbers of deep-strike aircraft such as Fencers and Backfires are actually removed from the inventory, destroyed or placed in non-flyable storage (and not just re-based), the Soviet ability to conduct offensive operations will be reduced.”¹¹⁶ This nuclear force posture, representing the increasing influence and significance of British and French nuclear forces, will provide a deterrent capability anchored in a redefined concept of Flexible Response, MC 14/4. The development of this nuclear force posture should include a negotiated arms control process to equalize capabilities at significantly lower levels and make reversals to previous force levels more politically difficult.
Notes


2 Aircraft are also emerging as the likely center of theater level nuclear forces in Europe As expressed by Under Secretary of Defense for Policy, Paul Wolfowitz, "Under the new conditions we face today, a greater reliance on dual-capable aircraft and sea-based systems would be appropriate” “NATO Review of Nuclear Forces Centers On Tactical Air-to-Surface Missiles,” Aviation Week and Space Technology, 14 May 1990, p 29

3 Most of the reductions came by phasing-out Honest John missiles in Turkey and Greece, removing Atomic Demolition Mines (ADM) from Italy and Germany, eliminating Nike-Hercules air defense missiles, and reducing the number of artillery shells


5 Soviet Foreign Minister Eduard Shevardnadze has also announced the unilateral withdrawal of 60 of the 1,400 tactical nuclear missile launchers currently stationed in Central Europe, more than 250 nuclear-capable artillery pieces and 1,500 nuclear warheads Whether or not these figures include Gorbachev’s 1988 reduction proposal items remains to be seen Thomas L Friedman, “Soviets Promise to Pull Back Some Tactical Nuclear Arms,’ New York Times, 6 June 1990, p 10


7 German unification is a powerfully influential driver of actions in Europe Commitments to unification are found in both the FRG’s Constitution and NATO's Brussels Treaty In 1954 with the invitation of the FRG and Italy "to accede to this Treaty” NATO changed its preamble to read “ to promote the unity and to encourage the progressive integration of Europe” A similar theme is expressed in the preamble to West Germany’s
Constitution “The German People have also acted on behalf of those Germans to whom participation was denied. The entire German people are called upon to achieve in free determination the unity and freedom of Germany.” Stanley R Sloan, NATO’s Future Toward a New Transatlantic Bargain, (Washington National Defense University Press, 1985), pp 211-212 and Ronald J Bee, Access Resource Brief German Unification, March 1990, p 1. Two recent articles, one by a RAND Corp analyst and another by the diplomatic correspondent for the German weekly, Die Zeit, are excellent introductions to the unification question. See Ronald D Asmus, “A United Germany,” Foreign Affairs, vol, 69, no 2, Spring 1990, pp 63-76, and in the same issue, Christoph Bertram, “The German Question,” pp 45-62.


9 Although a formal arms control agreement, one that yields a verifiable regime and truly limits the number of arms, could produce a new condition of security and stability in Europe, it has not happened yet. Whether the arms control process is fast enough to accommodate the changing security environment is a debate outside the range of this paper. See former ACDA Director Kenneth Adelman’s and retired Admiral Gene La Rocque’s writings in the Washington Times (8 February and 28 February 1989 respectively), Kenneth Adelman (New York Times, 5 December 1989, p 25), and John Mueller, “A New Concert of Europe,” Foreign Policy, (Winter 1989-1990, pp 3-16) discuss this problem in today’s arms control arena. For support of the arms control process, see Joseph S Nye Jr, “Arms Control After the Cold War,” Foreign Affairs, (Winter 1989-1990, pp 42-64) and Matthew Bunn, “Arms Control’s Enduring Worth,” Foreign Policy, no 79, (Summer 1990, pp 151-168). Secretary of Defense, Richard Cheney suggested that unilateral Soviet force reductions, before the completion of the ongoing CFE talks, would likely elicit comparable responses from the West. Patrick E Tyler, “More Troop Cuts Possible In Europe, Cheney Says,” Washington Post, 27 November 1989, p A5.


12 Ibid, pp 429-439. Additionally, Reuters News Service quoted a “senior Alliance official” speaking at the 24-25 April 1989 NATO Nuclear Planning Group ministerial meeting in Portugal, “the deeper those conventional cuts are, the more impact it will have on our nuclear force posture.” NATO’s
High Level Group was also tasked to investigate the implication of a CFE treaty for the alliances nuclear posture.


