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SOVIET INTENTIONS 1965-1985

Volume II
Soviet Post-Cold War Testimonial Evidence

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Interviews and Discussions with Cold-War Era Planners and Analysts

This volume contains much of the raw material on which this study is based. All items in this collection represent the testimony, in some form, of Soviet and American strategic planners and analysts whose professional careers were largely dominated by the need to understand and respond effectively to the military threat from their Cold War opponents.

Most of the items are structured as records or summaries of interviews conducted on the basis of a specific list of questions. In follow-up interviews or interviews with difficult subjects, the questions served only as a general guide to research. Long, narrative responses also often did not address questions in the same format and sequence in which the questions were presented.

For many reasons, items do not follow precisely the sequence and contents of the interview questions. Soviet interview subjects often were uncomfortable with the interview situation, the questions, or the implications of the research (the Cold War was over and the West had won). As a result, the nature of the record of interview or discussion varies from interview to interview. Transcripts of taped interviews are the record of choice, of course, followed by records based on notes and, finally, summaries based on the memory of the interviewer prepared shortly after the interview.

Many Soviet interview subjects were uncomfortable with tape recorders, especially early in the project (1989-1990) when several were far from convinced that the Cold War was, indeed, over. Likewise, several of the questions caused discomfort which forced rephrasing and special prompting (provocative statements or allusions to other information) on the part of the interviewer. Some interview subjects responded with almost a stream-of-consciousness flow of information that moved from association to association through an entire series of related issues. Stopping such a response to adhere precisely to our questions could result in the loss of valuable insights and information not anticipated by the questioner.

This resulted in incomplete coverage of some questions requiring, when possible, subsequent, supplementary interviews focused on specific issues. To compensate when possible, we revisited some of the most knowledgeable interview subjects several times over the course of 3 or 4 years.

We tried, when possible, to isolate the interview subject from his colleagues during questioning to avoid mutual intimidation, collegial responses, and contamination of data and observations. We were generally successful in meeting this objective but were sometimes forced by those who helped arrange a given interview to involve them in the process. When possible, we would subsequently isolate the interview subject and revisit one or two key questions to validate the original response.

The record that follows, therefore, is inconsistent in level of detail and comprehensiveness despite the planning and good intentions of the researchers. Imperfect as they are, they nevertheless represent a unique record of information and beliefs of Cold War participants who were able to trust their former enemies sufficiently to share their thoughts and beliefs in some detail before they themselves passed into history.

For the convenience of the reader, a list of acronyms and abbreviations appears in the appendices, as well as a selective list of decision makers and analysts cited or referred to in the interview record.

SUMMARY OF INTERVIEW

Subject:	Marshal Sergei F. Akhromeev
Position:	Personal National Security Advisor to President Gorbachev Chief of the General Staff, 1984-1989; First Deputy Chief of the Soviet General Staff, 1979-1984; Chief of the Main Operations Directorate of the General Staff, 1974-1979
Location:	Akhromeev's Office in the Kremlin (Room 409)
Interviewer:	John G. Hines
Date/Time:	March 5, 1990, 2:30-3:30 p.m.
Language:	Russian
Prepared:	Based on notes

Marshal Akhromeev promised by telephone in the morning to meet me at 2:30 p.m. during a recess of the Congress of Peoples Deputies which was in session. (He was a deputy representing Moldavia). The Congress had an unscheduled meeting in the afternoon but the Marshal broke away and kept his appointment as promised.

Comment: This exchange was taken up largely with getting acquainted and with recent events such as his resignation in late 1989 from his position as Chief of the Soviet General Staff.

Akhromeev opened the discussion with a question about where I had studied the Russian language. I explained my education and long-standing interest in Soviet affairs, my training and service as a U.S. Army Signal Officer in Germany and Vietnam, and subsequent mid-career intensive education in Russian language and Soviet affairs. I explained that I had studied advanced Russian at the U.S. Army Russian Institute in Garmisch-Partenkirchen, Germany. He smiled knowingly. I volunteered that I understood that the Soviet military considered Garmisch a "spy school." He smiled more broadly and corrected me, "No, not a spy school, a military intelligence school. There is a difference."

I accepted his correction, assured him that I was not an intelligence branch officer but had studied the Soviet Union for many years. I explained that I now wanted to understand better the extent to which U.S. and Soviet leaders and analysts had understood or misunderstood each other during the Cold War to help avoid repetition of such a prolonged and dangerous confrontation. He accepted the objective as worthy but clearly was still struggling with the process of ending the Cold War.

Given his disposition, I asked him about the Fall 1989 Soviet announcement of unilateral reductions of 1/2 million men and rumors that he had resigned as Chief of the General Staff[1] in protest. He responded deliberately and clearly. First, he said, the analytical work on which the cuts were based had been under way in the General Staff for

[1] General Staff will be either spelled out or abbreviated as GS throughout the interviews.

months before the decision was taken and the findings were consistent with his sense of what was necessary. Second, he retired because he was physically no longer up to the work and long hours. He said he had submitted his resignation on September 6, but stayed on for several more weeks at Gorbachev's request. Hence, his resignation occurred within a few days of the announcement of the unilateral force reductions.

Because time was running out, I asked him to what extent, in his two decades of experience on the General Staff, did operational and strategic planning as well as force planning rely on analysis and modeling for determining requirements. He responded that many groups did modeling and analysis which did contribute in some way to such decisions. This was more true in the mid-1970s and later. Many other factors, however, went into such decisions.

I asked if we could meet again, to which he readily agreed and I asked him if he could recommend an officer or officers with whom I should speak to better understand the analysis underlying Soviet strategic decisions. He thought about the question for some time and then responded that General-Colonel Korobushin had been very much involved in the process and could be very helpful.

I thanked him and said I had a small gift for him. He smiled but said that, as a government official, he couldn't accept gifts. I explained that it was a box of chocolates for his wife. He graciously accepted the gift and repeated that he would happily meet again but had to hurry to return to the congressional session.

SUMMARY OF INTERVIEW

Subject:	Marshal Sergei F. Akhromeev
Position:	Personal National Security Advisor to President Gorbachev Chief of the Soviet General Staff, 1984-1989; First Deputy Chief of the Soviet General Staff, 1979-1984; Chief of the Main Operations Directorate of the General Staff, 1974-1979
Location:	Akhromeev's Office in the Kremlin (Room 409)
Interviewer:	John G. Hines
Date/Time:	February 8, 1991, 4:00-5:30 p.m.
Prepared:	Based on notes

By the mid-1970s, both the U.S. and USSR had established the technically advanced command and control systems needed to give them confidence in central control over nuclear weapons. From the early 1970s to 1986-87, the General Staff focused on ensuring absolute control over nuclear weapons to prevent any unauthorized use by having the missile arsenal "in hand" [*v rukakh* - he gestured as if holding the reins of a horse] through strong C^3 systems. These efforts, by the mid-1970s, led to stability, which greatly reduced the likelihood of nuclear use. He said he believed the U.S. also had the necessary technical control over nuclear weapons only in the mid-1970s. Until then, there was a higher risk of an error on both sides.

In the European TVD[2] from 1972-87, the balance was good. The Soviets had a high level of readiness but were non-threatening. Akhromeev was very distrustful of U.S. intentions until he had the opportunity actually to meet his American counterparts on the U.S. Joint Chiefs of Staff in 1988. The first and several subsequent meetings reassured him that the joint chiefs were thoughtful and responsible people. The mutual understanding that came from face-to-face discussions helped to create a fairly stable situation in Europe. The intentions ascribed for many years by each side to the other were incorrect.

What caused much tension in the General Staff were the many U.S. air and naval bases encircling the USSR, and the listening posts surrounding the USSR, as well as the constant use of air reconnaissance along the Soviet borders. This is how the Korean airliner got shot down.

The increased readiness of both sides usually was prompted by distrust. Each side made a tremendous misreading of the other side's intentions, which led to a greater possibility of accidental strikes. Nonetheless, there was not a very great danger of war during the period 1970-87.

At no time did the USSR ever intend to make first use of nuclear weapons. In a military sense, the side that attacked preemptively would win, but in practical terms

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[2] TVD — *Teatr voennykh deistvii* — Theater of (Strategic) Military Action, for example, Central Europe from Ukraine to the western shore of Ireland.

neither side would win. Even to the General Staff it was clear that nuclear weapons were not really military weapons but were political tools.

In 1962, the USSR could not respond massively to a U.S. attack. Only in the late 1960s did the USSR acquire the capability to respond, which provided some stability. Neither side could consider selective nuclear use until the 1970s because technology and control systems before that could not support limited nuclear options (LNO).

In the early 1970s, within the military leadership, even the more conservative generals' understanding of nuclear weapons had matured to the point that they believed that nuclear weapons had no real military utility. Once a nuclear balance was established then deterrence [*sderzhivanie putem ustrasheniia*] was true of both sides. Solution of the question of control at the strategic level left unresolved the problem of positive control of nuclear weapons at the tactical level. By the late 1970s, both sides essentially had solved the question of control of tactical nuclear weapons.

Nuclear use had to be avoided if at all possible. Preemption was technically not even possible until very recently. In any case, the decision would take so long to make that the USSR would be stuck with a responsive strike.

[KGB defector] Oleg Gordievsky's revelations about the RIaN [*Raketno-Iadernoe Napadenie*][3] crisis of 1983 were self-serving falsifications. I'll explain why. There is the KGB over here [he placed an imaginary box on the table to his right] and the General Staff over there [he gestured far to his left]. The CIA is here [he gestured to my left] and the Joint Chiefs of Staff–The Pentagon–over here [on my right]. The KGB and CIA have more in common and more exchanges than do the General Staff and KGB. We in the General Staff probably would not brief a KGB officer on such secrets, especially if he was being posted to a Western embassy. Gordievsky did not know what the General Staff was doing. He told such stories to improve his standing in the West. War was not considered imminent.

