

CHAPTER 5

SOVIET VIEWS OF NUCLEAR WARFARE: THE POST-COLD WAR INTERVIEWS

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INTRODUCTION

During the Cold War, many American specialists studied Soviet doctrine for nuclear warfare and the details of the Soviet nuclear force posture. From this protracted study, a conventional wisdom emerged in the United States. That wisdom loosely characterized the Soviet approach to nuclear warfare as “war fighting” to win, in comparison with the U.S. approach of “deterrence” via the threat of mutual assured destruction. Evidence that emerged in the years immediately following the fall of the Berlin Wall and the dissolution of the Union of Soviet Socialist Republics (USSR) sheds new light on the adequacy of this characterization and the Soviet approach to nuclear warfare.

From 1989-94, a team of American Soviet specialists headed by John Hines conducted numerous private discussions in Moscow with former Soviet officials, including high-ranking military officers who served on the General Staff and the Strategic Rocket Force.¹ A rigorous interview process was used, involving multiple interviews with the same individual. These interviews were sponsored by Andrew W. Marshall, Director of the Office of Net Assessment of the U.S. Office of the Secretary of Defense.² The interviews were recorded and analyzed in a two-volume technical report prepared for the U.S. Government by the BDM Corporation (1995).³

Twenty-two Soviet senior military personnel were interviewed. The interviews included repeated discussions with General Colonel Andrian A. Danilevich, the director of the authors' collective that, from 1977-86, composed and refined the three-volume Top Secret *Strategy of Deep Operations (Global and Theater)*. This document was the basic reference document for Soviet strategic and operational nuclear and conventional planning for at least the last decade of the Soviet Union.

During the interview process, the subjects tended to contradict each other on details, but tended to agree with each other on the larger issues. Many of the interviews corroborate each other's description of specific events. The Hines team, in their subsequent analysis, made judgments about the most significant differences. The team also concluded that the interview results generally were consistent with the Voroshilov General Staff Academy lectures, which were based on Soviet military doctrine as it was taught from 1973-75.⁴

The evidence from the Hines interviews, which surfaces several important issues, is not widely known. It has also not been fully integrated with other evidence about the Soviet Union. Consequently, this chapter has a very narrow objective; to briefly present Soviet views of nuclear warfare as presented in the report documenting the Hines interviews. Some of the views expressed in the interviews challenge U.S. conventional wisdom about Soviet views.

This chapter does not attempt to reconcile the differences; that will require careful research far beyond the scope of this chapter. Hopefully, subsequent work will integrate the evidence from the Hines interviews and other post Cold War evidence, with the conventional body of knowledge on the Soviet Union. Such integration will create a more complete picture of the actual Soviet approach to nuclear warfighting, and that picture will contribute to the understanding of mutual assured destruction as a Cold War concept.

The chapter is organized into four major sections and two appendices.

- The first section summarizes Soviet military strategy over the duration of the Cold War.
- The second section discusses several specific issues central to Soviet views of nuclear war fighting.
- The third section tabulates Soviet bottom lines important to the topic of mutual assured destruction.
- The fourth section discusses work that needs to be done to fully integrate the interview material with other evidence.

- Appendix I lists the 22 Soviet personnel that were interviewed by the Hines team.
- Appendix II contains a bibliography of additional reference material in several categories.

A CHRONOLOGY OF SOVIET STRATEGY⁵

The interviews resulted in a detailed chronology of Soviet strategy for warfare and how and why that strategy changed during the period 1945-91. That chronology falls into five major periods. The nearly verbatim description of the main characteristics of each period, as pieced together by the Hines team after the interviews, is as follows.

Full Mechanization (1945-50).

Soviet strategy emphasized the use of massive conventional armored land forces to obtain a three- to six-fold advantage over the opposing forces and to defeat them with rapid, decisive offensive ground operations. Air and naval forces were modernized but continued to play a supporting role.

Acquisition of Nuclear Weapons (1950-60).

Initially, nuclear weapons were viewed to be anti-city weapons. However, by 1955 nuclear weapons replaced the tank as the central strategic weapon. At the same time, the nuclear weapon was viewed within the existing World War II structure of military thought. As its predecessor the tank, nuclear weapons were to achieve a strategic breakthrough on the battlefield, to be exploited via massive mobile conventional forces. Strategic defensive plans did not exist.

Nuclear Euphoria (1960-65).

Under Khrushchev, a new strategy emerged. Nuclear weapons reached such a level of importance that the value of other weaponry was significantly reduced. The Strategic Rocket Forces were created as a separate branch of the armed forces, and conventional tactical

aviation and artillery were reduced severely. The centerpiece of the nuclear strategy was preemptive global and theater nuclear use.⁶ Defense became only a tactical-level concept. The strategy would be executed in two phases: an intercontinental preemptive strike (a single massive salvo) against the United States, followed by a second phase consisting of a single strategic offensive along an entire European theater front. The second phase involved preemptive nuclear strikes followed by a decisive uninterrupted massive land offensive. A key to this strategy was the assumption that the U.S. opponent could be preempted from using nuclear weapons. The comparatively low level of missile technology placed a high premium on preemption because the time required to fuel the missiles and attach their warheads made a “retaliatory meeting strike” impossible and a purely retaliatory strike highly unlikely.

