

III. EVOLUTION OF SOVIET STRATEGY

Utility of Nuclear Weapons

Almost all U.S. experts believed that the USSR had no desire to precipitate a nuclear war, but if deterrence failed, then the USSR planned to fight in the hope of emerging victorious.⁷⁵ In contrast, a small number of analysts observed a certain Soviet confidence in victory and, by implication, a greater Soviet willingness to initiate nuclear war. These analysts argued that the USSR approached nuclear war with the aims of fighting and winning, of defeating capitalism. According to their reading, Soviet writings set out specific conditions that would constitute victory, and Soviet military strategy rested on the belief that under favorable circumstances the USSR could indeed win.⁷⁶ Team B, the outside experts assembled to examine highly classified Central Intelligence Agency information on Soviet strategic forces and to prepare a threat assessment in competition with the official National Intelligence Estimates, concluded that the Soviet leadership believed that "nuclear war could be fought and won."⁷⁷ Prominent Team B members, including Paul Nitze, Richard Pipes, and Paul Wolfowitz, later joined the Reagan Administration.

The majority opinion among Soviet specialists was shared by senior U.S. government officials. The prevailing view in the Carter Administration held that the Soviets were not anxious for nuclear war, but if war broke out, they would be serious about fighting. In fact, they had made provision for actual nuclear warfighting, for example building extensive facilities to protect the Soviet leadership from intercontinental U.S. nuclear strikes.⁷⁸ The Soviets, former National Security Advisor Zbigniew Brzezinski explained, were not preparing to start a war, but they were planning to win if war broke out.⁷⁹ In the early 1980s, the Joint Chiefs of Staff reportedly concluded that the Soviet High

⁷⁵ Ermarth, "Contrasts in American and Soviet Strategic Thought," pp. 143-144; Field Manual 100-2-1, *The Soviet Army: Operations and Tactics* (Washington: Headquarters, Department of the Army, July 1984), p. 2-1; Garthoff, "Mutual Deterrence and Strategic Arms Limitation in Soviet Policy," *Strategic Review*, Fall 1982, p. 44; Laird and Herspring, *The Soviet Union and Strategic*, p. 66; Lambeth, *How to Think About Soviet Military Doctrine*, pp. 8-9; McGuire, "Commentary: Soviet Intentions," p. 142; and Wolfe, *Worldwide Soviet Military Strategy and Policy*, p. 6.

⁷⁶ Douglass and Hoerber, *Soviet Strategy for Nuclear War*, pp. 10, 14-15.

⁷⁷ Central Intelligence Agency, *Competitive Analysis, Report of Team B*, p. 6.

⁷⁸ Marshall, October 22, 1991, *Vol. II*, p. 118.

⁷⁹ Brzezinski, November 20, 1991, *Vol. II*, p. 16. The view expressed by Fred C. Iklé on December 11, 1991, *Vol. II*, p. 77, was almost identical.

Command was risk averse and was not eager to fight. Despite mischief making in the Third World, it was not seriously contemplating any unprovoked use of force against the United States or against NATO. However, the High Command was determined, if there was a war, not to lose.⁸⁰

From the interviews with Soviet General Staff officers, a picture emerges of a military command that understood the devastating consequences of nuclear war and was genuinely intent on preventing war. Inside the General Staff, beginning in the early 1970s, the idea matured that while nuclear weapons might serve as a political tool, they had very limited military utility.⁸¹ By 1981, the General Staff had reached the conclusion that nuclear use would be catastrophic as well as counterproductive to combat operations in the European theater.⁸²

The employment of nuclear weapons had to be avoided if at all possible, asserted the late Chief of the General Staff Sergei Akhromeev.⁸³ Vitalii Tsygichko, former head of conventional and nuclear theater forces modeling at the Scientific Research Institute NII-6 of the Main Intelligence Directorate (GRU) of the General Staff, expressed the belief that the Soviet political leadership, with backing from the military leadership, would probably have entered negotiations in order to avert an outbreak of nuclear war.⁸⁴ Gen.-Col. Andrian Danilevich, a special advisor on military doctrine to the Chief of the General Staff, explained that even though some theoretical writings, plans, and exercises included a first strike against the United States, the Soviet political leadership never discussed the possibility of launching a first strike. When Politburo members did examine contingencies for nuclear use, they shied away from authorizing nuclear use.⁸⁵

Danilevich witnessed a military exercise in 1972 at which Soviet General Secretary Brezhnev, Prime Minister Kosygin, and Defense Minister Grechko were presented with the results of a simulated U.S. first strike that killed 80 million Soviet citizens, destroyed 85 percent of the USSR's industrial capacity,⁸⁶ and decimated Soviet ground forces and

⁸⁰ McDaniel, November 12, 1991, *Vol. II*, p. 120.

⁸¹ Akhromeev, February 8, 1991, *Vol. II*, pp. 5-6.

⁸² Danilevich, December 18, 1990, *Vol. II*, p. 24.

⁸³ Akhromeev, February 8, 1991, *Vol. II*, p. 6.

⁸⁴ Tsygichko, December 20, 1990, *Vol. II*, p. 145.

⁸⁵ Danilevich, December 14, 1992, *Vol. II*, p. 62.

⁸⁶ *Ibid.*, September 21, 1992, *Vol. II*, p. 27.

non-strategic aviation.⁸⁷ Brezhnev was given an actual button and asked to push it to authorize a retaliatory strike. Gen. Danilevich reported that the General Secretary was pale and perspiring and that his hand trembled visibly. He asked Grechko several times for assurances that the button would not set off real missile launches. "Andrei Antonovich," he repeatedly asked Grechko, "this is definitely an exercise?"⁸⁸ After 1972, the political leadership did not participate in even a single military exercise involving nuclear weapons. The General Staff was left entirely on its own to develop scenarios for nuclear war.⁸⁹

Another example, described by Danilevich, of Soviet aversion to nuclear war occurred in the early 1980s. Cuban leader Fidel Castro pressed the USSR to take a tougher line against the United States, including possible nuclear strikes. The Soviet Union, in response, sent experts to spell out for Castro the ecological consequences for Cuba of nuclear strikes on the United States. Castro, according to the General, recovered from his nuclear fever rather quickly.⁹⁰

The Voroshilov lectures reflect the lack of Soviet confidence in winning a nuclear war.⁹¹ Nevertheless, they make clear that if deterrence failed, Soviet forces were trained to fight.⁹² The Soviet Union was prepared for nuclear war. The country had established special stocks of food and other provisions and had built shelters and infrastructure in the hope of allowing a new life to begin after nuclear exchanges. Even though scientists pointed out that nuclear fallout would destroy whatever life remained following a nuclear conflict, Brezhnev's High Command still invested enormous amounts of resources in an attempt to ensure its survival. This indicated to Tsygichko that, under certain circumstances, the political leadership was prepared to enter a nuclear war.⁹³

The majority of U.S. officials and experts were correct in noting both the Soviet intention to avoid nuclear war and Soviet plans to fight if deterrence failed. Neither the military nor the political leadership of the USSR had any desire to precipitate a nuclear war. Soviet provisions made for nuclear war, such as the network of well-hardened shelters,

⁸⁷ Ibid., December 13, 1992, Vol. II, p. 56.

⁸⁸ Ibid., September 21, 1992, Vol. II, p. 27.

⁸⁹ Ibid., December 9, 1994, Vol. II, p. 69.

⁹⁰ Ibid., September 21, 1993, Vol. II, p. 28.

⁹¹ Turbiville, *The Voroshilov Lectures*, p. 72.

⁹² Ibid., pp. 82-83.

⁹³ Tsygichko, *Kommentarii k interv'iu*.

suggest much less an eagerness for armed conflict than pessimism about successful preemption of the U.S. and an expectation of the need for readiness to ride out a nuclear attack, as well as the vain hope of Politburo members to preserve their own lives and power. Among U.S. analysts, only a small, though vocal and sometimes influential, group mistakenly believed that the Soviet Union was willing to initiate a nuclear war and expected victory in such a war in a form that was in any sense meaningful.