SDI really can affect the future of warfare and greatly destabilize strategic relations. The side that achieves invulnerability will press this advantage. If the U.S. pursues SDI, the USSR can find cheap ways of countering the defenses, but this would undermine stability. If SDI is not included in START, then the USSR will announce unilaterally that Soviet agreement on START II will be conditional on the U.S. renouncing development of BMD.

Though the U.S. has precision weapons, technological countermeasures will be developed, e.g., to make tanks invisible. In the Persian Gulf, Iraq had no electronic countermeasures but after 5,000 U.S. sorties it still had 1,000s of tanks intact. The U.S. may be overestimating the effectiveness of precision weapons because they are being used in the Gulf War without opposition. A technologically sophisticated opponent will develop ways to counter this U.S. capability.

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[3] RIaN was an acronym that the Soviets used to describe a special period of tension between 1980 and 1984 when they reported greatly heightened expectations of a nuclear attack from the U.S. See Christopher Andrew and Oleg Gordievsky, *KGB: The Inside Story* (London: Hodder and Stoughton, 1990), pp. 501-507.

RECORD OF INTERVIEW

Subject: Gen.-Lt. Gelii Viktorovich Batenin

Position: Gen. Batenin began his career as an artillery officer and transferred in the 1960s to the Strategic Rocket Forces. In the late 1970s and through the mid-1980s, General Batenin worked for Marshal of the Soviet Union Sergei F. Akhromeev in various roles when the latter was chief of the General Staff Main Operations Directorate and then as First Deputy Chief of the General Staff under Marshal Nikolai Ogarkov.

Date: Friday, August 6, 1993

Place: McLean, VA

Interviewer: John G. Hines

Language: Russian

Prepared: Based on notes

Q: Over the past 3 years or so, I have interviewed several senior military people as well as from military industry and the Central Committee.[4] I was able to interview your former chief, Marshal Akhromeev twice and met several times with General Danilevich.

A: Danilevich? You know, he wrote the three-volume work for the General Staff on the Strategy of Deep-Operations, or at least he was responsible for the work. He directed the effort, very actively. The book covered everything, the entire picture of possible future war. It began with the anti-space operation [*protivo-kosmicheskaia operatsiia*] against incoming missiles, the anti-air operation [*protivo-vozdushnaia operatsiia)*] against your bombers and then the deep operations against NATO to the full depth of the theater. "Operational-strategic depth" referred to the entire 1,200 km depth of the European theater, to the beaches at the western edge of the continent. The theory of deep operations in Danilevich's work envisioned great depths of military action [*voennye deistviia*] because of the range of weapons, weapons platforms and the speed of movement of the forces. The initial operation was expected to take 5 to 7 days and to carry the counter-offensive 500 km. At that point we expected that we would have lost half of our tanks and that half of the remaining force would have outrun its logistics support. Because so much of the force would be exhausted, early, decisive success over the enemy was very important.

Q: What scenarios for the beginning of war were assumed in the book on strategic operations?

A: Missile strikes from the U.S. and the initiation of an offensive by NATO. The main objective of initial operations by Soviet Forces and the Warsaw Pact were to break up [*sorvat'*] the NATO offensive throughout the depth of NATO's forces and NATO's rear. Included in the concept of breaking up and stopping NATO's offensive was the

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[4] Central Committee will be either spelled out or abbreviated as CC throughout the interviews.

preemptive destruction of as many launch systems and aircraft as possible as well as associated control systems.

Q: Was the preemption to be with the use of conventional or nuclear weapons?

A: That would depend. We expected NATO to launch nuclear strikes at some point. If we did not detect preparation on the part of NATO to launch nuclear weapons immediately, we would attack launch platforms and storage using conventional weapons. If we detected preparation by NATO to launch nuclear strikes, and we believed we would know when this was happening, we would want to strike NATO's launch and control systems with nuclear strikes of our own. We had confidence in our knowledge of when NATO was preparing for nuclear launch. We would detect mating of warheads to missiles and uploading of nuclear bombs and artillery. We listened to the hourly circuit verification signal on your nuclear release communications systems and believed we would recognize a release order. Under these conditions when we detected NATO actually preparing to launch, we would want to preempt your launch with our own nuclear strikes.

Q: Did the General Staff consider selective use of nuclear weapons [*vyborochnye udary*] under these conditions, especially if it was clear that NATO would be attacking with only a few, say ten, nuclear weapons?

A: This would be very difficult to execute. It would be difficult just to launch on time against NATO preparation even with a strike against all or most of your nuclear capable systems and it is doubtful that we would attempt to restrict the strike under those conditions. More important, Ogarkov was very much opposed to the idea of limited nuclear war [*ogranichennaia iadernaia voina*] in any form because he believed it would benefit NATO.

Q: How?

A: By making nuclear strikes more likely, by making NATO believe that the Soviet Union might fight a limited nuclear war. A limited nuclear war was more likely to occur than an unlimited nuclear war. And Ogarkov believed that, once begun, limited nuclear use would almost certainly escalate to massive use. He tried to maintain, therefore, the posture that in the event of war massive use of nuclear weapons was both undesirable but unavoidable once any nuclear weapons were used. Akhromeev, by the way, was more open to at least considering situations where selected strikes might be made.

Q: Where did this grand concept of the strategy of deep operations come from?

A: I believe the SS-20 made it possible, that the SS-20 created the environment in which strategists could think about war on such a large scale. The SS-20 had a very low vulnerability, high accuracy and a great range, not only over all of Europe but over the Middle and Near East and much of the Mediterranean. Under the roof of the SS-20 it was possible to think about deep operations. There was a certain irony in that by 1987, many in the General Staff thought that all of the components necessary for conducting deep operations were in place at last, that we were ready that spring. We conducted games and exercises. At the same time, in December of that year we signed the INF Treaty. Gorbachev had his agenda and the General Staff its agenda. Gorbachev had seen General Danilevich's three-volume book on strategy. He even had a copy but he never read it. He was moving in another direction, eliminating the weapons that were the basis for executing such a strategy.

Q: When did these various elements come together; that is, the capabilities of the SS-20 and the development of the strategy of deep operations?

A: The late 1970s, it began to take shape in the late 1970s. The SS-20 was being deployed and Danilevich and others in his collective were developing concepts.

Q: Ogarkov took over in 1977?

A: Yes, this was important. Ogarkov fostered this kind of thinking, very actively.

Q: Relations between Ogarkov and Ustinov. Marshal Akhromeev wrote in his book, *Through The Eyes of a Marshal and a Diplomat*, that by 1982 relations were so bad that it was difficult for the General Staff to function effectively.

A: Yes, relations by 1982 were extremely strained. A major issue was PVO [*protivo-vozdushnaia oborona*—Air-Defense]. Ogarkov wanted to eliminate the PVO as a service, put the air element in the Air Forces and subordinate ground elements to the Ground Forces. He believed Ground Forces PVO [*PVO sukhoputnykh voisk*] was an effective arrangement that provided reliable air defense of forces under an integrated command. He wanted to broaden that principle. He also believed he could thereby eliminate an entire service headquarters apparatus. Ustinov wanted to retain that old structure.

Q: Was this the only disagreement?

A: No. There were broader differences. Ogarkov believed that the types and numbers of weapons produced should be determined by the military customers [*zakazchiki*] and Ustinov believed that such decisions were the business of the Communist Party,[5] Defense Council, and the Military Industrial Commission (VPK), that is, the industrialists.

Q: Was the General Staff-MoD deadlock as bad as was described by Akhromeev?

A: Absolutely. Things got done, in fact, because Ustinov treated Akhromeev as the *de facto* Chief of Staff. After 1982 he acted, in effect, as the Second Chief of the General Staff rather than as the First Deputy. Ustinov would communicate with Akhromeev rather than with Ogarkov. Akhromeev tried to keep Ogarkov informed, at first, and then told him less and less because it caused more problems than it solved. I was with Akhromeev in his office once when Ogarkov called to ask about some decision he had heard about from another source. It related to a change in organization in the GSFG (Group of Soviet Forces Germany) as I recall. Akhromeev, who was involved in the decision by Ustinov, was very uncomfortable. I heard him confirming the decision and explaining why he had not informed Ogarkov, that he had intended to brief him but other events had intervened, etc. This was a very difficult situation.

Q: There have been various reports, the most well known from former KGB agent Oleg Gordievsky and published openly in England, that there was a period of great tension in the Soviet Government in the early 1980s. Specifically, between about 1981 and 1984, the MoD, KGB, and others, believed that there was a high probability that the U.S. and NATO were preparing to attack the Warsaw Pact and the USSR, including with

[5] Communist Party of the Soviet Union will be either spelled out or abbreviated as CPSU throughout the interviews.

nuclear weapons. The whole problem of increased threat was identified under the acronym RIaN [*Raketno-Iadernoe Napadenie*].[6]

A: Yes. I am very familiar with RIaN. There was a great deal of tension in the General Staff at that time and we worked long hours, longer than usual. I don't recall a period more tense since the Caribbean Crisis in 1962.

[6] RIaN was an acronym that the Soviets used to describe a special period of tension between 1980 and 1984 when they reported greatly heightened expectations of a nuclear attack from the U.S. See Christopher Andrew and Oleg Gordievsky, *KGB: The Inside Story* (London: Hodder and Stoughton, 1990), pp. 501-507.