“Descent to Earth” and Intercontinental Ballistic Missiles (ICBMs) (1965-75).

After Khrushchev, there was realization that the usefulness of nuclear weapons had been overestimated, and the opponent had a large number of nuclear weapons that could inflict “unrecoverable losses.” A search was undertaken for a more holistic approach to warfare with each type of weapon, including conventional weapons, having a distinct role. A new combined arms strategic operation was formulated for war in the European theater and the military concept of defense was gradually revived. At the same time, the view of war was dominated by the nuclear weapon, and a purely conventional war was not viewed as a realistic possibility. The growth in size of the nuclear arsenal, and the emergence of submarine-launched ballistic missiles (SLBMs), made it possible to plan multiple nuclear strikes instead of a single massive salvo. The Soviet leadership also began to appreciate the consequences of a strategic nuclear exchange. At a nuclear exercise in 1972, they saw the devastating results of a simulated U.S. first strike against the USSR, and the results shocked the leadership.⁷

During this period, the Soviets also watched the development of new U.S. concepts of escalation and nuclear use, initially rejecting them. Prior to 1970, Soviet policy was to respond with a full

nuclear attack. However from 1970-75, there was a shift towards a “controllable nuclear war” policy that was made possible by three doctrinal changes: (a) a preemptive strike was not the only option – retaliatory-meeting⁸ and retaliatory strikes became valid options; (b) strikes were now developed for multiple conditions--either global or regional depending on the situation; (c) war was reshaped into four stages: a non-nuclear phase, a nuclear phase, follow-up actions, and concluding actions. The most important of these was the non-nuclear phase, gradually expanded for planning purposes from a few hours to 7-8 days. At the same time, intercontinental strategic operations remained nuclear.

Strategic Balance (1975-91).

This was a long period of rough parity in strategic systems with the United States, rapid growth in the size of the strategic forces, and strong technological competition. Soviet doctrine underwent three major changes during this period. From 1975-80, limited nuclear war was officially rejected, however, it was considered possible for the war to remain conventional from beginning to end. From 1980-85, limited nuclear was accepted and presented in planning documents presented to the political leadership. Different options were presented for the limited use of nuclear weapons: only on the battlefield, only against military targets, limited strategic strikes, and proportional retaliation to limited strikes (either with escalation or deescalation). Gradually, the projected length of the limited phase was lengthened from hours to several days. Finally, from 1985-91, there was the adoption of defensive doctrine and realization that a nuclear war cannot be won. Preemptive strike was ruled out, and only the retaliatory strike remained. If war must be fought, the new foundations of doctrine became deterrence, war prevention, and limited war.

ASPECTS OF SOVIET VIEWS OF NUCLEAR WARFARE

Embedded in the chronology of Soviet strategy are several important aspects of the Soviet approach to nuclear war fighting that were prominent in the interviews. These are briefly discussed below.

The text closely follows that of the Hines report, with transition text added and occasional changes or amplification in wording for clarity in the context of this chapter. The topics featured are:

- Soviet views of winning a nuclear war,
- Soviet fears of a U.S. first strike,
- Soviet first strike strategy,
- Soviet views of deterrence and mutual assured destruction,
- Soviet nuclear war fighting,
- Soviet military strategy in Europe, and
- Soviet views of the nuclear balance.

Although the Hines interviews surfaced important details about many aspects of Soviet thought, material from the interviews related to these specific topics is central to conventional Western views about the Soviet Union in the context of mutual assured destruction (MAD).

No Winners in Nuclear War.

Conventional wisdom in the West was that the Soviets were working hard to try and create a military force posture that would enable them to attain victory in nuclear warfare. The interviews, however, create a somewhat different picture. At least by the early 1970s, the interviews show that informed Soviet military leadership considered victory in a nuclear war to be unattainable in any meaningful sense.⁹ Akhromeev stated that in practical terms, neither side would win a nuclear war.¹⁰ According to Tsygichko, the General Staff understood the devastation that would result from a nuclear war and therefore did not develop a working definition of victory. Military planners instead focused on the destruction that they could inflict on the enemy. They hoped that, in a nuclear exchange, some pockets of civilization inside the Soviet Union would survive.¹¹

From the interviews, it appears that the Soviet military command understood the consequences of nuclear war and was intent on preventing it. The General Staff, beginning in the 1970s, developed

the idea that nuclear weapons were a political tool, with very limited military utility.¹² This applied to both the strategic and theater use of nuclear weapons. By 1981, the General Staff concluded that nuclear use would be catastrophic as well as counterproductive in combating operations in the European theater.¹³

The Specter of a U.S. First Strike.