15 Interview with Jean-Pierre Chevènement, "Non-acces de l’Allemagne aux armes nucléaires," Le Point, 8 January 1990, p 3


17 Mikhail Gorbachev, speech presented to the UN General Assembly on 7 December 1988, excerpts printed in Survival, March/April 1989, p 171


19 In characterizing NATO's accomplishments for 1953-54, JCS Historian, Robert J Watson writes At the beginning of 1953, the North Atlantic Treaty Organization, so hopefully launched less than four years earlier, seemed almost at dead center The problem that it faced was identical with the one that, in the view of the Eisenhower administration, confronted the United States The elements of the problem were the rising cost of military establishments, the pressure of demands for government expenditures for other purposes (or for lower taxes), the overwhelming numerical superiority of the communist countries in conventional military forces, and the unwillingness of Western governments to urge upon their citizens the need to bear a heavier burden of military costs No doubt it would have been extremely difficult for any set of US Government leaders to galvanize the European NATO countries to the effort needed to meet the Lisbon force goals The Eisenhower administration, committed to a general reduction in US forces, was in no position even to make an attempt Given this situation, there was no alternative to striking out in a new direction—trying a new approach that would make better use of the money and manpower the NATO powers were willing to contribute The advance of nuclear technology,
spawning both the enormously destructive hydrogen bomb and the smaller weapons available for tactical use, pointed in the direction that was to be taken by both the United States and the North Atlantic Treaty Organization.”


20 Strategy Of Flexible Response “The basis of this concept is that NATO should be able to deter, and if necessary, counter military aggression of varying scales in any region of the NATO area, thus can be secured only through a wide range of forces equipped with a well-balanced mixture of conventional, theater nuclear, and strategic nuclear weapons. The purpose of this balance of forces, while retaining the principle of forward defense, is to permit a flexible range of responses combining two main capabilities to meet any aggression by direct defense at a level judged to be appropriate to defeat the attack and be prepared to escalate the level deliberately, maintaining firm political control, if defense at the level first selected is not effective. An aggressor must be convinced of NATO’s readiness to use nuclear weapons if necessary, but he must be uncertain regarding the timing or the circumstances in which they would be used. However, selective use of nuclear weapons could not be deferred until NATO’s conventional defenses were completely defeated, since it would then be impossible to maintain a cohesive defense and to exploit the advantage gained by the use of the weapons. A substantial number of conventional and theater nuclear forces must be deployed in forward areas, prepared for adequate response, and its capacity to mobilize, reinforce and deploy in time of tension and crisis, are the foundations of this policy.” NATO Information Service, *The North Atlantic Treaty Organization: Facts and Figures*, (Brussels, 1981), pp 139-140


22 To underscore “de Gaulle’s Fifth Republic determination to employ its conventional and nuclear forces independently of NATO’s SACEUR or its allies,” and for a number of other reasons, France withdrew from NATO’s integrated military command structure, although less formal military


25 This element of NATO's military force employment planning is being further complicated by the revolutionary changes in Europe. Just where does the Alliance draw the "forward line of defense?" Should NATO maintain its current defense lines or, after German unification, shift the planning goals to the Oder-Neisse Rivers? Given the level of force reductions occurring unilaterally and likely under the CFE, can NATO even maintain a "forward defense" posture with an adequate force-to-space ratio? While this topic is receiving considerable attention, it is beyond the scope of this work. For a short, but very thorough introduction and survey of the topic of force balances and dynamics, see Natalie J. Goldring, The Conventional Balance: How Far Beyond the Bean Count Are We? (Washington Defense Budget Project, June 1989), 84 pages.


28 Gordon, p. 12.

29 Michael R. Gordon, "NATO Ponders Troop Mix in Europe," New York Times, 1 December, 1989, p. 12. NATO is itself considering "evolutionary changes" to forward defense and the role of FOFA in "a thinned-out battlefield." The various policy organs of NATO are evaluating the threat, examining alternative strategies and operational concepts, and evaluating their impact on readiness, weapon systems development/acquisition, force readiness, exercise requirements, and force structure, e.g. multinational corps. Theresa Hitchens, "NATO Chiefs May Refine Forward Defense Plan,"