SUMMARY OF INTERVIEW

Subject:	Sergei Blagovolin
Position:	Head of Department for Military-Economic and Military-Political Research, Institute of the World Economy and International Relations (Russian acronym, IMEMO)
Date/Time:	May 7, 1991, 10:30 a.m.
Location:	Office at IMEMO
Interviewer:	John G. Hines
Language:	Russian
Prepared:	Based on notes

"Industrial Mobilization"

Right after university (around 1971), Blagovolin worked on a project that analyzed the industrial mobilization potential of the United States and estimated that the U.S. could produce 50 nuclear submarines and 50,000 tanks per year within a few months of starting mobilization.

He believes the USSR is living with the results of that estimate. In the 1970s and 1980s this threat assessment was used to justify Soviet force building programs. After Iakovlev returned from Canada in 1982, and Blagovolin, as chairman of the Institute's Party Committee [*Partkom*], worked closely with him as Director of the Regional Party Committee [*Obkom*] to reevaluate U.S. mobilization capacity and the effect of the arms race on the USSR. The conclusion was that the Soviet Union had created its own set of enemies by building such a monstrous production machine in all sectors (including submarines) and had thereby helped to drive the Soviet economy to ruin. Blagovolin is publishing a book on this subject in English (expected out in Summer 1991).[7] The Russian version for a Russian audience is more important than the English.

The Agreement of April 23 states that the Treaty of the Union (TOU) will be signed soon, probably after the special 12 June Presidential elections in the RSFSR (Russian Soviet Federated Socialist Republic). Not less than 6 months after the signing of the TOU, a new constitution will be issued, and not less than 6 weeks after the new constitution, there would be new, direct elections at all levels.

At the Party Central Committee Plenum of April 20, Gorbachev threatened to resign after many of the delegates criticized his weakness and ineffectiveness regarding the Union and the economy. During the break, Volskii circulated a petition with the support of Bakatin and Nazarbaev (72 signed, 35 - 40 more promised to sign). After the break, Volskii got up and said that if Gorbachev's resignation were accepted, then the signatories of the petition would leave the Communist Party not as individuals but as a

[7] Book not published in either language.

political movement. As a result, the vast majority voted to reject Gorbachev's resignation. Blagovolin said it was clear that Volskii and the others were ready to break the Party apart over the issue of Gorbachev's leadership. The Party was already reaching a complete breakup, and Volskii intended to start a new party. He emerged in June as part of the new movement behind Shevardnadze that broke from the Party.[8]

[8] Eduard A. Shevardnadze, Minister of Foreign Affairs under Soviet President Mikhail Gorbachev.

SUMMARY OF INTERVIEW

Subject: Harold Brown

Position: Secretary of Defense (1977-1980)

Location: Johns Hopkins Foreign Policy Institute, 1619 Massachusetts Avenue, NW, Washington, D.C.

Interviewer: John G. Hines

Date/Time: November 8, 1991, 1:30 p.m.

Duration: 45 minutes

Prepared: Based on notes

In Dr. Brown's view, Soviet civilian leaders did not believe that the USSR could fight and win a nuclear war. For Soviet military leaders, it was inadmissible to say that they could not win, so they said that if nuclear war broke out, they would try to come out better than the other side. They claimed to have the edge and to have a bigger edge if the USSR struck first. Though they did not really believe that the USSR would survive a nuclear war, top military officials tried to improve Soviet chances for survival.

Soviet leaders believed in deterrence, according to Dr. Brown. They built up their nuclear arsenal in order to deter the U.S. Their deterrent rested on a capacity to inflict unacceptable damage, and by the 1960s, though a disparity remained, they thought they had enough nuclear weapons to meet that criterion. Soviet leaders accepted the concept of mutual deterrence but they did not embrace Mutual Assured Deterrence (MAD) to the extent that they rejected attempts to limit damage and they did not believe that a capability only to kill civilians was sufficient to deter the U.S.

According to Dr. Brown, these assessments were close to the positions and interpretations proffered by Fritz Ermarth, the National Intelligence Officer for Strategic Forces at the time. The former Defense Secretary seemed to hold Ermarth and his views in high regard.

The Soviet Union was likely to use chemical weapons. Dr. Brown expected the USSR to employ CW even if NATO did not and even in the absence of nuclear exchanges.

Soviet leaders aimed, in order of priority, (1) to ensure their personal survival and power, (2) to preserve the social and economic structures of the Soviet state, and (3) to hold on to the empire (including Eastern Europe). PD-59[9] made clear to Soviet leaders

[9] Presidential Directive 59, a key White House statement on U.S. nuclear strategy that was discussed by knowledgeable U.S. government officials in the U.S. press. Published accounts reinforced the concept of selective use of nuclear strikes under various scenarios and suggested early targeting of Soviet leadership and command and control in the event of Soviet aggression.

that all three priorities would be at risk if Soviet actions led to global war. Selective U.S. targeting held at risk the things that Soviet leaders valued most. The Soviet leadership itself was targeted but was far down on the target list to maintain the possibility for intra-war negotiating. Cities were not on the target list partly because Dr. Brown was unsure where the Soviet population fit into the Soviet leadership's priorities.

The Soviets would preempt only if they were convinced, based on their reading of American intentions, that the U.S. was going to launch a nuclear strike. This was Soviet military doctrine, which the political leadership may or may not have decided to follow. Similarly, the Soviet military may have recommended escalation in the European theater if convinced that the U.S. would escalate, but Dr. Brown was unsure whether the political leadership would accept this recommendation.

Dr. Brown never thought that the USSR would expand a theater nuclear war into a global war, and he doubted that the USSR would even escalate within the European theater. The Soviets might not win a conventional war but they would never lose. Even if a Soviet conventional attack were pinned down for 4 weeks and the Warsaw Pact allies began to pull out, nuclear use would not improve the situation for the Soviet side.

In Dr. Brown's view, the USSR probably did not develop limited nuclear options because it had conventional predominance. In practice, Soviet forces never used nuclear weapons first or selectively. The big question for the Soviet side was whether the U.S. would try to stop a Soviet conventional attack by resorting to nuclear arms. Dr. Brown did not know what the Soviets believed, but if they listened closely to Western leaders, they would probably conclude that the U.S. would resort to nuclear weapons but the West Europeans would not.

The Soviet Union did accept strategic parity. Despite its interest in strategic defense, the USSR's signing of the ABM Treaty reflected its acceptance of parity. The Soviets did not think it feasible to gain a significant edge. They understood that acquiring a greater number of weapons was not necessarily important and that one side's advantages in particular weapons categories were offset by advantages on the other side.

When asked why the Soviets continued to build strategic forces even after they had achieved parity, Dr. Brown seemed to attribute this pattern of force building to a sense that they could never have enough to offset growing qualitative advantages in the West.

By the 1970s, the number of weapons on both sides was so large that capabilities could only be affected by deep cuts (deeper than the START Treaty envisions). Therefore, the U.S. tried to influence Soviet decisions through U.S. strategy. The U.S. wanted to limit SS-18s and SS-19s, which were counterforce systems, in order to make U.S. retaliatory (particularly land-based) forces more survivable.

Dr. Brown never saw the arms race as an economic competition. Since the defense industry was the most efficient part of the Soviet economy, the U.S. in an arms race was competing in the area of the smallest U.S. comparative advantage. Harold Brown used American technological advantages to compensate for the smaller number of U.S. weapons. It was precisely the U.S. technological lead that convinced the Soviets that they could not win an arms race.

Dr. Brown gained some impressions of the Soviets from his time on the SALT delegation 1969-71 (including from contact with Ogarkov) and from the 1979 Vienna summit (where he saw Brezhnev, Ustinov, and Ogarkov). He based his understanding of Soviet intentions on Soviet military exercises, force structures, and policy statements.

Soviet statements on military forces and strategy were subject to broad variations in interpretation because any given statement or body of statements could represent any of three levels of authority: agreed policy statements, arguments put forth in the course of institutional infighting, or the personal views of an individual. Sovietologists, such as Fritz Ermarth, were helpful in interpreting and discriminating among these three sources of Soviet statements.

SUMMARY OF INTERVIEW

Subject: Zbigniew Brzezinski

Position: Assistant to the President for National Security Affairs, 1977-1980

Date/Time: November 20, 1991, 2:00 p.m.

Duration: 45 minutes

Location: Center for Strategic and International Studies, 1800 K Street, NW, Washington, D.C.

Interviewer: John G. Hines

Prepared: Based on notes

In Brzezinski's personal opinion, the Soviets were not preparing to initiate war but they were planning to win if war broke out. They wanted to acquire a demonstrable war-winning capability that they could exploit politically. Serious Soviet strategists realized that a clear-cut first strike capability was unattainable, but if the USSR acquired a theoretical first strike capability, this would have political consequences.

The Soviets believed in nuclear deterrence and practiced it from the late 1950s to offset what they perceived to be significant U.S. advantages in strategic forces. The Soviets did not believe in MAD in the sense of accepting the logic of mutual deterrence based on fear as a substitute for developing a credible warfighting capability for their strategic forces. In the 1970s, while they developed their own warfighting capabilities, they pretended to accept MAD in order to put a cap on or not stimulate U.S. efforts to gain a warfighting capability. The Soviets considered their warfighting capability to be a projection of deterrence, which would work better if the United States continued to abide by MAD (that is to say, if the U.S. continued to rely heavily on MAD logic to avoid developing a truly credible warfighting ability that could be brought to bear if deterrence should fail). Brzezinski saw absolutely no contradiction between the Soviet commitment to a warfighting capability and the Soviet belief in nuclear deterrence.