During the Cold War, U.S. declaratory nuclear policy was that of deterrence, popularly interpreted to be the use of nuclear weapons in a second strike mode. Nevertheless, virtually all interviewees emphasized that the Soviets perceived the United States to be preparing for a first strike. The Soviet memory of the June 1941 surprise attack colored Soviet strategic planning throughout the Cold War period.¹⁴ This led Soviet leaders, most of whom had personally experienced the German invasion, to consistently interpret U.S. capabilities and actions in terms of their implications for a U.S. surprise attack with nuclear weapons.

The Soviets saw several indicators of this. The most frequently cited indicators included: the development of the highly accurate, multiple warhead MX missile system;¹⁵ programs to develop accurate multiple independently-targetable reentry vehicles (MIRV) warheads for existing missile systems (putting Soviet land-based ICBMs and control systems at risk);¹⁶ the relative vulnerability of U.S. missile silos and control centers to ground bursts; the large and diverse arsenal of tactical nuclear weapons in Europe; the consistent rejection by the United States of no first use doctrine; the deployment of the *Pershing II* missile and ground and sea launched cruise missiles capable of striking command and control targets in Soviet territory with little warning; and the issuance of *Presidential Decision Memorandum 59* (PD-59), which the Soviets viewed to be a deliberate policy for launching a surprise decapitating first strike against the Soviet leadership.¹⁷

Soviet analytic calculations also reinforced this perception. Soviet calculations demonstrated the vulnerability of their own ICBMs to ground burst. In turn, when Soviet satellite photography showed the proximity of U.S. ICBM silos to each other and to the launch control center, the General Staff concluded that the United States

intended to launch the missiles first.¹⁸ This view was reinforced by Soviet intelligence about the U.S. Strategic Integrated Operations Plan (SIOP), which described the U.S. intent to launch nuclear force on strategic warning against Soviet forces.¹⁹ According to Dvorkin, Soviet modeling and testing was based on the assumption that the United States would strike first.²⁰

Soviet First Strike Strategy.

In the conventional Western view, one important aspect of Soviet war-fighting strategy was the execution of a preemptive first strike against the nuclear forces of the West. In the view of Soviet officers interviewed, the 1960s doctrine of strategic nuclear preemption was designed to prevent a successful U.S. strike on Soviet territory. World War II veterans viewed a doctrine of retaliation to be equivalent to the Soviet exposure to surprise attack by Hitler in 1941. Grechko reportedly said that he “wanted to avoid repeating the mistakes of 1941 by waiting to be struck on the head.”²¹ Soviet military leaders depended on preemption in the 1960s because of Soviet silo vulnerability, coupled with the length of time required to launch their ICBMs and pessimistic views of the survivability of their command and control system.²² By the 1970s, however, the Soviet political leadership, now more aware of the consequences of nuclear war, started to move away from preemption to a launch-under-attack doctrine and, for the first time, considered retaliation.²³

According to Danilevich, even though 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 examined contingencies for nuclear use, they shied away from authorizing nuclear use.²⁴ After 1972, the political leadership did not participate in a even a single military exercise involving nuclear weapons. The General Staff was left entirely on its own to develop scenarios for nuclear war.²⁵

The Hines team detected dual views within the General Staff about their strategic strike posture. This duality stemmed from a basic uncertainty about what was technically and bureaucratically possible in a crisis situation. The military leaders, convinced that the

United States would strike first, prepared for all three possibilities--preemption, launch-on-warning, and retaliation. However they did not like retaliation and did not believe that the Soviet command and control system had sufficient stability to guarantee an effective retaliatory strike. The military leaders also doubted that the political leadership could react fast enough in the face of a U.S. launch in progress. Nevertheless, the military acceded to political pressure to prepare for a retaliatory strike by hardening silos, resuming mobile missile programs, reducing missile launch times, and developing redundant command and control capabilities. As a result, by the mid-1970s, the necessary capabilities existed to execute a launch-on-warning doctrine. Nevertheless, the military leadership still held on to preemption as a possible option.²⁶

Deterrence and Mutual Assured Destruction.

The Soviet nuclear strategy relied heavily on deterrence. But the Soviet concept of deterrence was based on the premise that an aggressor would receive crushing punishment in case of an actual or imminent nuclear attack in the form of strikes against strategic targets. However, these strikes could be preemptive, "retaliatory-meeting," or purely retaliatory²⁷ and would target both military and civilian installations.²⁸

The Soviets did not develop an elaborate doctrine of deterrence enhanced by various strategies of nuclear use, selective targeting, planned and deliberate escalation, etc. However, the logic of deterrence exerted a profound influence over Soviet leaders who intuitively acted to avoid nuclear war and to prevent the United States from using any nuclear weapons against Soviet forces and territory.²⁹