Outcome of Nuclear War

Many U.S. analysts expected the Soviet Union to try to emerge from a nuclear war less devastated than the United States.⁹⁴ Other observers held that the USSR really did consider a meaningful victory possible.⁹⁵ The National Intelligence Estimate of Soviet strategic forces issued in December 1976 argued that there was a consensus among Soviet leaders on the need to assure the USSR's survival in a nuclear war and that Soviet military doctrine maintained that a nuclear war could be won.⁹⁶ The Defense Intelligence Agency and the intelligence branches of the Army, the Navy, and the Air Force went further. They affirmed the belief that the Soviet Union saw as attainable its objective of achieving the capability to wage nuclear war and to survive with sufficient resources to dominate the postwar period.⁹⁷ The State Department's Bureau of Intelligence and Research (INR), however, refused to characterize Soviet objectives as a "war-winning" or "war-survival" posture.⁹⁸

James Schlesinger, U.S. Defense Secretary from 1973 to 1975, was unsure whether Soviet leaders believed their own "pep talk" of winning a nuclear war. He, nevertheless, saw a need to communicate to them the danger of a nuclear conflict.⁹⁹ President Carter's Secretary of Defense, Harold Brown, concluded that the Soviet civilian leadership did not believe that the USSR could fight and win a nuclear war. Top Soviet military officials, Brown argued, did not really expect the USSR to survive a nuclear war, but they still

⁹⁴ Ermarth, "Contrasts in American and Soviet Strategic Thought," pp. 144-145; Garthoff, "Mutual Deterrence and Strategic Arms Limitation in Soviet Policy," p. 44; Laird and Herspring, *The Soviet Union and Strategic Arms*, p. 66; Lambeth, *How to Think About Soviet Military Doctrine*, pp. 8-9, and Nathan Leites, *Soviet Style in War* (Santa Monica, CA: RAND Corporation, R-2615-NA, April 1982), p. 379.

⁹⁵ Douglass and Hoerber, *Soviet Strategy for Nuclear War*, pp. 10, 14-15.

⁹⁶ Central Intelligence Agency, *Soviet Forces for Intercontinental Conflict Through the Mid-1980s*, *National Intelligence Estimate 11-3/8-76*, December 1976, p. 18.

⁹⁷ *National Intelligence Estimate 11-3/8-76*, p. 4.

⁹⁸ *Ibid.*

⁹⁹ Schlesinger, October 29, 1991, *Vol. II*, p. 129.

tried to improve Soviet chances for survival.¹⁰⁰ President Reagan reportedly believed that the USSR accepted his view, enunciated in 1985, that nuclear war cannot be won and should not be fought.¹⁰¹

Akhromeev expressed the conviction that in practical terms, neither side would win a nuclear war.¹⁰² According to Tsygichko, the General Staff understood the scale of devastation that would result from a nuclear war and therefore did not develop a working definition of victory. Military planners instead focused on the amount of destruction that they could inflict on the enemy. They hoped that if there were a nuclear exchange, some "pockets" of civilization inside the Soviet Union would survive. At a June 1968 meeting of the Defense Ministry's Scientific-Technological Council, which Defense Minister Grechko attended, Iurii Mozzhorin, Director of TsNIIMash, the USSR's leading research institute of missile technology, presented results of TsNIIMash's modeling that showed that the Soviet Union, whether it launched a first strike or a retaliatory strike, could not win a nuclear war.¹⁰³

The Soviet political leadership, Danilevich observed, did comprehend the catastrophic consequences of nuclear war, though studies of those consequences were suppressed or modified in order to maintain morale. The results of the 1972 study of the likely consequences of a U.S. nuclear attack on the Soviet Union were never circulated, and subsequent models used coefficients that artificially reduced the level of predicted destruction—for instance, a certain percentage of warheads would fail to explode or would miss their targets—and thereby presented a more acceptable picture of nuclear use. The possibility of survival, Danilevich admitted, was accepted until the early 1980s.¹⁰⁴ Tsygichko explained that, for ideological reasons, the USSR needed to maintain the official belief that it was possible to win a nuclear war.¹⁰⁵ This was, Tsygichko explained, a "theoretical" concept.

Many U.S. observers appreciated the deep Soviet pessimism regarding the possibility of surviving a nuclear war in any meaningful sense. Relatively few analysts took at face

¹⁰⁰ Brown, November 8, 1991, *Vol. II*, p. 13.

¹⁰¹ McDaniel, November 19, 1991, *Vol. II*, p. 120.

¹⁰² Akhromeev, February 8, 1991, *Vol. II*, pp. 5-6.

¹⁰³ Mozzhorin, April 1993, *Vol. II*, p. 124.

¹⁰⁴ Danilevich, September 21, 1992, *Vol. II*, p. 28.

¹⁰⁵ Tsygichko, *Kommentarii k interv'iu*.

value the ideological pronouncements on socialism emerging victorious from a nuclear exchange or interpreted the Soviet strategic buildup as an effort to gain the capacity to survive and win a nuclear war. Nevertheless, U.S. policy makers of successive administrations had sufficient doubts about Soviet rationality to continue to bolster the U.S. deterrent by placing Soviet political and military assets at greater risk. American concerns were ill founded. Soviet political leaders appeared to grasp the danger posed by nuclear use, and they showed little real confidence in the USSR's ability to survive a nuclear war.

Preemption

The Soviet Union considered surprise attack to be potentially decisive and was thus inclined to preempt against a U.S. nuclear strike according to the common perception in the analytical community. An attack that achieved surprise, Soviet military planners believed, could determine the outcome of a nuclear war.¹⁰⁶ They, therefore, were determined to prevent a surprise attack by the United States.¹⁰⁷ Some U.S. experts believed that in the event of war, the USSR hoped to preempt U.S. strategic forces.¹⁰⁸ According to Ermarth, the Soviet planner's sensitivity to operational uncertainties and aim of achieving a favorable outcome in war appeared to generate a strong Soviet tendency to preempt.¹⁰⁹ Nathan Leites, in contrast, concluded that Soviet authorities doubted their capacity to preempt effectively and were inclined to launch under attack.¹¹⁰

U.S. decision makers were quite evenly divided in interpreting Soviet intentions. Schlesinger saw Soviet preemption as a remote possibility. He could envisage the Soviets striking preemptively only if they undertook a conventional probe that met unanticipated NATO resistance and if they believed that NATO was about to go nuclear. Brown reached a similar conclusion. According to Soviet military doctrine, he argued, the Soviets would preempt only if they were convinced, based on their reading of

¹⁰⁶ Laird and Herspring, *The Soviet Union and Strategic Arms*, p. 69; Sienkiewicz, "SALT and Soviet Nuclear Doctrine," pp. 88-89; Douglass and Hoeber, *Soviet Strategy for Nuclear War*, pp. 35, 38; and *Report of Team B*, p. 14.

¹⁰⁷ Scott and Scott, *The Armed Forces of the USSR*, pp. 44, 77.

¹⁰⁸ Laird and Herspring, *The Soviet Union and Strategic Arms*, p. 71; and Lambeth, *How to Think About Soviet Military Doctrine*, pp. 10-11.

¹⁰⁹ Ermarth, "Contrasts in American and Soviet Strategic Thought," p. 152.

¹¹⁰ Leites, *Soviet Style in War*, p. 376.

American intentions, that the U.S. was going to launch a nuclear strike. Even then, the political leadership may have decided not to follow military doctrine and instead may have refrained from preempting.¹¹¹

Other U.S. officials perceived a greater likelihood of Soviet preemption. Brzezinski expected the Soviet Union, in the context of on-going hostilities, to respond to U.S. tactical nuclear use with tactical preemption. Iklé believed that the USSR was geared to preempt under certain extreme contingencies, such as a NATO decision to employ nuclear weapons first during a war in Europe. The Joint Chiefs, in the 1980s, did not expect the Soviet Union to absorb a large U.S. nuclear strike without responding. Instead, they thought, Soviet forces would probably launch on tactical warning and might preempt strategically.¹¹²

Interviews with former Soviet officers and missile designers suggest a deep duality in Soviet thinking about their strategic strike posture, a duality fostered by doubt and uncertainty about what was technically and institutionally possible in a crisis situation. Soviet military leaders relied on preemption throughout the 1960s because they had concluded that Soviet silo vulnerability and the prolonged time required to prepare and launch ICBMs would render impossible an effective Soviet retaliatory strike. These concerns, compounded by serious pessimism regarding the survivability of their command and control system, also gave Soviet military leaders strong incentives to preempt strategically. By the early 1970s, however, the Soviet political leadership, sobered by a growing awareness of the consequences of nuclear war, began to move away from preemption in favor of a launch-under-attack posture and for the first time considered retaliation. Convinced that the U.S. would strike first, the military leadership prepared for all three possibilities—preemption, launch-on-warning, and retaliation—but clearly disliked retaliation and doubted that the Soviet strategic arsenal had sufficient technical “reliability” (*ustoichivost'*) to ensure an effective counterstrike. The military also seriously doubted that the political leadership could react in a timely and decisive manner to a detected U.S. launch. However, the military acceded to pressure from the political leadership and prepared for the possibility of launching a retaliatory strike by hardening ICBM silos, resuming the mobile ICBM programs, reducing missile launch times, decreasing its reliance on ground bursts and developing redundant command and

¹¹¹ Brown, November 8, 1991, *Vol. II*, p. 14.