Dr. Brzezinski noted that some in the U.S. National Security community interpreted the Soviet preference for warfighting to mean that the Soviets preferred and were eager to fight wars rather than to deter them. Most, including himself, saw Soviet seriousness about warfighting as a different approach to planning against the event of the failure of deterrence, not as an alternative to deterrence. A benefit implicit in this approach was that a credible warfighting capability could enhance deterrence to the advantage of the Soviet side.

Parity was incompatible with Soviet warfighting capabilities. The Soviets did not accept parity because they regarded the nuclear relationship as dynamic. At any given time, one of the two sides was either ahead or moving ahead. Soviet weapons development was influenced by U.S. weapons programs.

Brzezinski asserted that PD-59 was designed to give the U.S. a warfighting capability. PD-59, combined with the Pershing II, MX missile, and SDI programs, showed that the U.S. government professed adherence to MAD but was in fact moving toward a warfighting capability and was more likely to prevail over the competition.

The Soviets saw nuclear weaponry as having military utility. They concentrated more systematically than the American side on the military utility of nuclear arms, particularly for theater use.

The Soviets were not risk takers, so they sought to win through intimidation rather than warfighting. They 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. The Soviets preferred to fight only with conventional forces. If they were winning, they would not employ nuclear weapons. Brzezinski believed that the United States should be willing to go nuclear against a successful conventional attack by the Warsaw Pact. His view was not widely shared but gained greater acceptance during the course of the Carter Administration.

In his gut, Brzezinski felt that the Soviets would not use nuclear weapons first and might be restrained even if they had superiority in nuclear weapons. If we employed nuclear arms, the Soviets probably would match us or maybe escalate. They would respond to U.S. tactical nuclear use with tactical preemption, in the context of on-going hostilities. Brzezinski doubted that during a theater war, the USSR would strike preemptively at U.S. strategic forces in the continental U.S.

The Soviets probably did not believe in limited nuclear options (LNO) but they may have wanted a capacity to employ LNO, especially if it enhanced the credibility of their threat to the West.

The Soviets had significant chemical weapons (CW) capabilities and they used CW in exercises. In a serious war, they would probably resort to CW, and they might even employ CW in the absence of nuclear use.

Brzezinski received much helpful data (e.g., on the USSR's strategic buildup) but little helpful interpretation. The data were ambiguous and the same data were cited to support contradictory positions and interpretations. For instance, there was no systematic assessment of Soviet warfighting capabilities. Analysts argued more about interpretation than evidence, though the data concerning Soviet ABM systems and possible breakthroughs in Soviet military technology were in fact ambiguous. Brzezinski considered it important to consult good Soviet analysts and he solicited the views of CIA, INR,[10] DoD, and outside experts.

[10] Refers to the Intelligence and Research Division of the U.S. State Department.

INTERVIEW NOTES

Subject:	Professor Dmitrii S. Chereshkin
Position:	Chief, Department of Cybernetics, VNIISI [*Vse-Soyuznii Nauchno-Issledovatel'nii Institut Sistemnogo Issledovaniia*—All-Union Scientific-Technical Institute For Systems Studies, Academy of Sciences, USSR]
Date:	April 24, 1991
Location:	Chereshkin's office at VNIISI
Interviewer:	John G. Hines
Language:	Russian
Prepared:	Based on notes

The Institute of Main Designers [*Institut Glavnykh Konstruktorov*], was founded in 1976, apparently by Ustinov, to run force development. This greatly increased the influence of designers.

SUMMARY OF INTERVIEW

Subject: Gen.-Col. (Ret.) Andrian A. Danilevich

Position: A General Staff Officer from 1964 to 1990. Senior Special Assistant [*Pomoshchnik*] to the Chief of the Main Operations Directorate (GOU) in the 1970s. Assistant for Doctrine and Strategy to Chiefs of the General Staff Marshal Akhromeev and General Moiseev from 1984 and 1990. Director of the General Staff authors collective that composed and refined, between 1977 and 1986, the top-secret, three-volume *Strategy of Deep Operations* (Global and Theater), that was the basic reference document for Soviet strategic and operational nuclear and conventional planning for at least the last decade of the Soviet state.

Location: Moscow

Interviewer: John G. Hines

Date/Time: March 5, 1990

Language: Russian

Prepared: Based on notes

From the mid-1950s, Soviet thinking about nuclear use evolved gradually and interactively with the U.S. (e.g., flexible response made a conventional phase more likely). By the mid-1970s, the Soviets viewed nuclear use as futile, because of the number of weapons and accuracy, and expected a nuclear exchange to result in catastrophe. By 1981, the Soviets realized that employment of tactical nuclear weapons would escalate to theater-strategic and then to global strategic nuclear war, which would cause unacceptable destruction.

•Rejection of first use was serious and was based on research.

•The Soviets assumed that the U.S. would use nuclear weapons first.

The Soviets wanted the U.S. to believe that they would respond massively to U.S. use of tactical nuclear weapons (TNW) because exchanges of even TNW would strike Soviet territory.

Concerns about vulnerability were evident in Soviet actions, e.g., development of mobile ICBMs. The Soviets never embraced vulnerability as desirable.

The General Staff discussed (the purely military effects of) possible responses to selective U.S. nuclear strikes in Europe, debating precise reciprocity vs. escalatory responses.

Soviet war games did not cover the starting of war and dealt with purely military themes.

SUMMARY OF INTERVIEW

Subject:	Gen.-Col. (Ret.) Andrian A. Danilevich
Position:	A General Staff Officer from 1964 to 1990. Senior Special Assistant [*Pomoshchnik*] to the Chief of the Main Operations Directorate (GOU) in the 1970s. Assistant for Doctrine and Strategy to Chiefs of the General Staff Marshal Akhromeev and General Moiseev from 1984 and 1990. Director of the General Staff authors collective that composed and refined, between 1977 and 1986, the top-secret, three-volume *Strategy of Deep Operations* (Global and Theater), that was the basic reference document for Soviet strategic and operational nuclear and conventional planning for at least the last decade of the Soviet state.
Location:	Office of Gen.-Maj. Iurii Kirshin, the Deputy Director of the Soviet Institute of Military History
Interviewer:	John G. Hines
Date/Time:	December 18, 1990, 12:00 p.m.
Duration:	1.5 hours
Language:	Russian
Prepared:	Based on notes

Purpose of Interview

To review with General Danilevich his views on the product and process of Soviet military assessments in the 1970s and 1980s. Of special interest was the Soviets' thinking about military competition, assessments of Western capabilities and intentions relative to their own, and expectations of the nature of war should it occur. The role and expected effects of strategic and theater weapons of mass destruction were of central concern as was the Soviet perception of the effect of qualitative improvements on the nature of conventional war.

General

I first met General Danilevich in Moscow in February 1990 through an introduction by General-Major Iurii Kirshin. I knew from Colonel (ret.) Vitalii Tsygichko that General Danilevich worked as Special Assistant to the Director of the Main Operations Directorate of the General Staff from the early 1970s until at least 1977 and, in that capacity, had a close working relationship with Ogarkov. General Kirshin informed me in January 1990, at a gathering in Cambridge, England, that General Danilevich had been working as special advisor for military doctrine for the Chiefs of the General Staff, Marshals Ogarkov and Akhromeev, from 1977 to 1988 and continued to work in the command group of the General Staff until December 1989. He added that Danilevich had

actually written much of the material published over Ogarkov's name in the late 1970s and early 1980s. Col. Tsygichko, chief of the Department for Theater of Strategic Operations Analysis (conventional and nuclear) in Research Institute Number 6 (NII-6), in the main research institute of the General Staff's Main Intelligence Directorate (GRU), ran an assessment effort for Ogarkov in the first half of the 1970s when Tsygichko himself did a great deal of analytical work for Ogarkov under Danilevich's guidance. Tsygichko, whose honesty, intelligence and analytical competence I have come to respect, has a very high opinion of Danilevich.

We met for this, our second, interview in General Kirshin's office. Also present were James Brusstar of National Defense University and Don Mahoney of RAND Corporation. I began the interview with a general description of the areas that were of interest after which General Danilevich made a rather lengthy presentation that was essentially chronological. The following is a paraphrased summary of the General's major points:

Soviet Military Assessments and Decisions Leading up to the 1970s

Danilevich asserted that Khrushchev was thoroughly involved in military matters on a personal level. His approach had both positive and negative consequences for military development.

On the negative side:

Khrushchev was not realistic and reasonable when it came to military affairs (presumably a reference to his severe reductions of ground, air, and naval forces in the early 1960s). Danilevich cited specifically the fact that Khrushchev "liquidated" the military infrastructure in the Far East.

On the positive side:

Khrushchev's interest in military technology led to major breakthroughs in military force development, especially in the nuclear area leading to the development and deployment of qualitatively advanced land- and sea-based missile systems. (He mentioned that one such advance, the sea-based cruise missile, was canceled under Khrushchev because of Soviet estimates of the effectiveness of Polaris.)

He explained that McNamara's analytical concepts were important for Soviet analysis because they represented a strategy for force development and employment. General Danilevich said that McNamara's ideas were "concrete" and implied that Soviet thinking was less specific and not as systematically developed. It was clear that he believed that Soviet strategists had borrowed from McNamara in developing their thinking about nuclear forces in the 1960s.

"Soviet Military Assessments and Decisions in the 1970s"

"Strategic Nuclear"

General Danilevich opened the discussion by stating that there was no crisis in the 1970s of sufficient magnitude to cause the General Staff even to contemplate nuclear use.