According to the interview of Marshal Akhromeev, the Soviet Union accepted the Soviet concept of nuclear deterrence by the late 1960s.³⁰ According to Iurri Mozzhorin, who served for 30 years as the Director of the Central Scientific Research Institute of Medium Machine Building, the Soviet Union accumulated enough ICBMs that it did not expect a U.S. attack. Brezhnev supported deterrence, despite opposition from Defense Minister Grechko. The principles of deterrence, in effect, were adopted as doctrine at a July 1969

meeting of the Defense Council. It was decided at that meeting to manufacture survivable missiles rather than produce vulnerable missiles in large quantities.³¹

Soviet strategists recognized that deterrence was, to some extent, mutual because each side was capable of launching a retaliatory strike and of inflicting unacceptable damage on the other.³² They nevertheless considered their nuclear power the only guarantee of security from war, and they never examined the question of mutually assured destruction as a condition that they should accept, much less pursue.³³ The Soviet Union never embraced vulnerability as desirable.³⁴ The Soviets also believed that, given the military uncertainties, mutually assured destruction was only a theoretical conclusion. This is because there was no guarantee in practice that a retaliatory strike would be launched or inflict unacceptable damage on the enemy.³⁵

Soviet Nuclear War Fighting.

According to the interviews, in Soviet eyes the concepts of deterrence and war fighting were not mutually exclusive. The Soviets tried to build weapons that credibly could and would be used if nuclear war occurred. In this sense, the ability to fight a war was an integral part of Soviet deterrence strategy, despite the fact that the leadership did not accept the concept of a meaningful victory. However, the Soviets neither embraced the concept of fighting a limited nuclear war (confined to Europe, for example), or of managing a nuclear war by climbing the ladder of escalation.³⁶

In the event of nuclear war, the Soviet Union planned to try and strike a mix of cities, industrial centers, and military targets. The proportion of military to industrial targets depended on whether the USSR tried to preempt³⁷ or launched second.³⁸ A preemptive Soviet strike would target the enemy's retaliatory forces, including ICBM silos, airfields, command centers, and naval bases.³⁹ A retaliatory strike would be aimed at soft military targets (such as airfields and C3 facilities), at U.S. infrastructure (such as transportation grids and fuel supply lines), and cities.⁴⁰

At the same time, Soviet military planners worried that weaknesses in their command and control systems might prevent

timely and effective launches of retaliatory strikes. As a result, they designed and deployed a command missile system which carried well-concealed and hardened missiles. They were deployed near launch clusters, would be able to launch on command into near space and give the launch order to the adjacent cluster of ICBMs.⁴¹ The Soviets also investigated a near-automatic Dead Hand launch system, but the interviewees did not agree on whether that system had been deployed.⁴² They were also concerned with the possibility of unauthorized use. By the mid-1970s, the USSR introduced command and control systems that gave the General Staff confidence in centralized control over Soviet nuclear forces.⁴³

Winning in Europe.

The inherent difficulties of nuclear war fighting notwithstanding, the Soviet military establishment was required to find a concrete operational solution to the problem of winning a general war in Europe. According to the interviews, the Soviet military's confidence in the utility of nuclear weapons for securing this objective declined steadily throughout the period.⁴⁴

Part of Soviet reticence stemmed from the fact that the General Staff expected the battlefield use of nuclear weapons to be devastating.⁴⁵ Soviet modeling in the 1970s predicted that the use of one quarter of the nuclear weapons in Europe would completely destroy operational formations, cause combat movement to virtually stop for several days, and produce an ecological disaster.⁴⁶ As a result, the Soviet General Staff recommended to the Central Committee that theater nuclear force modernization cease. This was rejected by the political leadership's orders that forced modernization to proceed, and that led the General Staff to prepare for war with the use of theater nuclear weapons.⁴⁷

A change in military doctrine was required to work out what the Soviets considered to be a viable military strategy. By the late 1970s, military doctrine shifted its emphasis to a prolonged conventional phase in a European conflict. At the same time, the Soviets assumed that a war in Europe could not be kept conventional for long and expected the North Atlantic Treaty Organization (NATO) to initiate nuclear use on the battlefield after initial losses.⁴⁸

In order to strengthen deterrence, Soviet leaders wanted the United States to believe that they would massively respond to any U.S. employment of nuclear arms. However, by the late 1970s, the General Staff considered limited nuclear options in the European theater. Some options were considered proportionate response, while others involved escalation or deescalation. The best response would be an equal number of strikes against analogous military targets such as troops, airfields, control centers, and missile sites.⁴⁹ However, these discussions were limited to the General Staff. According to Kataev, the party leadership never considered selective use, even tactically.⁵⁰ Nevertheless, the Soviets were capable of launching limited strikes.⁵¹ At the same time, the Soviets did not prepare any detailed plans for extended combat on a nuclear battlefield.⁵² They did not plan beyond an initial exchange of nuclear strikes on a tactical/operational scale. Neither did they plan for a massive response to a limited NATO nuclear strike against a Warsaw Pact country.⁵³

Although the Soviets developed limited nuclear options, they neither discussed nor exercised initiating selective nuclear use. Soviet military leaders also were very skeptical about the escalation control and expected the period of limited nuclear exchanges in theater to last at most for several days.⁵⁴