¹¹² McDaniel, November 19, 1991, *Vol. II*, p. 120.

control systems such as the Dead Hand.¹¹³ By the mid-1970s, the USSR had acquired the missiles and command and control capabilities necessary to execute a launch-on-warning. Despite these measures, however, and even though the Soviet political leadership officially renounced preemption around 1981 and adopted a retaliation posture by the mid-1980s, the military apparently never completely abandoned preemption as an option.

The USSR, in the view of former Soviet officers, relied on a doctrine of strategic nuclear preemption in the 1960s to prevent a successful attack from being launched against Soviet territory. Military commanders who were World War II veterans tended to view retaliation as a passive anticipation of attack, analogous to the Soviet Union's exposure to surprise attack in 1941. They were determined never to cede the initiative to the enemy and thereby to risk a disaster similar to Hitler's invasion. Grechko reportedly said that he wanted to avoid repeating the mistakes of 1941 by waiting to be struck on the head, as the proponents of retaliation suggested.¹¹⁴

Gen.-Col. Igor' Illarionov, an aide to Ustinov for almost 20 years, reported that he and others had concluded that Grechko did not really believe in retaliation. Grechko had no interest in ICBM survivability. He prevented the hardening of silos beyond 2 kg/cm² (28 psi) and canceled the mobile ICBM program in 1968. He seemed to favor a first strike strategy, even though it violated the USSR's official military policy (*voennaia politika*) of not initiating nuclear use.¹¹⁵ Soviet modeling and testing, Dvorkin states, was based on the assumption that the United States would strike first. On one occasion, in the early 1980s, however, Defense Minister Ustinov asked Dvorkin's institute, TsNII-4, to model a depressed trajectory launch of Soviet ICBMs against U.S. silo fields to determine the probable destructive effect. TsNII-4 found that a Soviet depressed trajectory strike over the pole would prove ineffective, because the angle of attack would so reduce accuracy and reliability as to make the uncertainties of an effective strike unacceptably high. The institute recommended against planning for such a strike.¹¹⁶

Danilevich explained that Soviet nuclear doctrine throughout the 1960s prescribed strategic preemption, because the long time required to prepare missiles for launch left

¹¹³ See discussion under previous section on deterrence beginning on p. 13.

¹¹⁴ Mozzhorin, April 1993, *Vol. II*, p. 123.

¹¹⁵ Interview with Gen.-Col. Igor' V. Illarionov, June 23, 1993, *Vol. II*, p. 84. Illarionov was an Aide to Ustinov in the Central Committee Secretariat (1965-1976), and later an Assistant to Ustinov for special assignments (1976-1984).

¹¹⁶ Dvorkin, June 24, 1993, *Vol. II*, pp. 70-71.

only a small possibility of retaliating effectively. Five to 6 hours were needed to fuel Soviet missiles, and another 2 - 3 hours to mate their warheads. By the time they were ready to be launched, the Soviet Union would have sustained an incoming U.S. strike. Soviet military planners expected a U.S. nuclear attack to cause extensive damage to Soviet missile silos and command and control systems, and therefore, they believed that a Soviet retaliatory strike was unlikely to prove effective.¹¹⁷

Soviet missiles inside the earliest silos were particularly vulnerable to attack. In September 1958, Kalashnikov was instructed to draft a report on alternative silo designs. He presented three options: (1) single launch dispersed silos; (2) clusters of 4 silos; and (3) single silos containing a missile drum with a refire capability. The first option was selected for prototype testing using an R-12 (SS-4) missile. A test launch took place in the spring of 1959.¹¹⁸

Under the code name "*SHEKSNA*," [acronym-expansion unknown] a draft project for a missile complex was completed in May 1960, representing the first-generation silo, according to Irukhim Smotkin, who worked on silo design from 1960 to 1975 and served as head of the mechanical design department of the Design Bureau of Mechanization Devices (KBSM), located in Leningrad, of the Ministry of General Machine Building.¹¹⁹ In 1962, Smotkin reported, KBSM began to develop the second-generation silo for a new missile complex named Individual Launch (*Odinochnyi Start*).¹²⁰ Whereas the first generation of silo-based missiles could only be fueled for a period of two days, after which it had to be drained and refurbished before it could be operational again, the second-generation missile could be kept fueled for six months.¹²¹

Beginning in 1965, Tsygichko was personally involved in a series of tests carried out by the General Staff at Semipalatinsk on an annual basis between 1964 and 1966 to measure the vulnerability of silo-based intercontinental ballistic missiles (ICBMs) to ground-burst attack. Missiles identical to those in operation were put in silos built to actual operational specifications. High-explosive conventional charges were placed in the ground at various distances (from 20 meters to over 1 kilometer) from the silos to simulate and measure the

¹¹⁷ Danilevich, September 24, 1992, *Vol. II*, p. 39.

¹¹⁸ Kalashnikov, April 1993, *Vol. II*, p. 91.

¹¹⁹ Irukhim Smotkin, *Hardening Soviet ICBM Silos* (Falls Church, VA: Delphic Associates, 1991), p. 74.

¹²⁰ *Ibid.*, p. 78.

¹²¹ Peter Shugart, Memorandum on "Silo Vulnerability," May 14, 1993.

effects of nuclear ground bursts. The charges did not exceed the blast energy effect of a 500 kiloton (kt) nuclear warhead. The tests took geological conditions into account and tried to approximate the impact of an actual U.S. nuclear attack on Soviet ICBM silos.¹²²

The measure of effectiveness for a missile kill was the ability of the missile, after an enemy attack, to be launched in the prescribed time (a matter of hours) and to destroy its target. A jammed silo door, ruptured fuel system, disoriented missile guidance system, or disrupted launch control system would constitute a missile kill. The actual damage from ground-burst simulations was normally far more extensive and required days, weeks, or even months to repair. The test data showed that ground bursts were very effective in destroying silo-based ICBM systems. Silo doors often jammed, even from distant strikes. Under certain geological conditions, a ground wave from a strike as far away as 1 km was powerful enough to drive the entire silo 3 meters out of the ground, causing extensive damage to the missile system inside. A ground burst closer than 1 km was highly likely to destroy (achieve a "mission kill" of) a silo-based ICBM. If two silos were less than 2 km apart, typically the missile systems in both would be disabled by a single incoming strike.¹²³

Tsygichko was given the task of creating models to compare the effects of ground bursts and air bursts. He used data collected before the 1963 signing of the Limited Nuclear Test Ban Treaty from tests at Semipalatinsk on the impact of nuclear explosions on structures and silos. The models indicated that an air burst (80 or more meters above ground) was 15 to 25 percent as effective as a ground burst of the same yield going off at an equal distance from the target. In 1966, Tsygichko took part in briefing the General Staff on the tests and modeling of silo vulnerability.¹²⁴

The Soviet military leadership assumed that U.S. scientists had conducted similar experiments and (b)(1),(b)(2)

When Soviet satellite photography showed U.S. missile silos relatively poorly protected by overhead cover and grouped rather close to each other and to the cluster's launch control center, the General Staff became convinced that U.S. ICBM fields were not designed to ride out an attack and that U.S. land-based systems were first-strike weapons

¹²² Tsygichko, December 21 and 23, 1991, *Vol. II*, pp. 150-151.

¹²³ *Ibid.*

¹²⁴ *Ibid.*

(*oruzhie pervogo udara*).¹²⁵ U.S. ICBMs were routinely referred to as such in internal Soviet military and political discussions and written communications for the following two decades.¹²⁶ According to Dr. Viktor Surikov, this assessment of the U.S. strike posture was informed not only by indirect evidence obtained through satellite intelligence but also by direct intelligence about the U.S. SIOP. According to this intelligence information, the U.S. planned to launch on strategic warning against Soviet strategic forces.¹²⁷ In response, the Soviet Union examined the problem of silo vulnerability, developed solid- and liquid-fueled missile systems that could be launched within minutes of a launch order, and moved toward adoption of a launch-under-attack doctrine.