He characterized the 1970s as the period of struggle for strategic superiority (he sometimes used the word "parity"). He clearly believed that the U.S. had strategic superiority going into the 1970s, and the Soviets were striving, at the very least, to take away the U.S. advantage. He said the Soviet General Staff believed there were a great number of areas where the Soviets were not only behind, but where the U.S. advantage was continuing to grow.

These included:

Missile systems quality, specifically—accuracy and survivability

Overall command and control of strategic nuclear forces

Naval strategic systems

MIRV technology - U.S. deployment of multiple, independently targetable reentry vehicles (MIRV's) in the early 1970s was extremely unsettling to the General Staff because MIRV represented a significant offensive advantage.

General Danilevich stated that this perception that the Soviets were falling behind stimulated military planners to set out on a period of rapid development of ICBMs. The SS-11 was one of the products of this process. At the same time, the Soviet military were indulging in deception to lead U.S. planners to believe that they were more advanced than was the case. As he put it, in the areas of nuclear and other advanced technologies, the Soviet military were not doing all that they claimed to be doing.

"Correlation of Forces Assessment Work"

In the early 1970s a great deal of substantial [*krupnyi*] analytical, "scientific," work was being done in the area of strategic correlation of forces assessments. He stressed that the work was difficult but extremely important.

He criticized the work in that Soviet analysts "never did understand very well" how quality influenced the correlation of forces. Under quality he included the characteristics of control, accuracy, and reliability. To expand on this point he explained that analysis of quantity alone provides only half of the analytical picture. Because of qualitative deficiencies, one side could have a tenfold quantitative advantage and still be behind.

He added that analysis of the strategic correlation of forces involved assessments of more than strategic nuclear systems alone. The overall correlation depended on other factors as well, especially upon U.S. naval forces such as aircraft carriers.

"Political Factors Influencing Broader Correlation of Forces Assessments in the 1970s and Early 1980s"

"External"

Relations with China: The Soviet MoD was forced to create groupings of forces in the Far East. In the late 1960s and early 1970s the only area that demanded significant force buildup was along the Chinese border. China represented a major diversion of resources and attention:

For every one General Staff exercise carried out in the West, three were done in the Far East.

Warming of U.S.-Chinese relations was a major source of concern.

Vietnam: The Soviet military were extremely pleased to see the U.S. tied up in Vietnam because the war represented such a large diversion of military and economic resources away from areas that were more directly threatening to the USSR.

"Internal"

Brezhnev showed very little interest in the military area and was "very weak" in the area of military decision making. In exercises he would become very nervous and agitated even thinking about nuclear weapons and would physically tremble when required to make an exercise decision with respect to their use.

Because of his aversion to thinking about military questions, he ceded control over military decisions to the Minister of Defense (MoD). He also gave *carte blanche* to the MoD in terms of defining force requirements. Marshal Grechko, MoD until 1976, focused on planning strategic force deployments. Marshal Ustinov, MoD until his death in late 1984, concentrated on strategic force employment.

Given this political environment, according to Danilevich, forces were developed and deployed in the context of the arms race, not necessarily on the basis of any compelling analysis or intention to achieve a force advantage that would enable the Soviets to launch a surprise preemptive attack.

He explained that:

By 1972 there was already in existence a plan for employment of strategic nuclear weapons but that the plan did not envision a nuclear offensive—not an "OVN" [the expansion of the acronym may be *Operatsiia Vnezapnogo Napadeniia*—Surprise Attack Operation].

SALT I in 1972 led the Soviets to freeze all strategic force programs.

Serious resumption of force building in 1975-76 was stimulated above all by the desire to get ahead of the U.S. competition. It was *not* based on careful analysis that would support arguments for the utility of large numbers of nuclear weapons. Specifically, in force building decisions, no consideration was given to the consequences [*posledstviia*] of actually using any or all of the weapons being built on both sides. [The senior author, John Hines, knows from Tsygichko that major studies had been done in the General Staff in 1968 and 1972 on the various effects, including atmospheric, of strategic and theater nuclear use. Danilevich's statement confirms Tsygichko's view that this

analysis did not penetrate the decision process until the early 1980s.] "Neither side," according to Danilevich, appreciated the complex implications of the arms race for actual war planning.

"Theater Conventional and Nuclear"

General Danilevich acknowledged that in the early 1970s the Soviet Union enjoyed a significant quantitative advantage in conventional forces over NATO. There was, however, no Soviet plan to take Germany nor to take all of Europe. In this connection, he pointed out that the General Staff attributed to NATO a significant advantage in theater strategic aviation and in tactical nuclear weapons. The General Staff did have a counter-offensive plan which called for the Soviets to use their conventional superiority to launch a powerful strike in the event that NATO "unleashed" a war.

"Changing Expectations About Nuclear Use"

Early 1970s - Under Kulikov, there was genuine concern in the General Staff that NATO might launch a preemptive nuclear strike against the Warsaw Pact in a time of crisis. Barring NATO preemption, the General Staff expected that the conventional period of a war would last hours or days depending upon the Warsaw Pact's success conventionally. The General Staff expectation was that the U.S. probably would use nuclear weapons at the first main defensive line in Germany and would "always" use nuclear weapons to prevent a Rhine crossing by the Warsaw Pact.

1977 - When Ogarkov became Chief of the General Staff, the expected duration of the conventional phase extended out to 5 or 6 days.

1979 - The General Staff came to believe that the entire initial strategic operation "into France" could remain conventional.

1980-81 - The General Staff came seriously to expect that the entire war might remain conventional.

"Rationale Behind Changing Assessments"

The General Staff, by 1981, had come to a very firm, "scientifically derived," conclusion that nuclear use would be catastrophic in general and operationally counter-productive. Key in the General Staff expectation that nuclear use could be avoided indefinitely was an observable change in NATO's [exercise] behavior. NATO had become much more cautious in its treatment of nuclear weapons and clearly contemplated a very prolonged period of conventional war. In the opinion of the General Staff, NATO probably was responding to Soviet development and deployment of tactical nuclear weapons and Soviet achievement of strategic nuclear parity.

"Limited Nuclear Use and Intra-War Termination of Nuclear Use"

For most of the 1970s the Soviets rejected all Western theories about escalation control as either Western deception or the work of academic theorists whose work was not rooted in reality. To maintain strategic-to-theater linkage, the Soviets maintained the

policy that any nuclear use would result automatically in a full strategic nuclear response against the homeland of the initiating states.

1979-80 - By 1979, the General Staff began to contemplate the possibility of limited nuclear use or of limited nuclear war. This represented a new variant in addition to the two main existing variants: nuclear war or purely conventional war. The limited nuclear use variant did not enjoy much support because of Soviet pessimism about escalation control.

1979 - Intra-War Termination of Nuclear Use: The General Staff began to explore new scenarios for terminating nuclear use. Specifically, they began to evaluate the possibility of negotiations after the initial nuclear exchange in theater.

"Theater Warfare Assessment Work"

A great deal of work was done throughout the 1970s in the areas of assessments and comparisons of the combat potential of opposing sides. This work was helpful but mathematical analysis suffers from important limitations. At the operational and tactical levels, or for analysis of an operation or series of operations of limited duration, mathematical analysis generally is unable to predict outcomes reliably. The primary reason is that mathematical approaches do not capture effectively the art (or luck) of the commander who might make or fail to make the "critical" decision that will tend to dominate all other factors in determining the outcome of a given operation. Every operation usually has one such "critical decision point" that simply cannot be reflected in such analysis. He cited as examples that mathematical analysis would have predicted other outcomes for the Russian-German conflict in World War I and for the Pakistan-Bangladesh conflict.

He added that, on a large scale over a long time period, numbers do matter. He cited Soviet success in World War II as an example. He said that the Soviets did not win the Great Patriotic War because Soviet generalship and fighting skills were superior to those of the Germans. The Soviet Armed Forces simply overwhelmed the Germans with superior numbers of airplanes, men, tanks, and artillery.

"Assessments and Decisions in the 1980s"

1980-85 - The General Staff had the general expectation that war was becoming more likely during this period but that it was also increasingly more likely that, should war occur, it would remain conventional. This assessment led the General Staff to do a great deal of work to develop a more complete theory of conventional war.

Overall, the 1980s were a period of tremendous change for the General Staff because of changes in the general strategic situation, the rapid development and deployment of new technologies, and dramatic changes in the domestic and international political scene.

At least two factors emerged which greatly complicated General Staff assessments. One was concern about the need to calculate the effects of chemical use and the second was the introduction for the first time (after the 1986 Chernobyl disaster) of the consequences of the destruction of nuclear and chemical facilities in the event of war.

All of these factors—political, strategic, technological, and operational—greatly increased requirements for the General Staff to devise ways to meet "tremendous" increases in anticipated wartime demands for control capabilities, logistics, and infrastructure.

"The 1982-1983 War Scare in the Soviet Union"

I informed General Danilevich of the publication in the U.K. of KGB defector Oleg Gordievsky's book in which was described a period of extreme crisis between 1981 and 1984. The general acknowledged that there was a "period of great tension" of which he had vivid personal memories, especially in 1983, but that there was never a "war scare" in the General Staff. No one believed there was a real likelihood (immediate threat) of a nuclear strike from the U.S. or NATO. He felt that the KGB may have overstated the level of tension because they are generally incompetent in military affairs and exaggerate what they do not understand.