Soviet military strategists also developed a new conceptual framework for war in Europe that included new operational concepts such as the Operational Maneuver Group and a preemptive air operation coupled with the threat of launching the SS-20 to deter NATO initiation of nuclear use. By the mid-1980s, the Soviet General Staff considered it possible that Warsaw Pact forces could reach the English Channel quickly while avoiding a massive theater nuclear war.⁵⁵

Finally, even though the Soviets explored the limited use of nuclear weapons in Europe, the Soviet theater nuclear force buildup in Europe during the late 1970s and 1980s was primarily designed to reduce the likelihood of NATO nuclear use and keeping the war conventional. Simultaneously, changes in Soviet conventional force posture and employment concepts were designed to maximize operational effectiveness and obtain a decisive and quick success before reinforcements could arrive from the United States.⁵⁶ A key component of this conventional strategy was the deployment of

the SS-20 nuclear missile system. This gave the Soviets escalation dominance in Europe, and, hopefully, would deter NATO from escalating to nuclear use. In December of 1987, however, Gorbachev signed the Intermediate Nuclear Force (INF) Treaty and eliminated the SS-20, the enabling element of the new Soviet conventional strategy.⁵⁷

The Importance of the Nuclear Balance.

The nuclear balance between U.S. and Soviet forces was an important factor in the development of the Soviet force posture. The Soviets felt that the only truly stable situation was one in which one side had clear superiority over the other. For them to feel secure and for the balance to be stable, the imbalance had to be in their favor. At the same time, Soviet strategists considered the nuclear balance to be unstable because technological advances and increases in the size of the arsenal could significantly augment the power of one side relative to another, thereby upsetting the balance. The Soviets believed that this situation induced both the United States and the USSR to constantly improve the technological characteristics of their nuclear forces in order to restore the balance. Between 1965-85, the Soviets tried to gain strategic superiority over the United States. Their primary goal was not to insure victory in a nuclear war, but to create a stable situation in order to enhance their general security.⁵⁸

IMPORTANT SOVIET BOTTOM LINES

The overarching purpose for this chapter is to contribute to a discussion of Cold War views of MAD. The following Soviet viewpoints, expressed in the interviews and discussed above, are especially important in that context.

No Victory in Nuclear Warfare.

Beginning at least in the early 1970s, the Soviet leadership did not believe in any meaningful concept of victory in nuclear warfare. Nevertheless, the Soviets were preparing to fight such a war and survive it if one occurred.

Psychological Fear of a U.S. First Strike.

A dominant psychological consideration was the Soviet fear of a surprise nuclear first strike by the United States against the Soviet homeland. This fear was deeply rooted in the Soviet experience of the German surprise attack in 1941. Virtually all interviewees emphasized that the Soviets perceived the United States to be preparing for a first strike.

Rejection of MAD.

The Soviets did not believe in the concept of mutual vulnerability as a basis for nuclear strategy. The MAD approach resurrected fears of the Soviet vulnerability that led to the attack by Hitler. Hence even though concepts of assured retaliation eventually became a part of Soviet doctrine, these concepts did not stem from a deliberate shift to MAD. Rather, they came from what the Soviets saw as the inherent difficulty of successful military counters to a U.S. first strike.

Rejection of Soviet First Strike.

The 1960s doctrine of strategic nuclear preemption was designed to prevent a successful U.S. first strike. By the 1970s, the doctrine shifted. Even though theoretical writings, plans, and exercises included a first strike against the United States, the political leadership avoided considering the possibility of a first strike. In fact, the General Staff operated independently in developing scenarios for nuclear war.

Deterrence, Soviet-Style.

Soviet strategy relied heavily on deterrence of a U.S. first strike. But the Soviet concept of deterrence was based on their ability to inflict significant damage to the aggressor by preemptive, "retaliatory-meeting," or purely retaliatory strikes against both military and civilian targets. Which of these reactions materialized was strongly a function of the operability of the Soviet command

and control system and the reaction time of the Soviet political leadership.

Limited Military Utility of Nuclear Weapons.

Beginning in the early 1970s, the General Staff increasingly believed that nuclear weapons had limited military utility in either strategic or theater use. Eventually Soviet military strategy for victory in Europe depended on maintaining nuclear escalation dominance in theater to deter NATO nuclear use, thus giving the Soviets time to win conventionally.

Importance of the Nuclear Balance.

Throughout the period 1965-1985, the Soviets tried to gain strategic superiority over the United States in nuclear forces. The primary goal was not to ensure victory in a nuclear war, but to create a stable situation in order to enhance their general security.

SOME UNANSWERED QUESTIONS

There are many interesting and important issues that surfaced in the Hines interviews. The points discussed above are no means complete. They were selected because of their centrality to the topic of MAD, and also because they are at variance with some popular Western conceptions of Soviet nuclear warfare. It is important to know the degree to which the interviews correspond to Soviet ground truth or whether they need to be filtered.