Concern about silo vulnerability led some Soviet experts in the mid-1960s to seek improvements in silo protection. Iurii Mozzhorin, then Director of TsNIIMash, argued strongly in favor of hardening ICBM silos. His argument was opposed by the Defense Ministry and the Ministry of General Machine Building, which wanted to avoid the expense of hardening silos and to spend those resources instead to build more missiles. In 1966, Ustinov, who at that time was still a Central Committee Secretary, held a meeting of senior officials from the Ministries of Defense and of General Machine Building to discuss silo protection. The Deputy Defense Minister for Construction asserted that for the cost of enhanced silo protection, the USSR could produce an additional 72 missile launchers. Why stop there, Mozzhorin retorted, when you can use wood to build even more? After heated debate, a decision was made to develop reinforced missile launchers. Enhancement of silo protection went forward only because of support from Ustinov, Brezhnev, and Smirnov, the Chairman of the Military-Industrial Commission (VPK). Soviet silos eventually were improved and, in Mozzhorin's opinion, made superior to U.S. silos.¹²⁸

(b)(1),(b)(2)

¹²⁶ *Ibid.*, p. 152.

¹²⁷ Surikov, September 11, 1993, *Vol. II*, p. 134.

¹²⁸ Mozzhorin, April 1993, *Vol. II*, p. 124. Boris A. Strogonov, an expert on missile technology who worked from 1955 to 1987 in the Defense Industry Department of the Central Committee, confirmed that Ustinov was a proponent of survivable missiles. Most of the Defense Ministry, and Grechko personally, was opposed to silo protection, according to an interview with Strogonov, March 1993, *Vol. II*, p. 132. Several sources, including Dvorkin, June 24, 1993, p. 70; Illarionov, June 23, 1993, p. 84; and Gen.-Lt. Nikolai V. Kravets of the Strategic Rocket Forces, June 22, 1993, p. 110, confirmed that in the 1960s, Soviet ICBM silos could withstand only 2 kg/cm² overpressure. Strogonov asserted that hardening increased silo protection to 50 kg/cm². In the 1970s, Dvorkin claimed, some Soviet ICBM facilities could withstand 400 kg/cm².

Hardening of ICBM silos, along with the growing size of the Soviet nuclear arsenal, improvements in command and control systems that enabled a decision from Moscow to reach all launch sites on Soviet territory in just 13 seconds,¹²⁹ development of the capability to retarget missiles within minutes,¹³⁰ and a sharp decrease in launch times allowed the Soviet Union to begin to move away from preemption in the early 1970s. Improvements in the fueling capacity and in the instrumentation of Soviet missiles reduced the launch time (between receipt of a launch command and the actual missile launch) from 20 - 30 minutes, for first-generation missiles, to around 1 minute by the mid-1970s.¹³¹ Retaliation thus became a credible alternative to preemption for the Soviet leadership.¹³²

A July 1969 Defense Council meeting,¹³³ which both Mozzhorin and Illarionov attended, gave impetus to the shift toward a strategy of retaliation. The participants discussed a 15-year plan for weapons production and tried to decide which of two recently developed ICBMs—the SS-17 or the SS-19—to put into production. Professor Mstislav V. Keldysh, President of the USSR Academy of Sciences, argued that the choice between the SS-17 and the SS-19 was, in essence, a doctrinal question and that the Soviet Union should acquire an effective second-strike capability in order to deter U.S. first use. The Defense Council participants failed to choose between the two ICBMs, opting instead to manufacture both, but resolved the doctrinal debate in favor of a second strike, which led to the adoption of a launch-on-warning doctrine.¹³⁴

The Voroshilov lectures, which present the established Soviet military doctrine from 1973 to 1975, leave open the possibility of nuclear preemption at the tactical level and the theater level¹³⁵ but rule out strategic preemption. They indicate that the Soviet Union

¹²⁹ Korobushin, December 10, 1992, *Vol. II*, p. 108.

¹³⁰ Danilevich, September 21, 1992, *Vol. II*, p. 31.

¹³¹ According to an interview with Korobushin, December 10, 1992, *Vol. II*, p. 108, the earliest Soviet missiles required 20 minutes preparation time. Smotkin, as cited in Pete Shugart, Memorandum on "Silo Vulnerability," May 14, 1993, stated that the launch time of 30 minutes for first-generation missiles was reduced, in second- and third-generation silos, to 8 - 10 seconds after the silo cover opened. The reduction occurred partly because on-board instruments of later generations of missiles could begin to operate before receiving the launch command. Danilevich (September 24, 1992, p. 39) asserted that pre-fueled (*ampulizirovannye*) ICBMs were ready for launching within minutes. By the mid-1970s, Korobushin (December 10, 1992, p. 108) explained, the USSR had deployed missiles with launch times of 60 seconds.

¹³² Danilevich, September 24, 1992, *Vol. II*, p. 41.

¹³³ For a detailed description of the July 1969 Defense Council meeting, see Section IV on Struggles Among the Princes.

¹³⁴ Illarionov, June 23, 1993, *Vol. II*, p. 84. The July 1969 Defense Council meeting near Yalta was the first occasion on which a launch-on-warning strategy was seriously discussed.

¹³⁵ Turbiville, *The Voroshilov Lectures*, pp. 248, 312.

intended to prevent a surprise intercontinental U.S. attack not by preempting but rather by releasing a retaliatory strike before U.S. forces hit their targets. The Voroshilov lectures appear to prescribe a launch-on-warning doctrine instead of strategic preemption. They state that in the event of an enemy nuclear attack, the warning system should inform the Soviet High Command "within 3 to 4 minutes" in order to leave time for a decision regarding retaliation.¹³⁶

By the middle 1970s, the Soviet Union acquired the capacity to execute a launch-on-warning, termed a retaliatory-meeting strike (*otvetno-vstrechnyi udar*), whereby Soviet missiles would be released upon detection of a U.S. missile launch and would pass U.S. missiles in mid-air on the way to targets on U.S. territory.¹³⁷ A retaliatory-meeting strike became possible after the creation of an automated control system and the deployment of over-the-horizon (*zagorizontnye*) radars and space-based systems for early warning. The USSR adopted a strategy of flexible use of nuclear weapons based on three options—preemption, retaliatory-meeting strike, and retaliation¹³⁸—but preferred, in the event of a conflict, to launch a retaliatory-meeting strike.¹³⁹

The increased size of nuclear arsenals and growing Soviet awareness of the consequences of nuclear use led the USSR to renounce preemption by 1980, according to Danilevich. The USSR was then left with the two options of retaliation and retaliatory-meeting strikes.¹⁴⁰ Surikov asserts, however, that the General Staff never really accepted the possibility of a purely retaliatory strike because of continued pessimism regarding the survivability of the command and control system, and continued to plan to launch either on strategic or tactical warning.¹⁴¹

The Soviet Union, during the 1970s, also reduced its reliance on ground bursts. Kalashnikov was in charge of missile testing on the commission that organized tests in 1972 at Semipalatinsk to determine the vulnerability of existing silo and command center

¹³⁶ *Ibid.*, p. 246.

¹³⁷ Tsygichko, December 21 and 23, 1991, *Vol. II*, p. 151. Ilarionov, reported in his interview that development of the retaliatory-meeting strike doctrine began in the late 1960s, although the Defense Ministry and chief designers had reached the conclusion that the USSR was unable at that time to launch a retaliatory strike before an incoming U.S. strike had already detonated on Soviet territory. See Ilarionov, April 1993, *Vol. II*, p. 80.

¹³⁸ Danilevich, September 24, 1992, *Vol. II*, p. 40.

¹³⁹ Korobushin, December 10, 1992, *Vol. II*, p. 108; Ilarionov, April, 1993, *Vol. II*, p. 80; and Tsygichko, December 21 and 23, 1991, *Vol. II*, p. 151.

¹⁴⁰ Danilevich, September 24, 1992, *Vol. II*, p. 39.