RECORD OF INTERVIEW

Subject: Gen.-Col. (Ret.) Andrian A. Danilevich

Position: A General Staff Officer from 1964 to 1990. Senior Special Assistant [*Pomoshchnik*] to the Chief of the Main Operations Directorate (GOU) in the 1970s. Assistant for Doctrine and Strategy to Chiefs of the General Staff Marshal Akhromeev and General Moiseev from 1984 and 1990. Director of the General Staff authors collective that composed and refined, between 1977 and 1986, the top-secret, three-volume *Strategy of Deep Operations* (Global and Theater), that was the basic reference document for Soviet strategic and operational nuclear and conventional planning for at least the last decade of the Soviet state.

Location: Center for Global Security, Russian Academy of Sciences, Gagarin Square, Moscow

Interviewer: John G. Hines

Date/Time: September 21, 1992, 12 noon

Language: Russian

Prepared: Based on audio cassette tape

Q: What consequences did Brezhnev, Ustinov, and other Politburo members expect from nuclear war? Did they think that they could survive a nuclear war?

A: In the early 1970s we conducted three exercises in which we considered the consequences of a strategic nuclear exchange assuming a U.S. first strike. In 1972, the GS conducted the final exercise in the series and Brezhnev, Kosygin, Grechko, and several members of the government took part. We presented to them the results of our computer models, as we then saw them, of the consequences of a nuclear first strike against the Soviet Union. Brezhnev and Kosygin were visibly terrified by what they heard. We explained our conclusions that after the strike the Armed Forces would be reduced to 1/1,000 of their previous strength; 80 million citizens would be dead; 85% of the industrial capability of the Soviet Union would be destroyed; the European part of the USSR would be contaminated by radiation at extremely lethal levels of 3,000 roentgens. Given all of this, the consequences of a retaliatory strike against the U.S. would be even more lethal to that country. During the exercise three launches of ICBMs with dummy warheads were scheduled. Brezhnev was actually provided a button in the exercise and was to "push the button" at the appropriate time. Marshal Grechko was standing next to him and I next to Marshal Grechko. When the time came to push the button, Brezhnev was visibly shaken and pale and his hand trembled and he asked Grechko several times for assurances that the action would not have any real-world consequences. "Andrei Antonovich, are you sure this is just an exercise?"

This study was prepared by various authors and organizations, including GS officers, members of GS Institutes, Intelligence, others. I personally prepared the summary section. However, this summary section was never published, because its

message was judged too psychologically detrimental to morale and resolve. All of the results from this study were "buried."

After this study, attempts were made to ameliorate its devastating impact on decision makers. For subsequent studies, coefficients were introduced into the models which artificially reduced the level of destruction predicted by the results: a certain percentage of warheads would fail to explode, not hit their targets, the percentage of ecologically "dirty" ground bursts was reduced, etc. As a result the picture of nuclear use was artificially made more palatable and made somewhat more possible a willingness to fight a nuclear war in the classical sense. This attitude continued until the early to mid-1980s.

One example of our appreciation of the consequences of nuclear use: In the early 1980s Fidel Castro pressed hard for a tougher Soviet line against the U.S. up to and including possible nuclear strikes. The GS had to actively disabuse him of this view by spelling out the ecological consequences for Cuba of a Soviet strike against the U.S. This changed Castro's positions considerably.

The 1972 model was based on a U.S. first strike, in which 70% of the U.S. strategic arsenal was used, with a Soviet retaliatory strike. This model presented a terrible picture. From then on the percentage of weapons used in a first strike was maximized and a first strike was planned because the first to strike would be the one to win. However, technology changed this policy. In 1972 most of the targets were countervalue targets, since it was assumed that all of the enemy's weapons will already have been used in a strike, or would be used before they could be hit. After 1975 MIRVs appeared, which allowed a single missile to attack several targets at once.

Brezhnev was not a military-technical man and did not have an understanding of the impact of military technology. Kosygin had the best such understanding, and played an important role in moving military thought forward. Ustinov had the best technological understanding, but he did not have a very good military understanding. The conclusion from all of this is that there was an understanding at both the military and political levels of the catastrophic consequences of a nuclear war. The Castro incident confirms this.

Q: What about SSBNs?[11] How did they effect the calculus?

A: The main fear was to be late for a first strike. Survivability was not important. Later, in the early 1980s, the emphasis shifted to avoidance of a war by finding alternatives to a massive first strike/retaliatory strike, and creating options on the ladder of escalation. This concept led to a series of technical difficulties. How to protect forces: SSBNs, hardened silos, etc.? Later still, the first strike was rejected outright and the launch-under-attack [*otvetno-vstrechnyi udar*] became doctrine.

In all of these processes, both objective (scientific) and subjective (political/power) factors played important roles.

Q: In the Soviet view, could the USSR increase its chances for survival by gaining an edge in nuclear capabilities?

A: We considered that we held advantages in certain areas, such as throw-weight, land-based systems, in control systems, in silo protection, in number of weapons, so we

[11] SSBN — Submarine, Ballistic Missile equipped, Nuclear powered — a submarine designed to launch strategic nuclear ballistic missiles (SLBMs).

thought that we could win a nuclear war by striking at the Americans and then using our general superiority to bring the nuclear war to victory. Regarding the possibility of survival, it was accepted up until the beginning of the 1980s. After the rise of Gorbachev this assumption was put under question. But it was not just a matter of Gorbachev, because by this time we had 12,000 strategic nuclear warheads, it became clear that a preemptive strike could not guarantee protection from a retaliatory strike, that a retaliatory strike is absolutely inevitable, under any conditions. A first strike could take out 50, 60, 80%, but the remaining 10% would be enough to completely put out of commission all elements of the viability of a state, and put that state to death. Under any scenario of actions, the damage was unacceptable. This was not really related to Gorbachev, but rather to the evolution and development of systems. MIRVs appeared, other new systems, the triad was more fully developed, and besides the strategic weapons, huge tactical arsenals were created, which were superimposed on the situation, so the situation changed. Also all of our estimates regarding the secondary use of nuclear weapons also had their impact. What would follow the first nuclear strike, the irreversible changes in the world's ecology, came to be perceived as the death of civilization and the death of the Soviet Union. So at this stage we came to the opposite conclusions from before. This, in turn had its influence on strategy, then on policy and on the coming together which occurred between you and us. All of the decisions which were made at the strategic negotiations—at SV-1, SV-2, SV-3 [SALT I, SALT-II, START][12]—were strongly opposed by the military because the concessions that we made outweighed the benefits by two, three, four times, but we were forced into these concessions because we saw that not to concede would not solve the main problem. The picture at these negotiations was very complicated and very dramatic. If it were described factually and in detail, showing what effect it had on our hearts and minds, it would be a tragedy, in the spirit of Shakespeare. We were forced to sign something that our hearts were against.

Q: How did the Politburo and the General Staff come to the realization that nuclear weapons had no military utility?

A: Neither the Politburo nor the GS came to this conclusion. The question was about the *rational* use of nuclear weapons. Large-scale use of nuclear weapons really does become senseless since it leads to mutual destruction. After this was realized, we started looking for alternatives—to what levels were reductions acceptable, etc. Gorbachev talked about total reductions, but we in the GS did not think that this would really happen. We supposed that this could be some far-off prospect, but did not believe it. We came from the premise that an acceptable level compatible with mutual deterrence should be found. We still maintain that nuclear weapons should be preserved as an element of deterrence, given the real possibility of the appearance of nuclear arsenals among third countries. And the second questions of finding ways to use nuclear weapons so as to give them a role in deterrence, but also the role of a strategic military factor, a factor in armed conflict. So that those methods of using nuclear weapons that were envisioned in the 1950s, 1960s, and 1970s are unacceptable and we need other methods. So now we are seeing the return of the selective strike [*vyborochnyi iadernyi udar*], limited strike [*ogranichennyi iadernyi udar*], warning strike [*predupreditel'nyi iadernyi udar*], disarming strike [*razoruzhaiushchii iadernyi udar*], decapitating strike [*obezglavlivaiushchii iadernyi udar*] . . . —a whole series of concepts allowing for the limited, flexible use of nuclear weapons which, on the one hand would not cause global ecological changes, and on the other hand gained the given military-strategic objectives. As to the claim that they held no military utility, this was not concluded. The conclusion

[12] Russian SV is shorthand for the last two words of the expression *dogovor po sokrasheniiu strategicheskogo vooruzhenii* [agreement on the reduction of strategic arms].

was only that in that form, and on that scale, which existed before, nuclear weapons could not be used.

Q: Did the Soviet Union accept the concept of mutually assured destruction? Was the strategic balance considered stable? How did the USSR gauge its vulnerability to U.S. nuclear forces?

A: In the late 1970s we talked about reaching a strategic balance. In reality, there was not and could not be a real military balance, because you had advantages in certain systems; we had advantages in others. You were ahead in SSBNs, in control systems, in protection means. In weapon yield, in the land groupings of nuclear weapons we held the advantage, in early warning systems there was rough parity. But with the massive potential we both had, all these distinctions tended to lose their meaning. So one could talk about a strategic balance, meaning that under any set of conditions, each side could cause unacceptable damage to the other. So in this context one could draw conclusions about strategic parity—equal capabilities for mutual destruction. But the fact is that these were all theoretical conclusions. In practice it often happens differently, especially in military affairs. If the military art could be reduced to arithmetic, we would not need any wars. You could simply look at the correlation of forces, make some calculations, and tell your opponent, "we outnumber you 2:1, victory is ours, please surrender." But in reality you could outnumber your opponent 3:1 and still suffer a crushing defeat, like Hannibal defeated the Romans, or like the German victories over us in 1941. So the correlation of forces is significant, but there is also a sea of specific, subjective factors, or even random events, which reduce these objective factors to nil. Therefore, in theory we may have the possibility to totally destroy the U.S. and vice versa. But in practice this may not happen. In practice the result could be completely unexpected. Because perhaps not all of these forces you have would be used. Because in the end you might not find the man who will press that button. That depends on many, many things. In the military art it is impossible to make predictions because things may go otherwise than you had planned. Although with nuclear weapons everything is subject to analysis, calculations, you can say exactly what damage there will be, etc. But in practice, things may go otherwise. And it is the fear of that "otherwise" that forces us to modernize nuclear weapons, the control systems, to develop various options for their use, etc. We and you both have tens of options programmed on board our rockets, depending on the situation. And to go from one option to another it takes just seconds now.