30 The impact of demographic trends cannot be overlooked by military planners and political leaders managing or negotiating for reduced forces Roger L L Facer, Conventional Forces and the NATO Strategy of Flexible Response, Santa Monica, Calif RAND Corp , R-3209-FF, January 1985, referenced the 1979 German Defense White Paper that warned of a 60,000 shortfall in conscripts by 1990 More recently, other articles have highlighted the influence of demographic declines driving force structure changes, active/reserve mix changes, etc, especially in the FRG See Henry Owen and Gen Edward Meyer, Central European Security,” Foreign Affairs, vol 68, no 3, (Summer 1989), Gen Klaus Naumann, “The Restructured Bundeswehr,” NATO s Sixteen Nations, vol 34, no 6, (October 1989), pp 31-33, and Mark Galeotti, “Ethnic clashes on the inside,” Jane’s Defense Weekly, 14 April 1990, pp 698-699 Additionally, Professor Sam C Sarkesian examines “ the demographic component of strategy and its long- and short-term impact on existing power relationship” He highlights problems not only in the FRG, but also the US and USSR in “The Demographic Component of Strategy,” Survival, vol 31, no 6, (November/December 1989), pp 549-564


32 Ibid


34 Ibid, p 103

35 Department of the Air Force, Air Force Basic Doctrine (Air Force Manual 1-1), 4 August 1989 (Draft), p 18 and Department of the Army, Operations (FM 100-5), May 1986, p 3 To further realize the dilemma of the “dual,” i e , political and military nature of nuclear weapons employment see,


37 'London Declaration on a Transformed North Atlantic Alliance" Issued by the heads of state and government participating in the meeting of the North Atlantic Council on 5-6 July 1990, *NATO Review* no 4, August 1990, pp 32-33


41 In August, 1987, the agreement to destroy Soviet and US intermediate-German Pershing IA missiles that carried US controlled nuclear warheads To address this unease, Chancellor Kohl committed the FRG to dismantle the 72 Pershing IA missiles if the US and USSR eliminated all of the proposed systems and comply with the terms of the treaty So we find (somewhat buried) in the ratified treaty between the US and the Soviet Union a statement on the "Protocol on Procedures Governing the Elimination of the Missile Systems Subject to the Treaty," paragraph II.9 "During the last fifteen days a party shall withdraw to its national territory re-entry vehicles which, by unilateral decision, have been released from existing programs of cooperation and eliminate them during the same time frame in accordance with the procedures set forth " US Department of State, *Treaty Between the United States of America and the Union of Soviet Socialist Republics on the*
Elimination of Their Intermediate-Range and Shorter-Range Missiles, (Washington Department of State, December 1987), p 44

42 See Strobe Talbot, Deadly Gambits The Reagan Administration and the Stalemate in Nuclear Arms Control, (New York Vintage Books, 1985), pp 78-79, for the policy debate on terminology to describe the developing arms control focus, theater nuclear forces versus intermediate-range nuclear forces, or as the Soviets once argued, "medium-range systems in Europe"

43 US Department of Defense, Soviet Military Power Prospects for Change 1989, (Washington GPO, 1989), p 52 NOTE Given such variables as attrition due to conventional operations, placement of carrier in relation to targets/target packages, and the fact that not all dual-capable aircraft and crews are actually trained and certified in nuclear weapons delivery techniques, the availability of DCA would be very situational dependent

44 The Low Altitude Navigation and Targeting Infrared for Night (LANTIRN) is an integrated navigation and ground attack targeting system employing two pods mounted externally beneath the fighter-bomber This system increases the combat capability of the aircraft by expanding the operations envelope The navigation and targeting pods allow lower flight altitudes (e.g., 200 feet above rough terrain at speeds greater than 600 MPH) in adverse weather or night operations and improved air-to-surface attack ability with precision guided and unguided munitions David Fulghum, "The decade of night fighting is just beginning," Air Force Times, 19 February 1990, p 22 and US Air Force, "Fact Sheet LANTIRN," no 87-38

45 Arms Control Association (ACA), 'Fact Sheet US and NATO Nuclear Weapons in Europe without INF," January 1989


47 Joint Chiefs of Staff, 1989 Joint Military Net Assessment, (Washington Department of Defense, June 1989), p 4-4

48 IISS p 216, 225(n)


51  “Britain, France Raise Concerns About Cuts in Combat Aircraft,”
*Aviation Week and Space Technology*, 5 June 1989, p 20  Range estimated on
the ASMP to be 100 km to 300 km with warhead yield of 300 kT

52  IISS, p 52

53  IDDS, p 403 E 6

54  The IISS lists 32 Pluton launchers in the French Army, while SIPRI
lists 44 missiles and 70 AN-51 warheads in the French stockpile  SIPRI, *SIPRI