¹⁴¹ Surikov, September 18, 1993, *Vol. II*, pp. 134-135. See "Deterrence" above for a more extended discussion of perceived vulnerability of Soviet command and control systems.

designs to nuclear strikes. In addition to underground nuclear tests, above-ground tests using conventional explosives equivalent to 10 kt were carried out against mobile missile platforms, planes, tanks, and other targets. The tests showed that ground bursts were generally, but not always, effective at disabling silos, while air bursts proved very effective against planes and tanks.¹⁴²

Danilevich confirmed that Soviet forces intended to employ air bursts against unprotected targets. Moreover, he explained, the proportion of ground bursts declined as the USSR planned to launch increasingly massive nuclear strikes and the consequences of those strikes became less predictable. The Soviet military made computer calculations of fallout zones to forecast the spread of radiation following a nuclear exchange and then tested the calculations during several exercises. The tests showed that when massive explosives were detonated, the actual shock wave often deviated from the predicted one. The proportion of ground bursts, which was about 80 percent in the 1960s, declined until the late 1970s, when the USSR stopped employing ground bursts.¹⁴³

The Soviet watchers in the United States emphasized that the USSR was determined to keep any U.S. nuclear attack from achieving surprise. U.S. officials, on the other hand, saw little probability of Soviet preemption, or else they expected Soviet forces to preempt in the European theater rather than at the strategic level. The actual Soviet strategic posture was ambiguous. By the late 1970s and early 1980s, when the cited U.S. studies came out, the Soviet Union had adopted a clear preference, at least at the policy level, for retaliatory-meeting strikes and then renounced preemption altogether. Doubts persisted, however, especially among the technically sophisticated members of the military, regarding the possibility of carrying out a successful retaliatory or retaliatory-meeting strike. In a crisis, especially without the guidance of strong political leadership, preemption would not have been ruled out.

Limited Nuclear Options

In the judgment of numerous U.S. analysts, the Soviet Union eschewed limited nuclear options. Intra-war bargaining ran counter to Soviet doctrine,¹⁴⁴ because once the nuclear

¹⁴² Kalashnikov, April 1993, *Vol. II*, p. 91.

¹⁴³ Danilevich, December 14, 1992, *Vol. II*, p. 60.

¹⁴⁴ Ermarth, "Contrasts in American and Soviet Strategic Thought," p. 149.

threshold was crossed, half-measures would weaken the USSR's initiative and prospects for victory.¹⁴⁵ U.S. observers were nevertheless suspicious of public Soviet denunciations of the limited nuclear war concept.¹⁴⁶ The Soviet argument on the inevitability of escalation was intended to strengthen deterrence by persuading the United States that nothing could be gained from limited nuclear strategies.¹⁴⁷

Some experts in Washington pointed out that Soviet force modernization provided a broader array of employment options and thereby increased the USSR's potential to set conflict limitations. The Soviet Union, in Fritz Ermarth's view, probably conducted some contingency planning for limited nuclear options at the theater and, perhaps, at the strategic level.¹⁴⁸ Notra Trulock concluded that Soviet political and military leaders had strong incentives to develop means to control the course of a nuclear conflict¹⁴⁹ and almost certainly envisioned the conduct of limited nuclear operations in the event that a theater conflict escalated to the nuclear level.¹⁵⁰ The risks inherent in all-out nuclear war, Trulock continued, probably were highly unpalatable to the Soviet leadership,¹⁵¹ and selective strikes offered an alternative to either all-out nuclear war or termination of the conflict short of Soviet victory,¹⁵² so the USSR developed both operational concepts and capabilities to fight a limited nuclear war.¹⁵³ Soviet strikes could be limited in terms of the number or types of weapons, geographic area, or targets.¹⁵⁴ Robbin Laird and Dale Herspring argued that through its buildup of the 1970s, the Soviet Union developed a capacity to wage nuclear war in Europe.¹⁵⁵ In the event of conflict, they suggested, the USSR might pursue a limited nuclear warfighting strategy, deterring U.S. escalation to the strategic level while negotiating a favorable end to hostilities in Europe.¹⁵⁶

¹⁴⁵ Lambeth, *How to Think About Soviet Military Doctrine*, p. 12.

¹⁴⁶ Leites, *Soviet Style in War*, pp. 377-379.

¹⁴⁷ Sienkiewicz, "SALT and Soviet Nuclear Doctrine," p. 88.

¹⁴⁸ Ermarth, "Contrasts in American and Soviet Strategic Thought," p. 149.

¹⁴⁹ Notra Trulock III, "Soviet Perspectives on Limited Nuclear Warfare" in Fred S. Hoffman, Albert Wohlstetter, and David S. Yost (eds.), *Swords and Shields: NATO, the USSR, and New Choices for Long-Range Offense and Defense* (Lexington, MA: Lexington Books, 1987), p. 55.

¹⁵⁰ *Ibid.*, p. 76.

¹⁵¹ *Ibid.*, p. 54.

¹⁵² *Ibid.*, p. 55.

¹⁵³ *Ibid.*, p. 76.

¹⁵⁴ *Ibid.*

¹⁵⁵ Laird and Herspring, *The Soviet Union and Strategic Arms*, p. 21.

¹⁵⁶ *Ibid.*, p. 75.

U.S. officials tended to agree that the Soviet Union probably did not develop an array of limited nuclear options.¹⁵⁷ It had no need to, because it had conventional predominance, as Harold Brown pointed out. Furthermore, Soviet leaders seemed genuinely skeptical about the possibility of limiting a nuclear war.¹⁵⁸ Though American limited nuclear options were based on the expectation that the USSR would act rationally and respond in kind, there was little evidence one way or the other indicating how the Soviet leadership would respond to a limited U.S. strike.¹⁵⁹ Schlesinger hoped that the USSR would refrain from escalating after selective U.S. nuclear strikes but, he added, even if the Soviets refused to believe in the possibility of limiting a nuclear war, they would still be deterred by the belief that selective U.S. strikes would lead to an all-out nuclear war.

Soviet officials, as they now confirm, wanted the U.S. to believe that they would respond on a massive scale to any U.S. employment of nuclear arms. Exchanges of even tactical nuclear weapons, they feared, might hit Soviet territory.¹⁶⁰ To strengthen deterrence, they threatened to respond with full force to the employment of even one U.S. nuclear weapon, but if the U.S. had in fact launched a selective strike, the Soviet political leadership simply would have gathered together to decide how to respond.¹⁶¹

Interviews with Soviet military planners revealed that the General Staff, by the late 1970s, did contemplate limited nuclear options and evaluate the possibility of intra-war bargaining.¹⁶² It introduced gradually, beginning in 1976, a new periodization (*periodizatsiia*) of war. Until that time the dominant, although not the only, scenario envisaged by the General Staff was that of a major war divided into two periods—a massive nuclear exchange followed by land operations that would exploit the results of nuclear strikes. The new periodization added a phase of limited nuclear operations. War

¹⁵⁷ McDaniel, November 12, 1991, *Vol. II*, p. 120. The exception was Fred Iklé, who argued that the Soviet Union, due to its growing strength, was moving toward acceptance of limitations on nuclear war.

¹⁵⁸ Schlesinger, October 29, 1991, *Vol. II*, p. 129.

¹⁵⁹ Marshall, October 22, 1991, *Vol. II*, p. 118.

¹⁶⁰ Danilevich, March 5, 1990, *Vol. II*, p. 19.

¹⁶¹ Interview with Kataev, June 23, 1993, *Vol. II*, p. 101. Kataev confirmed that the Soviet declaratory policy of retaliating on a massive scale to any employment of nuclear weapons was intended primarily to enhance deterrence. If deterrence had failed, and NATO had launched 7 to 20 tactical nuclear strikes, the Politburo would have faced a very difficult decision. Kataev, who worked very closely with Communist Party national security decision makers at the highest level for the 18 years in the defense department of the Central Committee (essentially inside the "black box" the authors so longed to uncover and understand) admitted that he simply did not know how the Politburo would have responded.

¹⁶² Danilevich, December 18, 1990, *Vol. II*, p. 25.

was expected to consist of four periods: (1) conventional operations; (2) limited nuclear strikes; (3) full-scale nuclear exchanges; and (4) concluding period.¹⁶³

From 1978, the General Staff discussed available responses to selective U.S. nuclear strikes in Europe, debating the relative merits of precise reciprocity versus escalation.¹⁶⁴ It examined the possibility of dosage use (*dozirovannyye starty*), which might be confined to Europe or to targets in the United States¹⁶⁵ or might be limited to military targets.¹⁶⁶ Soviet military planners developed scenarios for responses to U.S. selective strikes. Some scenarios envisioned proportional retaliation; others involved Soviet escalation or de-escalation. If the U.S. launched 20 strikes, for example, Soviet forces might have retaliated with 15 or, alternatively, with 30 strikes. The best response, in the Soviet view, would be an equal number of strikes against analogous targets, mainly against military targets such as troop formations, airfields, control centers, and missile fields.¹⁶⁷

Discussion of limited nuclear options, by all accounts, was restricted to the General Staff. Dvorkin stated that to his knowledge, the Strategic Rocket Forces institute TsNII-4 never examined scenarios involving selective nuclear strikes.¹⁶⁸ Former First Deputy Chief of Staff of the SRF Korobushin denied that the SRF either planned selective strikes or conducted exercises employing selective strikes.¹⁶⁹ Although the General Staff analyzed the possibility of limited nuclear use, Kataev insisted, no decision was made to change Soviet military doctrine. Kataev attended several meetings at the highest level where force structures and employment options were discussed, including those that considered selective use options. The Party and military leadership at these meetings, according to Kataev, never accepted selective use, even at a tactical level.¹⁷⁰

¹⁶³ *Ibid.*, September 24, 1992, *Vol. II*, p. 41.