The interviews leave much work to be done and some major questions unanswered. For example, one question they raise is the degree to which the views expressed in the interviews are consistent with the details of the Soviet military force posture and operational concepts that were generated via classified and unclassified sources of evidence during the Cold War. A second question is the degree to which the interviews are consistent with evidence of Soviet strategy and nuclear warfighting concepts that became available at the end of the Cold War. A third question is what is the picture that results when all of these sources of evidence are considered simultaneously.

It will take work to answer these questions. Careful research that works back and forth between the conventional wisdom about the Soviet Union, existing open source and intelligence documents that capture that wisdom, the Hines interviews, and other post-Cold War evidence will be required. To the extent that an understanding of actual Soviet military strategy, warfighting style, and the details of Soviet views of nuclear weapons and operations are important today and for the future, that effort is probably warranted. At a minimum, it appears to be worth the effort to set the historical record straight.

APPENDIX I

THE INTERVIEW SUBJECTS

The following 22 senior Soviet military officials were interviewed by John Hines and his research team.

Sergei F. Akhromeev, Chief of the Main Operations Directorate of the General Staff (1974-1979), Chief of General Staff (1984-1988), Personal National Security Advisor to President Gorbachev.

Dimitri Chereshkin, Department Head, All-Union Scientific Research Institute for Systems Studies (VNIISI).

General-Lieutenant G. V. Batenin, staff to MSU Sergei Akhromeev when the latter was Chief of the Main Operations Directorate, and then First Deputy Chief of the General Staff under MSU N. Ogarkov.

General-Colonel Andrian A. Danilevich, Deputy Director, General Staff Main Operations Directorate (to 1977), Special Advisor for Military Doctrine to the Chief of the General Staff (1977-1988), Director of the authors collective that composed and refined (1977-1986), the three volume Top Secret *Strategy of Deep Operations (Global and Theater)*—the basic reference document for Soviet strategic and operational nuclear and conventional planning for at least the last decade of the Soviet state.

General-Major Vladimir Z. Dvorkin, Director of TsNII-4, the Central Scientific Research Institute of the Strategic Rocket Forces.

Army General **Makhmut A. Gareev**, Chief of the Tactical Training Directorate of the General Staff (1974-1977), Deputy Chief of the Main Operations Directorate for Training and Readiness of the General Staff (1977-1984), Deputy Chief of the General Staff for Scientific Work and Operational Readiness (1984-1989).

General-Colonel Igor V. Illarionov, Aide to MSU Ustinov in the Central Committee Secretariat (1965-1976), assistant to Ustinov for special assignments (1976-1984), specializing in Air Defense, Rocket Forces, and Aviation.

Aleksei S. Kalashnikov, Head of Strategic Rocket Force Committee on Science and Technology (5 years), Chairman of State Commission on Nuclear Testing at Semipalatinsk (10 years).

Vitali L. Kataev, Senior Advisor to the Chairman of the Central Committee Defense Industry Department (1967-1985).

General-Major Iurii A. Kirshin, Director, Institute of Military History (1985-1992), Former Chief of the Strategy Department of the Military Science Directorate of the Soviet General Staff.

General-Colonel Grigorii F. Krivosheev, Deputy Chief of the General Staff, Chief of the Main Directorate for Organization and Mobilization.

General-Colonel Varfolomei V. Korobushin, First Deputy Chief of Staff of the Strategic Rocket Force (10 years), Director of the General Staff's Center for Operational and Strategic Research (TsOSI).

General-Lt. Nikolai V. Kravets, Strategic Rocket Forces officer with over 30 years experience in force design, systems acquisition, testing, and evaluation.

Petr M. Lapunov, Department Chief in TsOSI.

Iurii A. Mozzhorin, Director of the Central Scientific Research Institute of Machine Building (TsNIIMash) (30 years).

Vladimir A. Rubanov, Aviation Ministry Official.

Boris A. Strogonov, Missile technology expert, Central Committee Defense Industry Department (1955-1987).

Viktor M. Surikov, First Deputy Director, TsNIIMash, and assistant to the head of the Central Committee Defense Department, the party body responsible for force building, procurement, and arms control.

Vitalii N. Tsygichko, Head of the Theater Forces Modeling Department of the Scientific Research Institute NII-6 of the Main Intelligence Directorate (GRU) for the General Staff (1967-1977), Senior Analyst at VNIISI (1977-1995).

Dimitry Volkogonov, Director, Institute of Military History.

APPENDIX II

BIBLIOGRAPHY OF ADDITIONAL REFERENCES

There is a large amount of Western literature on Soviet views of nuclear warfare. There is also a body of evidence on Soviet views of nuclear warfare that comes from Soviet source material that was written during the Cold War. Finally, there is source material that became available in the West after the collapse of the Berlin Wall or in the years following the end of the Soviet Union. A representative set of material in each of these categories follows. In addition to these classes of material, there also exist many formerly classified intelligence documents on related topics.