*Defense and Diplomacy*, June 1990, p 29

Weekly*, 23 June 90, p 1,259

57  Warsaw Treaty Organization, “Statement by the Committee of the
Ministers of Defense of the Warsaw Treaty Member States,” 30 January 1989,
p 5

58  Arms Control Association, “Fact Sheet Nuclear Missiles Deployed in
Europe After INF,” May 1989

59  US Arms Control and Disarmament Agency, “Issues Brief Short-
Range Nuclear Forces,” 5 May 1989, and IISS, p 29

60  See IISS, p 214-215(n) and *Soviet Military Power, Prospects for Change

61  Western European Union, Committee on Defense Questions and
Armaments, “Force Comparisons (NATO and Warsaw Pact military
potential),” 6 November 1989, p 14

62  Bill Keller, “Gorbachev Plans to Destroy His A-Armed Subs in Baltic,”
*New York Times*, 27 October 1989, p 10  NOTE  A potential wrinkle in this
development is an earlier report from Danish and Norwegian defense
officials on the deployment of Soviet Yankee class submarines rearmed with
SS-N-21 cruise missiles operating in the GIUK gap and closer to Europe
Their patrol patterns and range of the weapons involved suggest their pre-
planned target package is Western Europe Julian Isherwood, “Scandinavians
Say Soviets Used Hole in INF Treaty to Cover Ground Targets,” *Armed
Forces Journal International*, September 1989, p 28


IISS, p 28, and *Soviet Military Power 89*, p 69

The "operational art" applies to the level of warfare planning and execution between national strategy and the tactical level where the opposing forces meet. The operational level concentrates on the question, "How to achieve the strategic ends of the war with the forces allotted?" It is the level of warfare that plans for the employment of forces during a war's campaigns. This idea, as it applies to air forces, is developed and clearly presented in John A Warden, III, *The Air Campaign*, (Washington National Defense University Press, 1988)

US, Department of the Army, FM 100-5, *Operations*, (Washington Department of the Army, 1986), p 47

NATO, Air Board, Military Agency for Standardization, ATP-33(B), *NATO Tactical Air Doctrine*, (n p, November 1986), p 4-2

NATO's Tactical Doctrine refers to air interdiction as attack on targets at such a distance from friendly forces so as not to require close coordination. Battlefield air interdiction involves targets in the battle area without direct contact and may not require continuous coordination as opposed to close air support's (CAS) concern for hostile targets in close proximity to friendly forces requiring detailed integration of each air mission/sortie. Ibid, p 5-2. This description, somewhat, belies the complexity of tactical airpower and its control. See Col Clifford R Krieger, "Air Interdiction," *Airpower Journal*, vol III, no 1, Spring 1989, pp 4-15 and subsequent comments by Col Krieger and Lt Col Price T Bingham, "Fire/Counterfire," *Airpower Journal*, vol 3, no 3, Fall 1989, pp 86-90 For a short description of the development of


71 Gormley, p 159


According to the Congressional Research Service, the SRAM-T has "a post-launch range of approximately 400 km." US, Congress, Senate Committee on Foreign Relations, NATO At 40, C Rept, 1989, 101st Cong., 1st sess., p 21


75 Jacques Isnard, "France lines up ASLP for RAF," Jane's Defense Weekly, 21 April 1990, p 728


An outline for a potential joint air force is said to be circulating among NATO and British defense authorities. It proposes a squadron of US F-111s or F-15Es, and two other squadrons of Tornados, one British and one German. As suggested in the article, 'West Germany's involvement in the new air wing would ensure that Germany does not become denuclearized, does not become tempted to develop a nuclear weapon of its own, and maintains direct ties to NATO's two nuclear


80 David F Bond, “NATO Commander Presses Congress for Lance Missile Replacement,” Aviation Week and Space Technology, 12 February 1990, p 33

81 Ibid


Charles Miller and Michael J Witt, “Critics Knock U K Defense Budget,” Defense News, 9 April 1990, p 61 This shift to the Trident D5 system will significantly increase the UK’s target coverage of the Soviet Union’s economic base Current systems could potentially destroy 5%, with the D5 Britain will have the potential “to incapacitate up to half of the Soviet production base” John Prados, Joel S Wit, and Michael J Zagurek, Jr, “The Strategic Nuclear Forces of Britain and France,” Scientific American, vol 255, August 1986, p 36