Recently El'tsin gave an order to remove the targeting programs from our weapons systems. But the U.S. reaction to this was very cool, even though the order removed the targeting of cities. You probably did not believe us and preferred to maintain the status quo.

Q: These theoretical and practical approaches, to what time period are they relevant?

A: They apply to the latest [Gorbachev] period.

Q: In your opinion, was nuclear war best prevented by mutual deterrence or by developing Soviet nuclear warfighting capabilities? Were the Soviet Armed Forces prepared to fight if nuclear deterrence failed?

A: [beginning missing]. . . On the other hand it played a deterrent role. It is an unprecedented historical situation which has not yet been fully understood. If deterrence failed, was the Soviet Union ready to fully use its nuclear weapons? I think that we would not have refrained from using them. If we reached a certain threshold we would have pushed the button, especially under Khrushchev. Under Brezhnev there was already

a fear and an understanding of this thing, but under Khrushchev it was absolutely well within the realm of the possible, both ideologically and practically. For instance, I remember being in the Northern Group of Forces during the Cuban Missile Crisis. We were ordered to stop all exercises, return to our command posts, and be ready for action. We were completely sure that the war would begin within 24 hours. So the situation was really on the edge of the precipice, and if there were a careless move on either side, it could have led to a nuclear war.

Q: Did the Soviet Union adopt a launch-under-attack [*otvetno-vstrechnyi udar*] doctrine?

A: As I said before, it was considered, and it was the basis for our thinking until recently, when we moved to new principles for war-planning.

Q: Was the Soviet retaliatory strike aimed at U.S. missile silos or only at soft military targets and economic infrastructure?

A: Yes [Does not specify targets of strike].

Q: You have said that cities were the most probable targets. Did this strategy change after 1972 or not until 1985?

A: In the 1960s and 1970s the main targets were cities. After that the correlation of forces change, but cities, and economic targets and military targets were always considered as targets in a certain mix. The proportion of cities was determined by particular scenarios or variants of strikes. For instance, if a first strike was planned, then military targets would be targeted. In a retaliatory strike, when the enemy's weapons had already been used, cities were targeted. But both kinds of targets were always considered.

Q: Was it technically difficult to change the targeting?

A: No, it wasn't. It was difficult at first, but later different targeting orders were programmed into the systems and it took minutes to change from one to another.

Q: How did the USSR intend to respond to a selective U.S. nuclear strike at the strategic level?

A: At first, the theory of selective strikes was completely rejected. It was considered that we would react to <u>any</u> use of nuclear weapons, even a single nuclear explosion, by a massive retaliatory strike with our full arsenal of weapons. Later this thinking began to change. Later we also considered the possibility of limited nuclear strikes, including different scenarios of limited strikes. For example, only tactical strikes in certain zones, only certain categories of targets. So we began to accept the American point of view in this, which caused changes in our political situation and also changes in our forces. In short, as we began to understand the catastrophic consequences of the unlimited use of nuclear weapons, we concluded that it was inevitable to have some intermediate or transitional period from conventional to partial or warning use of nuclear weapons, designed to stop further escalation, but it was always understood that any use of nuclear weapons threatened its full-scale use. So it was a very slippery situation.

Q: Did you believe that the Soviet Union was capable of winning a war in Europe with only conventional arms?

A: Yes, based on the fact that our forces greatly outnumbered the forces of NATO. There were different assessments of our chances. We had some plans which called for an advance to the English Channel. Later we limited our appetites, our goals, but we thought it was realistic to achieve victory in Europe using our strategic advantages.

Q: How would Soviet forces respond to a small-scale U.S. strike using tactical nuclear weapons?

A: We always understood that the U.S. held certain advantages in this area and that the situation was unequal. With a tactical nuclear strike, you can hit targets on the territory of our allies: Poland, Czechoslovakia; and moreover, with tactical strikes you can reach only targets on European territory. A clearly unequal situation. To balance it, we considered limited use of nuclear weapons, but limited not by the size of the charge—tactical or operational, but, by the kind and size of the target. So we considered a limited balancing strike against certain targets in the United States, not with tactical, but with strategic weapons. Of course, this was all tentative and subject to political direction, but there was this "dosage" strategy.

Q: What would have been the response to a limited strategic strike from the territory of the U.S. on the Soviet Union, limited in terms of the number of weapons?

A: As I say, and this has been published in the open press, the answer would have been full-scale. We took this position because we thought it would play a deterrent role vis-à-vis the Americans. It would make them afraid to make a limited strike.

Q: But U.S. strategists in the late 1970s called for initial attacks on the radar locations north of the Arctic Circle to demonstrate . . . .

A: We don't really understand this position of the Americans. They even said that jamming of the early warning system would be considered as a nuclear attack and lead immediately to the use of nuclear weapons. This was not a serious statement, given that there were numerous occasions when the warning systems gave signals that could have been interpreted as a nuclear attack. Therefore, these kinds of statements and actions like early warning jamming, could not have led to nuclear war, although they led to an aggravation of relations, and malfunctions did happen. But an actual nuclear strike against specific targets, even on a limited scale, would quickly have led to nuclear escalation on a global scale. But, as I say, all of this was subject to change and development, and these views were always changing with time, and with the understanding of what would be the global consequences of the global use of nuclear weapons from just one side, not to mention both sides.

Q: Did the USSR have plans to escalate from theater to global nuclear use?

A: It is less a matter of plans than of the fact that the on-board scenarios allowed for the possibility of any actions—against specific regions, like America, Europe, Asia, but to predict all of these scenarios was impossible. You would have planned 2,000 scenarios on paper, but the real situation would certainly have been the 2,001st. Therefore, at the base lay a concrete decision based on a concrete situation. Then, the time needed for such decisions was counted in minutes, and it had to be taken at the highest political level. So between the planning and the scenarios of military actions there is a large divide.

Q: Why did the USSR build up its SS-20 and other theater nuclear forces in the late 1970s and early 1980s?

A: We had R-12 [SS-4] and R-14 [SS-5] missiles, of which there were stationary and mobile variants. These missiles were not fully modern. The SS-20 was a mobile, solid-fuel missile, which made possible the solution of problems at a totally different level. Also, we had a competition—you were developing the Minuteman, Midgetman, and the Typhoon-Trident missile. And we were also developing various new strategic weapons. And the SS-20 was a breakthrough, unlike anything the Americans had. We were immediately able to hold all of Europe hostage. Therefore, in the strategic sense, this decision was justified. And in the technological sense it was a breakthrough. But we did not anticipate some of the consequences of their deployment. The Pershing II only appeared about 10 years later, and that made us rethink the original decision. It was of enormous advantage to us. By the way, in many kinds of strategic weapons, perhaps with the exception of MIRVs, the Soviet Union had the advantage. For instance, we began developing submarine-based ballistic missiles at a time when the U.S. never for a minute thought about developing them. But Khrushchev unilaterally shut them off. So the scientific and technological ideas were there as a product of the confrontation between our countries. Our design bureaus were working in this direction, and so were yours. We both knew that if there were a breakthrough, it would take a certain amount of time to develop the means to counteract it, and that every such time lag gave a temporary technological superiority, and that technological superiority allowed political pressure to be brought to bear, and all of this was linked into a single chain. So there were technological, strategic, and political reasons for further development of systems. But we never thought that we would some day have to destroy these missiles. It made sense, of course, when, I don't remember which president proposed the Zero Option, of not introducing intermediate-range forces to Europe, because we did not believe that it was possible, but in the end we were forced to accept this plan on terms not favorable to us.

Q: Was the Soviet Union striving for strategic nuclear superiority?

A: Of course we strove to achieve superiority, just like you did. We chose different paths; we emphasized land-based systems; you emphasized sea-based systems; we tried to catch up in this field, and actually overtook you at one point. So it was a natural process caused by political factors in the world.

Q: Was it a competition in quality as well as quantity?

A: Our primary tendency was to overtake you in quantity. Later the question became one of quality also. We were behind in the control systems, in the protection of silos, and we tried to catch up. In such areas as MIRVs you put us in a difficult position. And this very highly complex technological problem was solved by us in a very short period of time.

Q: Were particular nuclear weapons developed and deployed in order to fulfill specific military missions?

A: Yes, precisely for military missions. It was later that the term "deterrence" appeared, which was first invented by politicians, but in time we ourselves came to rely on it. But they were *weapons*, not means of deterrence, but weapons. Later, they came to be looked upon as a means of deterrence.

Q: Did the General Staff have more influence over force structures than the Military Department of the Central Committee [*Voennyi Otdel*]?

A: Well, there was no such thing as the Military Department of the Central Committee. There was the Defense Council [*Sovet Oborony*], which solved military problems, a

government-Party organ, the military took part in it. Of course, the General Staff developed proposals, developed assessments and forecasts, and greatly influenced military decisions. But the final say belonged to the political-military leadership.

Q: Under what circumstances was the Soviet Union prepared to employ chemical weapons? What kinds of chemical agents were contemplated for use?