Other Post-Cold War Materials.

The sources cited below, as with the Hines interviews, have not been fully integrated yet into the conventional body of knowledge about Soviet views of nuclear warfare. There are also other sources of post-Cold War evidence not cited here. Additionally, there is probably significant material in the Russian archives that some day may become available to help create a coherent and consistent picture of Soviet views.

Wardak, Ghulam Dastagir (compiler) and Graham Hall Turbiville, Editor, *The Voroshilov Lectures: Materials from the Soviet General Staff Academy*, Vols. I-III, Washington DC: National Defense University Press, 1989-92.

Heuser, Beatrice, "Warsaw Pact Military Doctrines in the 1970's and 1980's: Findings in the East German Archives," *Comparative Strategy*, Vol. 12, 1993, pp. 437-457.

Soviet Primary Source Documents.

The sources cited below contain translations of some of the basic Soviet source material related to nuclear warfare. The referenced material spans the 1960s and the 1970s.

Kintner, William R, and Harriet Fast Scott, editors, *The Nuclear Revolution in Soviet Military Affairs*, Norman: University of Oklahoma Press, 1968.

Lomov, Colonel Gen N.A, editor, *The Revolution in Military Affairs*, Moscow, Military Publishing House, Ministry of Defense, 1993, translated and published under the auspices of the U.S. Air Force, Washington, DC: U.S. Government Printing Office, 1980.

Scott, Harriet Fast, and William F. Scott, *The Soviet Art of War: Doctrine, Strategy, and Tactics*, Boulder: Westview Press, 1982.

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Yegorov, P. T., I. A. Shlyakhov, and N. I. Alabin, *Civil Defense*, Moscow, Publishing House for Higher Education, 1970, translated and published under the auspices of the U.S. Air Force, Washington, DC: U.S. Government Printing Office, 1977.

Representative Western Assessments.

The sources cited below contain a representative set of Western assessments. These collectively give the conventional wisdom in the West about Soviet views of nuclear warfare.

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ENDNOTES - CHAPTER 5

1. The Hines team also repeatedly attempted to gain access, unsuccessfully, to relevant Central Committee and Ministry of Defense archives for the post-1960 Cold War period. The oral testimony is what was possible. John G. Hines, Ellis Mishulovich, and John F. Shull, *Soviet Intentions 1965-1985. Vol. I: An Analytical Comparison of U.S.-Soviet Assessments During the Cold War*; McLean, VA: The BDM Corporation, September 22, 1995, p. vi. (Hereafter referred to as Hines, Vol. I.)

2. One purpose of the interviews was to exploit to the short window of opportunity after the collapse of the USSR to gain a better understanding as to how key Soviet senior defense officials assessed the military balance and associated doctrines and forces postures, and how the Soviets developed and operated their nuclear arsenals. A. W. Marshall, "Introductory Memo," Hines, Vol. I.

3. John G. Hines, Ellis Mishulovich, and John F. Shull, *Soviet Intentions 1965-1985. Vol. I: An Analytical Comparison of U.S.-Soviet Assessments During the Cold War; Vol. II: Soviet Post-Cold War Testimonial Evidence*, McLean, VA: The BDM Corporation, September 22, 1995, produced for OSD-Net Assessment under Contract MDA903-92-C-0147. Interviews were also conducted with senior U.S. defense officials, and a comparison of views made. Hines, Vol. I.

4. The Voroshilov lectures, published in the late 1980s by the U.S. National Defense University, are a compilation of the translated lecture notes of foreign officers who attended the Voroshilov General Staff Academy in the early 1970s.

5. Extracted from Hines, Vol. I, pp. 72-76; and Interview with General-Colonel A. A. Danilevich, in Hines, Vol. II, pp. 54-57.

6. Marshall V. D. Sokolovskiy was the advocate of the new strategy. His ideas were published in his influential book, *Modern War*, and accepted as doctrine at a Ministry of Defense Conference held in 1962. They were put into practice in 1962-63. Interview, General-Colonel Danilevich, in Hines Vol. II, p. 55.

7. The calculated effects of the U.S. first strike, using ground bursts, showed 100 percent of the ground forces destroyed, 100 percent of nonstrategic aviation destroyed, 80 percent of strategic aviation destroyed, 100 percent of naval forces destroyed, and radiation contamination of 400-3,000 roentgens over European Russia. Hines, Vol. I, p. 74.

8. A "retaliatory-meeting" strike is the Soviet adaptation of the traditional meeting engagement in warfare. Two opposing sides are attempting to launch strikes; comparative command and control processes determine which side actually launches first, and whether or not the warheads of one side are landing during the launch of other side. If, for example, the side with the actual initial launch is the United States, and U.S. warheads are incoming or landing during the Soviet launch sequences, then the Soviet strike becomes a "retaliatory-meeting" strike.