¹⁶⁴ Danilevich, March 5, 1990, *Vol. II*, p. 19.

¹⁶⁵ *Ibid.*, September 24, 1992, *Vol. II*, p. 40. According to Gareev (June 20, 1993, *Vol. II*, p. 75), the USSR might have considered launching selective strikes at the global level, but the context in which dosage use was given serious thought was the TVD (Theater of Military Operations).

¹⁶⁶ Danilevich, December 14, 1992, *Vol. II*, pp. 58-59.

¹⁶⁷ *Ibid.*, p. 60.

¹⁶⁸ Dvorkin, June 24, 1993, *Vol. II*, p. 70.

¹⁶⁹ Korobushin, December 10, 1992, *Vol. II*, p. 107.

¹⁷⁰ Kataev, June 23, 1993, *Vol. II*, p. 101. At this particular interview, Dr. Kataev, somewhat exasperated, invoked the Party prescript that even a single nuclear warhead against the USSR would have elicited a "full response." The U.S. could not have presumed to make a limited strike without catastrophic consequences. The follow-up question proved more productive: "Vitalii Leonidovich, you worked closely with the Politburo security decision group for many years including the old group of five [*piaterka*: Brezhnev, Gromyko, Andropov, Smirnov, Ustinov]. I understand the Party's official position on responses to U.S. limited use. My question is more specific. If as General Korobushin commented, the U.S. actually had struck the Soviet Far East and Siberia with three nuclear missile strikes against discrete military targets with limited collateral damage, as he claimed the U.S. practiced in the mid-1980s, how would 'the five' react?"

The Soviet Union was technically capable of launching selective strikes. In the early 1970s, it replaced its "all or nothing" command and control system, which was designed to release only massive strikes, with a system that could carry out launches from individual sites, according to Gen. Makhmut Gareev, who was in charge of training and doctrine in various positions in the General Staff from 1974 to 1988.¹⁷¹ Available documents from the Potsdam archives show that certain Warsaw Pact exercises included selective nuclear strikes,¹⁷² though exercises involving the East German military usually went only as far as the launch of the second salvo of the first strike at a tactical or operational-tactical level.¹⁷³

Although the USSR developed limited nuclear options, it neither discussed nor conducted exercises in which it initiated selective use.¹⁷⁴ Soviet military leaders remained very skeptical about escalation control.¹⁷⁵ The period of limited nuclear exchanges was expected to last several days at most.¹⁷⁶

Some U.S. officials mistakenly discounted Soviet development of limited nuclear options, and a couple of analysts overemphasized Soviet interest in pursuing a limited nuclear warfighting strategy. Otherwise, most policy makers and experts in Washington were largely correct in their interpretations of the Soviet position on limited nuclear options. The General Staff did in fact examine the possibility of selective strikes. It was inclined to make a proportionate response to an initial U.S. limited strike. There is no evidence to suggest, however, that the General Staff planned to trade a series of selective nuclear strikes with U.S. forces. Soviet military strategists seriously doubted that a nuclear war could remain limited for long, and they were loath to let U.S. generals think that the USSR would follow U.S. scenarios of extended exchanges of selective strikes and would allow the U.S. to achieve escalation dominance.¹⁷⁷

Would they just have pushed the button to launch the whole Soviet nuclear arsenal as they had promised? Think about that group and how they behaved under stress. What would they *really* have done?" Kataev stopped, stood up, struggling with his answer. After a still longer pause, he answered. "I just don't know."

¹⁷¹ Gareev, April 30, 1993, *Vol. II*, p. 72; and June 20, 1993, *Vol. II*, pp. 74-75.

¹⁷² Beatrice Heuser, "Warsaw Pact Nuclear and Conventional Strategy in the 1970s and 80s: Findings in the East German Archives," *Comparative Strategy*, Vol. 12, No. 4, November 1993, pp. 437-457.

¹⁷³ *Ibid.*

¹⁷⁴ Danilevich, December 14, 1992, *Vol. II*, p. 58; and Gareev, April 30, 1993, *Vol. II*, p. 72.

¹⁷⁵ *Ibid.* The Voroshilov lectures warn that the limited employment of nuclear weapons will not last long. Turbiville, *The Voroshilov Lectures*, p. 248.

¹⁷⁶ Danilevich, December 13, 1992, *Vol. II*, p. 57.

¹⁷⁷ Gareev, April 30, 1993, *Vol. II*, p. 72. Gen. Gareev specifically rejected the Soviets' willingness to participate in the tit-for-tat theater-level exchanges he believed were envisioned by NATO commands.

Escalation

Some Western analysts expected the Soviet Union, in a conventional conflict, to resort to nuclear weapons. They argued that, in a major war, the USSR would conduct conventional operations with the transition to nuclear use as the dominant concern. The nuclear phase would be considered decisive.¹⁷⁸ Soviet forces would employ nuclear weapons, even if NATO did not, at an early stage of an offensive campaign in Europe.¹⁷⁹ Other observers, in contrast, stressed the Soviet Union's reluctance to initiate nuclear use¹⁸⁰ and to expand the scope of a nuclear conflict. Laird and Herspring believed that the USSR wanted to control the process of escalation and to minimize collateral damage.¹⁸¹

By the assessment of U.S. officials from successive administrations, the Soviet Union preferred to wage a war in Europe employing only conventional forces.¹⁸² After the 1961 Berlin Crisis, Schlesinger explained, the Soviets began to think that a conventional phase in a major war was possible. They later came to hope that in practice NATO would not resort to nuclear weapons, but U.S. limited nuclear options diminished Soviet confidence in the possibility of averting U.S. first use.¹⁸³ Brzezinski had a gut feeling that the Soviets would not employ nuclear arms first. The USSR sought superiority at different rungs of the escalation ladder in order to inhibit the U.S. from escalating and thereby to gain a strategic advantage.¹⁸⁴ The Soviets, Brown pointed out, would probably not escalate in Europe because, even though they might not win a conventional war, they would never lose. Iklé concluded that the Soviet Union could win a war with limited objectives using only conventional forces backed up by unused nuclear strength to coerce a settlement.

Soviet escalation of theater nuclear exchanges was considered unlikely by most Washington policy makers. The USSR would probably not escalate in response to a

¹⁷⁸ Joseph D. Douglass, Jr. and Amoretta M. Hoerber, *Conventional War and Escalation: The Soviet View* (New York: Crane Russak, 1981), p. 7.

¹⁷⁹ Lothar Ruhl, "Offensive Defence in the Warsaw Pact," *Survival*, Vol. 33, No. 5, September/October 1991, p. 446.

¹⁸⁰ Field Manual 100-2-1, *The Soviet Army*, pp. 2-9.

¹⁸¹ Laird and Herspring, *The Soviet Union and Strategic Arms*, pp. 71-73.

¹⁸² Brzezinski, November 20, 1991, *Vol. II*, p. 17; Komer, October 22, 1991, *Vol. II*, p. 105; Marshall, October 22, 1991, *Vol. II*, p. 118; McDaniel, November 12, 1991, *Vol. II*, p. 120; and Schlesinger, October 29, 1991, *Vol. II*, p. 128.

¹⁸³ Schlesinger, October 29, 1991, *Vol. II*, p. 128.