89 Lt Colonel John S Westerlimd, US Army, "The French Army of the 1990s," *Military Review*, vol 70, no 2, February 1990, p 44 and Jacques Isnard, "French Missile's Yield Revealed," *Jane's Defense Weekly*, 23 December 1989, p 1,359 There is some opposition to the Hadès The former chairman of the Defense Committee in the French National Assembly supports the warning/retaliation role of nuclear weapons, but argues against the short-ranged Hadès and " advocated the idea of another land or airborne defense component, one with enough range and precision to reach military forces inside the Soviet Union, the only power with an arsenal that poses a threat to France." Francois Fillon, interviewed by *Liberation* (Paris), 6 February 1990, pp 6, 7 and reported in *FBIS-WEU-90-066*, 5 April 1990, p 15 Additionally, French President Mitterrand has admitted the Hadès has " the clear disadvantage of not being able to reach territory beyond the new democracies which have just been established in Europe " No author, "Hadès to go ahead but fewer deployed," *Jane's Defense Weekly*, 28 July 90, p 102


92 For a short, but authoritative attempt to present another side of the debate on artillery's "use or lose" imperative and questionable tactical survivability see John M Weinstein, "NATO Should Modernize Its Nuclear Artillery," *Arms Control Today*, March 1989, p 28 He argues that the SNF forces, especially the artillery, "are among NATO's most survivable assets" given any realistic strategic warning and subsequent weapon dispersal In addressing the "use or lose" dilemma he states, " it strains credulity to think that NATO will initiate premature nuclear operations to avoid the capture of a few nuclear projectiles In fact, NATO units would have sufficient time to render these weapons permanently inoperative and the
Soviets would achieve little by their capture (other than assuring these captured weapons would not be used on Soviet forces). Finally, without a valid execution message, enabling codes local commanders could not fire AFAP on their own initiative to avoid Soviet capture of these weapons.


Galvin quoted by Theresa Hitchens, "NATO Officials Raise Doubts Over German Nuclear Ban," Defense News, 16 April 1990, p 28. Although a political minority, the Social Democratic Party of the FRG has pushed for an even more extreme position in its Progress 90 report, a precursor to the party's upcoming election campaign platform. "We want to do away with the concept of nuclear deterrence—NATO has to give up the strategy of forward defense, flexible response and the first use of nuclear weapons." Serge Schemann, "Kohl's Foes Want NATO Recast If a Reunified Germany Is To Join," New York Times, 22 March 1990, p 17


108 French Defense Minister Chevènement in an 18 October 1989 luncheon address to the Paris Anglo-American Press Association. Informal translation by US Embassy, promulgated in message format from AMEMBASSY Paris, 191959ZOCT89, Subject Chevènement speech on eve of Cheney visit


110 Hans Binnendijk, Director of Studies IISS, reported by David Fouquet, "Post-CFE Europe Studies Under Way," Armed Forces Journal International, January 1990, p 28. An additional concern is the need to mollify Soviet security concerns of a unified Germany in the NATO alliance. To address this Soviet reservation, NATO has already offered to ban all land-based tactical
nuclear weapons from the FRG  Theresa Hitchens, "NATO Mulls Ban of Nuclear Arms in Germany," *Defense News*, 9 April 1990, p 4

111  NAC, July 1990, p 33

112  See Karpov note 24, Part IV

113  Maintaining a smaller nuclear capability still allows a weapons mix fulfilling those classic functions described by Schelling in 1966  Deterrence is generated by their physical presence, the weapons show America’s commitment to Europe, and they provide a means to “politically signal” the Soviets of a potentially escalating war  Thomas C Schelling, *Arms and Influence*, (New Haven  Yale University Press, 1966), pp 35-49, 97-116


115  Soviet perceptions of arms control’s utility has appeared to be based on a balance of costs and benefits  In May 1955, Khrushchev’s peaceful coexistence policy was foreshadowed by a Soviet proposal to the United Nations General Assembly Disarmament Committee  It reflected the Soviet goals to weaken NATO’s political cohesion, lower the Western willingness to rely on nuclear weapons, increase the influence of Western moderates relative to hardliners, and appeal to the rapidly expanding Third World  The proposal recommended a multistage and multi-year program of arms reductions, liquidation of foreign based armed forces, and the convening of a world conference on conventional and nuclear disarmament, and as an initial step, “States shall assume a solemn obligation not to use nuclear weapons  Exception to this rule may be permitted for purpose of defense against aggression”  US Department of State, *Documents on Disarmament 1945-1959*, (Washington  GPO, 1960), p 462