9. Hines, Vol. I, p. 1.

10. Akhromeev, in Hines, Vol. II, pp. 5-6.

11. Hines, Vol. I, p. 26.

12. Akhromeev, in Hines, Vol. II, pp. 5-6.

13. Danilevich, in Hines, Vol. II, p. 24.

14. Hines, Vol. I, p. 2.

15. This was eventually deployed as the Peacekeeper missile.

16. These programs probably included the NS-20 guidance package for the *Minuteman III*, as well as improved U.S. SLBM warhead accuracy resulting from the global positioning system on the Navstar satellite combined with the development of the D-5 missile for the *Trident* submarine. Additionally, in traditional Soviet views, their land-based intercontinental ballistic missile (ICBM) force had political and domestic significance far beyond its military contribution, so the pending vulnerability of that force element could not be automatically offset by increases in other elements of the Soviet strategic triad.

17. Hines, Vol. I, p. 2.

18. Hines, Vol. I, p. 31.

19. Surikov, in Hines, Vol. II, p. 134.

20. Dvorkin, in Hines, Vol. II, pp. 70-71.

21. Mozzhorin, in Hines, Vol. II, p. 123.

22. According to Danilevich, 5-6 hours were required to fuel the missiles and 2-3 hours to mate warheads. By this time, the U.S. strike would have landed, resulting in heavy damage to both the missiles and the command and control system. Danilevich, in Hines, Vol. II, p. 39. The Soviet measure of effectiveness for their own missiles was the ability of a missile, after an enemy attack, to be launched in the prescribed time and destroy its target. Thus launch impairment in any form as a result of the incoming U.S. attack would result in, in Soviet view, in the inability of the Soviet missile to perform its mission, in other words, a missile kill by the United States. Tsygichko in Hines, Vol. II, pp. 150-151.

23. Hines, Vol. I, pp. 28-29.

24. Danilevich, in Hines, Vol. II, p. 62.

25. *Ibid.*, p. 69.

26. Hines, Vol. I, pp. 28-29.

27. Note that the strikes could be precipitated on strategic warning (“imminent nuclear attack”), and the deterrent strikes could be preemptive, retaliatory-meeting, or retaliatory, depending on the parameters of warning, missile preparation, the command and control system, and political decisionmaking.

28. Hines, Vol. I, p. 2.

29. *Ibid.*, pp. 2-3.

30. Hines, Vol. II, p. 6.

31. *Ibid.*, p. 125.

32. *Ibid.*, p. 55.

33. Hines, Vol. I, pp. 16-17.

34. Hines, Vol. II, p. 19.

35. *Ibid.*, p. 30.

36. Hines, Vol. I, p. 3.

37. Recall that the Soviet concept of preemption is the successful execution of a strike against a U.S. first strike that is imminent. Hence the United States has made the first move.

38. Hines, Vol. II, p. 31.

39. Hines, Vol. I, pp. 17-18.

40. *Ibid.*, p. 18.

41. Kataev, in Hines, Vol. II, p. 100-101.

42. Hines, Vol. I, pp. 19-21.

43. Akhromeev, in Hines, Vol. II, p. 5.

44. Hines, Vol. I, p. 4.

45. According to Tsygichko, the Soviets predicted much higher battlefield attrition rates than the United States. This was because the Soviets had concluded that 7 pounds/square inch (psi) overpressure was sufficient to kill personnel, who were similar to dogs in their response to overpressure. Tsygichko, in Hines, Vol. II, p. 152. Nominal U.S. personnel lethality levels were 40 psi. 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. Cited in Hines, Vol. I, p. 43.

46. Tsygichko, in Hines, Vol. II, p. 142.

47. Tsygichko, *Soviet Use of Mathematical Models to Support Strategic Decision Making: A Model of Strategic Operations in Continental Theaters of Military Action*, cited in Hines, Vol. I, p. 44.

48. Hines, Vol. I, p. 4.

49. Danilevich, in Hines, Vol. II, p. 60.

50. Kataev, in *Ibid.*, p. 101.

51. Analysis in the Hines Report points out that information obtained from the East German archives showed that certain Warsaw Pact exercises included selective nuclear strikes. See Beatrice Heuser, "Warsaw Pact Nuclear and Conventional Strategy in the 1970s and 1980s: Findings in the East German Archives," *Comparative Strategy*, Vol. 12, No. 4, November 1993, pp. 437-457, cited in Hines, Vol. I, p. 39.

52. Tsygichko, in Hines, Vol. II, p. 157.

53. Tsygichko, in *Ibid.*, p. 144.

54. Danilevich, in *Ibid.*, pp. 57-58; and Gareev, in Hines, *Ibid.*, p. 72. Gareev was responsible for all exercises from 1974-88 from the tactical to the operational-strategic level. He insisted that the Soviet military was forbidden to exercise first use of nuclear weapons in the absence of any indication of nuclear initiation by the enemy.

55. Hines, Vol. I, p. 4.

56. Hines, *Ibid.*, pp. 44-45.

57. Batenin, in Hines, Vol. II, p. 8.

58. Hines, Vol. I, p. 1.