¹⁸⁴ Brzezinski, November 20, 1991, *Vol. II*, p. 17.

small-scale U.S. employment of tactical nuclear weapons along the flanks.¹⁸⁵ The Soviet military might recommend escalation in the European theater if convinced that the U.S. would escalate, but the political leadership might turn down the military's recommendation.¹⁸⁶ If the United States launched nuclear strikes, the Soviet Union probably would match the U.S. action and might jump to a higher level of nuclear use.¹⁸⁷ Only members of the first Reagan Administration judged Soviet escalation to be likely. In their opinion, the USSR would probably retaliate against NATO's first use with hundreds of nuclear weapons.¹⁸⁸

Over the years, the U.S. government was divided on whether the Soviet Union would expand a theater nuclear war into a global nuclear war. Brown, Brzezinski, and Iklé doubted that during nuclear exchanges in Europe the USSR would strike preemptively at American strategic forces in the continental United States. Schlesinger expressed the opposing view that the Soviet Union might expand a total theater war into a global nuclear conflict. Top U.S. military commanders in the early 1980s expected the USSR, in a theater nuclear war, to make quick recourse to global nuclear strikes.¹⁸⁹

Soviet officers asserted that the Soviet Union never intended to initiate the employment of nuclear weapons.¹⁹⁰ The Soviet rejection of first use was serious and was based on research.¹⁹¹ Since 1975, the Soviet military has been "guided by instructions" of the political leadership not to employ nuclear weapons first.¹⁹²

Materials from the East German archives have been used to suggest that Warsaw Pact forces were inclined to employ nuclear arms to advance across Europe. The official report by the German Defense Ministry on the records from the East German National People's Army asserts that use of tactical nuclear weapons formed an integral part of Warsaw Pact personnel training. Those weapons, the report claims, would serve primarily as a means of breaking through enemy defenses. Furthermore, nuclear

¹⁸⁵ Schlesinger, October 29, 1991, *Vol. II*, p. 128.

¹⁸⁶ Brown, November 8, 1991, *Vol. II*, p. 14.

¹⁸⁷ Brzezinski, November 20, 1991, *Vol. II*, p. 17.

¹⁸⁸ McDaniel, November 19, 1991, *Vol. II*, p. 120.

¹⁸⁹ *Ibid.*

¹⁹⁰ Akhromeev, February 8, 1991, *Vol. II*, pp. 5-6.

¹⁹¹ Danilevich, March 5, 1990, *Vol. II*, p. 19.

¹⁹² *Voennaia mysl'*, January 1975, p. 66, quoted in Garthoff, "Introduction: U.S. Considerations of Soviet Military Thinking," p. 13. This might be more credible, in practice, in that Marshal Grechko, reputed by Soviet political and military leaders to be a convinced "first-striker," died in the spring of 1976.

weapons were employed, according to the report, either in a surprise first strike or in a counterstrike, in numerous Warsaw Pact exercises, which were led by Soviet commanders, during the late 1970s and early 1980s.¹⁹³ The report apparently fails, however, to distinguish a Soviet first strike (initiating the use of nuclear weapons in the absence of indications of nuclear initiation by the enemy) from preemption (attempting to strike an enemy *that is preparing to launch a nuclear strike* before he is able to launch in order to eliminate his capability to execute nuclear strikes) and therefore has created the misleading impression that the USSR intended to initiate nuclear use. In fact, as an independent scholar concluded after examining the same material as did the German Defense Ministry, these exercise descriptions in the Potsdam archives *invariably* assumed that NATO would be the first to prepare for nuclear use, and Soviet preemption would then occur in response to observations of NATO preparations for a nuclear launch.¹⁹⁴

The East German archives provide largely tactical training and planning data that do not necessarily explain how the Soviet Politburo would have chosen to wage war in Europe. Gareev, who was in charge of training in the General Staff from 1974 to 1988 and therefore was responsible for all exercises from a tactical to operational-strategic level, insisted that the Soviet Armed Forces did not plan to resort to the use of nuclear weapons first and were forbidden to exercise initiation of nuclear use. The USSR conducted exercises, he added, not only to prepare forces for execution of war plans but also to test new operational concepts and to train commands, staff, and troops for all sorts of contingencies. Training often included nuclear strikes, because the General Staff assumed that NATO would resort to nuclear weapons and wanted to be prepared to

¹⁹³ German Defense Ministry, *Military Planning of the Warsaw Pact in Central Europe: A Study, Based On Records from the East German National People's Army (NVA)*, translated by Mark Kramer, *International History Project Bulletin*, Issue 2, Fall 1992.

¹⁹⁴ Heuser, "Warsaw Pact Nuclear and Conventional Strategy in the 70s and 80s: Findings in the East German Archives," pp. 438, 439, 443-444. Ms. Heuser summarized her findings thus: "Drawing on recently opened East German military archives, this article traces the evolution of Soviet military doctrine through Warsaw Pact training and maneuver documentation. Paradoxically, while the USSR was deploying more usable and survivable nuclear weapons (the SS-20), it was developing a strategy which attempted to win a limited war in Europe with conventional weapons only. Pact records do show planning for preemptive nuclear strikes in response to observation of NATO preparations for nuclear launches. Great care was taken not to proceed to a nuclearization of the conflict unless the enemy was about to do so." p. 437.

NATO's practices and procedures in the 1960s and 1970s, tend to confirm two aspects of the Soviet declarations. NATO routinely assumed in its exercises that superior Warsaw Pact conventional forces would push NATO armies to the Rhine River within days after the inception of hostilities, forcing NATO to resort to nuclear weapons first in order to avoid total catastrophe. Second, NATO forces routinely practiced use of and defense against nuclear weapons in its exercises in order to maintain proficiency in a critical area of warfare for which officers and troops must be trained on a continuous basis. Failure to have done so would have been irresponsible and misguided.

respond and to continue operations under conditions of nuclear use.¹⁹⁵ Decisions concerning employment of nuclear weapons were, without exception, reserved for the highest political leadership in Moscow.

The General Staff expected the battlefield employment of nuclear weapons to have a devastating impact. Tsygichko was aware of tests conducted in the late 1950s and early 1960s on the effects on animals from conventional and nuclear explosives. According to the tests, as well as to pre-1946 German data, a dog's response to overpressure most closely resembled that of humans, and 7 psi overpressure was sufficient to kill people.¹⁹⁶ In contrast, U.S. scientists calculated the average lethality threshold at 40 psi.¹⁹⁷ Therefore, Soviet military planners predicted much higher rates of attrition on the battlefield resulting from nuclear and conventional bombardment than did their U.S. counterparts.

The USSR, the Soviet sources contend, also had no intention of climbing up the rungs of the escalation ladder in a nuclear conflict. Soviet modeling predicted that the use of 20 to 25 percent of the nuclear weapons in Europe would completely destroy operational groupings and would throw millions of tons of toxic material into the atmosphere, causing an ecological disaster.¹⁹⁸ Before the 1970s, the General Staff expected the rate of advance to increase from 20 - 30 km per day with only conventional forces to 40 - 50 km with the introduction of nuclear weapons. The modeling effort conducted in the early 1970s concluded that if nuclear weapons were used, all significant movement would cease for several days.¹⁹⁹ Nuclear strikes on all of NATO's airfields would contaminate Eastern Europe and parts of the Soviet Union.²⁰⁰ The findings from the modeling effort, which undermined the rationale for modernization of theater nuclear forces, were reported to the head of the General Staff's Main Operations Directorate, Gen. Kozlov, and summarized in a five-page document for Marshal Viktor Kulikov, who was then serving as Chief of the General Staff. They were accepted by the General Staff and then

¹⁹⁵ Gareev, June 20, 1993, *Vol. II*, pp. 74-75.

¹⁹⁶ Tsygichko, December 21 and 23, 1991, *Vol. II*, p. 152.

¹⁹⁷ Samuel Glasstone and Philip J. Dolan (eds.), *The Effects of Nuclear Weapons* (Washington: U.S. Department of Defense and U.S. Department of Energy, Third Edition, 1977), p. 552. Terry A. Furnell, in *Comparative Study and Analysis of U.S. and Soviet Air Blast Injury and Incapacitation Criteria* (Army Research Laboratory, ARL-TR-6, November 1992), suggests that Soviet lethality overpressures might be much lower than lethality overpressures under U.S. direct blast criteria (p. 28) and that injury from direct blast occurs at much lower overpressures under Soviet criteria than under U.S. criteria (p. 1).

¹⁹⁸ Tsygichko, December 17, 1990, *Vol. II*, p. 142.

¹⁹⁹ Gareev, June 20, 1993, *Vol. II*, p. 74.

²⁰⁰ Tsygichko, December 17, 1990, *Vol. II*, p. 142.

sent to the Central Committee, which rejected them. The Central Committee ordered modernization of theater nuclear forces to proceed. The political leadership instructed the General Staff to plan for war with tactical nuclear weapons even though the General Staff reached the judgment that those weapons had little military utility in combat operations.²⁰¹

The Soviet Union never prepared in any detail for extended combat on a nuclear battlefield, Tsygichko stated.²⁰² The General Staff did not conduct any actual planning beyond an initial exchange of nuclear strikes on a tactical/operational scale. Nor did the General Staff have a plan for a massive response to a limited strike by NATO tactical nuclear weapons against a Warsaw Pact member country.²⁰³ Tsygichko explained that the Soviet buildup of theater nuclear forces in Europe during the late 1970s and early 1980s was intended, in large part, to reduce the probability of NATO's first use and thereby to keep the war conventional, so that outcomes would be relatively more predictable and the USSR might enjoy an advantage.²⁰⁴

The Voroshilov lectures and testimony of Soviet officers corroborate Tsygichko's assertion that the Soviet Union did not intend to initiate escalation to nuclear use nor to strategic nuclear use from theater use. The lectures make clear that if NATO turned to limited use of nuclear weapons in the European theater, Soviet forces would respond in kind. The USSR would not initiate escalation beyond the theater.²⁰⁵ If NATO launched a conventional attack that put Soviet silos or tactical nuclear weapons in danger of being overrun, the USSR would, as standard operating procedure, destroy them rather than use them.²⁰⁶

The General Staff's deep pessimism regarding the utility of nuclear weapons in theater-strategic operations encouraged strategists inside the Main Operations Directorate to refine existing operational concepts and develop new concepts of structuring conventional forces that would allow them to be used to maximum effect. By the late

²⁰¹ Tsygichko, *Soviet Use of Mathematical Methods To Support Strategic Decision Making: A Model of Strategic Operations in Continental Theaters of Military Action*, translated and edited by Matthew Partan, unpublished manuscript, January 1993.

²⁰² Tsygichko, December 21 and 23, 1991, *Vol. II*, p. 157.

²⁰³ *Ibid.*, December 20, 1990, *Vol. II*, p. 144.

²⁰⁴ *Ibid.*, December 21 and 23, 1991, *Vol. II*, p. 157.

²⁰⁵ Garthoff, "Introduction: U.S. Considerations of Soviet Military Thinking," p. 14.

²⁰⁶ Korobushin, December 10, 1992, *Vol. II*, p. 108.

1970s, the General Staff saw a possibility for war in Europe to begin with a long conventional phase, and in the early 1980s, for an entire war to remain conventional, without escalation to nuclear use.²⁰⁷ This change in strategy, characterized on the “new periodization of war,” also was encouraged by changes during the 1960s and early 1970s in the balance of forces, both conventional and nuclear, in favor of the Warsaw Pact. As a result of Soviet tactical nuclear weapons deployments, the deployment of the intermediate-range SS-20, and the Soviet achievement of strategic parity, NATO lost escalation dominance in Europe and seemed to grow more cautious about nuclear weapons, in the General Staff’s view.²⁰⁸ Also during this period, the Soviet bloc increased its superiority in numbers, and lethality and mobility of its conventional weapons systems. The military leadership believed that conventional superiority provided the Warsaw Pact with the means to approximate the effects of nuclear weapons and achieve victory in Europe without resort to those weapons,²⁰⁹ and therefore, that the burden of initiating nuclear use would lie with NATO.²¹⁰

The Soviet strategy for keeping a strategic offensive in Europe at the conventional level and winning it, known as the Strategy of Deep Operations (*Strategiia Glubokikh Operatsii*), was encapsulated in a three-volume work, which carried the power of a directive (*nastavlenie*), produced inside the Main Operations Directorate of the General Staff, under the direction of Danilevich.²¹¹ This strategy, developed in the late 1970s and refined in the early 1980s, foresaw an offensive all the way to the Rhine using only conventional forces.²¹² Quick success was critical to the Soviet plan. Warsaw Pact forces had to achieve decisive breakthroughs against NATO forces and come into possession of the bulk of NATO’s tactical nuclear weapons in the first few days of the offensive, before NATO could overcome initial confusion and expected political rifts and come to an agreement on nuclear release. The Soviets needed to deliver a knockout blow to NATO before reinforcements could arrive in sufficient numbers from the U.S. Decisive success was also necessary because the Soviets expected to lose up to half their

²⁰⁷ Danilevich, December 18, 1990, *Vol. II*, p. 25.

²⁰⁸ *Ibid.*

²⁰⁹ Kalashnikov, April 1993, *Vol. II*, p. 90; and Danilevich, December 18, 1990, *Vol. II*, p. 24.

²¹⁰ Korobushin, December 10, 1992, *Vol. II*, p. 106; and Turbiville, *The Voroshilov Lectures*, pp. 245-247, 258.

²¹¹ Batenin, August 6, 1993, *Vol. II*, p. 7.

²¹² Danilevich, December 13, 1992, *Vol. II*, p. 56.

tanks, outrun their logistics support, and exhaust their forces in the initial push. Some optimistic assessments expected this initial operation to take 5 to 7 days and carry the Soviets some 500 km.²¹³

The interviewees' views regarding escalation and the role of nuclear weapons support the picture of Soviet strategy that emerged in Soviet military journals from the mid-1970s to the early 1980s. The Soviets expected to be able to achieve the initial breakthrough and to maintain high rates of advance by employing several independent but coordinated strategic operations. A conventional strategic air operation would serve as a substitute for a mass nuclear strike against NATO air defenses, airfields, nuclear storage facilities, and key command and control points. It would be carried out using a combination of conventionally armed missiles, aircraft, and air assault troops. Using air and air defense formations, the Soviets would then conduct a strategic anti-air operation in the attempt to suppress surviving NATO air assets and gain freedom of movement for the troops on the ground. The main forces then would use mobility, and high concentration and precise coordination of conventional fire strikes to approximate the effect of battlefield nuclear weapons along localized regions of the Forward Edge of the Battle Area (FEBA). High-speed, combined armored and airborne groupings (*operativnye manevrennye gruppy* - OMGs) would then exploit the gaps in NATO's forward defenses and advance quickly into the rear areas to disrupt C³I, destroy critical targets and defending units, and facilitate the advance of the main second echelon forces. The precise coordination of all combat activities could be achieved, because Soviet forces integrated ground, air, and fire support units under a single command structure for specific tasks.²¹⁴

The Warsaw Pact's conventional strategy against NATO was facilitated greatly by the deployment in the late 1970s of the SS-20 intermediate-range missiles in the Western USSR. According to Batenin, the SS-20's very low vulnerability, high accuracy, and great range created an umbrella under the cover of which it was possible to contemplate deep conventional operations into Western Europe.²¹⁵ The intermediate-range missiles gave the Soviets escalation dominance in the European Theater of Operations, which they hoped would deter NATO from escalating to nuclear use during the first chaotic days of the war. According to Batenin, by spring of 1987 all of the various elements of the strategy of deep operations, including the operational concepts, training and exercises,

²¹³ Batenin, August 6, 1993, Vol. II, p. 7.

²¹⁴ Gen. Makhmut A. Gareev, *The Cold War and the Arms Race*, unpublished manuscript, April 1993.

²¹⁵ Batenin, August 6, 1993, Vol. II, p. 8.

and the conventional and nuclear force structures, were in place.²¹⁶ In December of that year, however, Gorbachev signed the INF treaty, eliminating the SS-20—the key element in the General Staff's strategy.²¹⁷

Top U.S. government officials and analysts were correct to observe that the Soviet Union had no intention of employing nuclear weapons first. In fact, the USSR wanted to prolong as much as possible the conventional phase of a major conflict. A few analysts misjudged Soviet intentions, claiming that Soviet forces were poised and may even have preferred to initiate nuclear use.

U.S. assessments of the Soviet attitude toward initiation of escalation were, for the most part, accurate. They generally discounted the probability of Soviet escalation of theater nuclear exchanges, and in fact, the General Staff did not plan to escalate, because it judged that the use of relatively few nuclear weapons would cause sufficient damage to bring combat operations to a halt. The General Staff did, however, anticipate NATO escalation forced by impending conventional defeat, escalation that they would attempt to detect and preempt in order to reduce losses and limit damage. They hoped that deployment of the SS-20 would inhibit NATO escalation but were very pessimistic about control of escalation once nuclear use had been initiated.

²¹⁶ Ibid.

²¹⁷ Ibid.