A: Chemical weapons were considered to be a secondary means of armed conflict, since with the advent of nuclear weapons chemical weapons had lost their significance. We planned for its use only in the sense that if events did not reach the nuclear stage, we could adequately respond to the U.S. without resorting to the nuclear potential. Although chemical weapons are a means of mass destruction, it is incomparable in its consequences with nuclear weapons. It does not lead to the death of humanity, but it does carry enormously tragic consequences. But they are limited and localized in nature. They were developed primarily as a secondary means in the conduct of armed conflict. But it was assumed that if we reached the nuclear stage, then we would not spare anything and we would use chemical weapons on a scale that would be possible, but we did not attach any great hopes to it. Despite the relative unimportance of chemical weapons, the Soviet Union could not concede to the U.S. superiority in this field and matched all U.S. means, including delivery and agents used. We could deliver it by means of aircraft bombs, and rockets, in sufficient amounts. The arsenals were on the order of 1,000s of tons. So we were ready for chemical warfare, but only as a retaliatory means.

Q: In your view, did Pershing II and cruise missiles give U.S. forces the capability to launch a surprise attack on Soviet territory?

A: Yes, both types of weapons were perceived as a very serious threat, since their time of flight was only 6 minutes to vitally important regions. The flight times to U.S. targets were 32 - 35 minutes. Also, our air defense systems were not designed to detect such missiles. And pushed us to such a quick response. You had hardly deployed 1/3 of these missiles and we were already compromising. They were considered to be a great threat to our administrative-political centers, and the possibility of a surprise attack was very threatening, although we did possess a huge arsenal of medium-range SS-20 missiles which could completely destroy Europe in response to such a strike.

Regarding cruise missiles, these appeared later. Actually, we began work on them in the 1950s. There was Chelomei,[13] who was the ideologue of cruise missiles, and there was a great competition between the two directions: ballistic missiles and cruise missiles. Khrushchev was a good friend of Chelomei and he supported him in the development of cruise missiles. In short, we began to develop cruise missiles at about the same time as you, and we won some measure of technological superiority, but later, during the 1960s and early 1970s, there was sharply more emphasis on ballistic missiles, and work on cruise missiles was abandoned. By the late 1970s, we again returned to cruise missiles, but we had lost time and the U.S. had a new generation of cruise missiles which we again had to catch up. There were no warning systems for cruise missiles. There were no and are no means to intercept ballistic missiles and whether or not SDI is possible is . . . we still think that this problem is not resolvable for now. But at least there were means of detection. We could detect both the launch and the flight and predict where the missile would hit, and thereby activate our own forces. Regarding the cruise missiles, we did not even have the means to detect them. Therefore, there was this double jeopardy. Especially threatening were the land-based and sea-based classes of cruise missiles,

[13] One of the original Soviet chief designers of strategic nuclear missiles.

which put us in a very serious position. They caused serious worries in the GS and in the political-military leadership in general. And so we began intensive research and development programs. But to this day we do not have parity, and this is aggravated by the fact that the Americans are constantly trying to take these weapons out of the negotiations. Even this latest agreement does not involve cruise missiles. And this threatens to upset the strategic balance by 1,000s of weapons. This is a cause of serious concern, although in the technological arena the situation is more equal and in response to your missiles, we can now use our own. But the geophysical conditions are such that they give the U.S. an advantage in the use of cruise missiles. I mean the naval and air bases which still surround the Soviet Union, our distance from you, all give great advantages to the Americans. Second, cruise missiles can be used to carry both nuclear and conventional warheads. Their use in the Persian Gulf showed them to be highly effective, in combination with good targeting systems. This creates a second problem. I think that if what happened to the Soviet Union had not happened, this would have reached a balance. But now our state does not have the means to develop cruise missiles, and all of these considerations become secondary.

Q: Were decisions on force development and deployment based on expert analysis, particularly on quantitative analysis?

A: Of course there were various studies made for all kinds of weapons systems; different variants and solutions were suggested; different weapons systems were suggested. Right now, because of the development of weapons based on new physical principles—neutron weapons, low-frequency weapons, and others—these began first in the U.S., and we also, as a measure of adequate response, began R&D work in laser weapons, and these other areas, and reached certain successes. I don't know how these studies will be conducted now, as now there are not the means nor the scientific cadres, not, most important, the full-fledged financial support to do it. The work is being conducted in the U.S., and is continuing here to some degree, but the solutions are very complex, the temporal parameters are very problematic in the near term, so it is very difficult to say when and if these new weapons will appear, and if we will be able to create them. I think that the Americans will be able to create them. Regarding ourselves, my personal opinion is that right now we do not have the social and economic resources to bring these R&D programs to fruition. But the American advantage in these fields will not be of great significance, given the current political-military situation because that situation is such that, to be frank, the Americans can reach their political goals relative to the Soviet Union freely without any war, and they are doing just that.

Q: The essence of the questions is what roles did research and analysis play?

A: Well, I have already said, the recommendations of the research organizations and design bureaus were taken into consideration, but the decisive word was that of the political and military leaders. Whatever they decided, that was the system that was developed; that system had the priority; all efforts and financial resources were focused on it, etc.

Q: Did the Politburo inner circle of Brezhnev, Ustinov, Gromyko, and Suslov listen to the advice of the General Staff?

A: Suslov participated in the Defense Council, but he had very weak influence on military matters because that is not what he did. He worked mainly ideological issues. Gromyko had some influence, and he had his own opinions, although he had a weak understanding of military affairs. Ustinov, of course, had great influence, he knew his stuff. Brezhnev also had a great influence, although he was not current on the issues, but

he did do a lot of work on missiles and cosmonautics, i.e., he was familiar with these issues. There were two kinds of questions: military-technical and political-military. Of course, the majority of military-technical programs were developed in the General Staff and were put up for discussion in the Politburo and the Defense Council by the General Staff and the General Staff had a decisive significance for the adoption of decisions. The decisions were not always supportive of the General Staff for various reasons, but the opinion of the General Staff was very significant. But not all of the proposals of the General Staff were adopted, especially when they contradicted political considerations and when they conflicted with the policies of disarmament in the latest period, when Shevardnadze came into power, when Gromyko also followed this line regarding reaching arms control agreements, etc. The General Staff always expressed strictly professional views, based on the real correlation of forces, on the advantages that one or the other side would receive, based on our strategic military plans, on our operational-technical plans. We attempted to defend these positions in order to minimize the damage to our side. The politicians based their decisions on different considerations: the relaxation of international tensions, the improvement of relations. More often than not, they won out. In this case, the considerations of the General Staff were rejected and the decision did not reflect them.

Q: Did Ustinov and the chief designers consider there to be a need for rapid technological improvement in Soviet weaponry and command and control?

A: Yes, Ustinov understood this and ordered many R&D programs in this regard. They were conducted with some lag behind the required deadlines, because there were many difficulties. Of course Ustinov understood this need and facilitated these efforts to a considerable degree, although he played a dual role. On the other hand, he exercised considerable influence in the military-industrial complex and knew all the subtleties. Even during the war, when he was the minister for armaments, he never entered a plant through the front door, but always from the back, so that he really knew the full story of the military industry. It was very difficult to fool him. He was feared, and the industrialists and OKBs[14] acknowledged his absolute authority. But at the same time, he allowed certain weaknesses in relation to them. Grechko, for example, when performance did not meet specifications, or when it was suggested to procure certain weapons systems even though they were not fully developed, he categorically rejected these suggestions and objected very strongly to the industrialists, and put them up against the wall. But Ustinov, even though he also scolded them, in the end he would give up and concede to them, because the industrialists were closer to him than the strategists. So he was full of internal contradictions. He acted as the client, the contractor, and the customer. In practice his position was such that he was often forced to compromise with himself. It seems that he should have played a tremendous role in military-technical progress—in a quick leap forward in our military technical capabilities, and there was a certain leap. But it did not turn out to be as great as it could have been if there had been a division of responsibilities.

Q: Did he represent the interests of the industrialists or of the military?

A: He stood on the edge of the blade, and waffled in both directions. He stood on the border. On the one hand he considered the interests of the military, and on the other hand, those of the military-industrial complex. But more often, since he worked there for 30 years, he sided with the military-industrial complex. But he understood the

[14] OKB — *Opytno-konstruktorskoe buro* — [Experimental] Design Bureaus. These were R&D facilities in the military-industrial sector that originated major weapons designs (aircraft, missiles, etc.) and followed their development through to mass production and deployment.

requirements. Take Grechko; take Malinovskii. All of them considered foremost the military-strategic objectives, the political objectives, which demanded the creation of weapons in order to achieve them. Under Ustinov, we had weapons, and the strategic objectives were subordinated and built around the weapons, although this was not quite right. In this way, he put pressure on Ogarkov, etc. In any great figure, including Stalin, including the politicians, the military leaders, you cannot find anyone who is whole, who can be characterized in a single word or by a single action. They are all self-contradictory. It is the same with our military leaders—their decisions, their actions were self-contradictory. It cannot be otherwise—such is life.

Ustinov was not a conservative, and he appreciated and understood the significance of new technologies, new systems, modernization, etc., and did not simply reject them. But the personal relationships with particular OKBs was also significant. When there were difficult decisions and it is difficult to choose between two technologies that are being proposed, and both have positive qualities, and neither has yet been built, and it is hard to see the results, then the personal relationships come into the fore. I trust you, you are closer to me because of joint work, and I tend toward your solution, although often it is the wrong choice. And the other technology, which would sometimes prove itself to be desirable in the future, was neglected. There was a time when Khrushchev wanted to do away with tanks altogether. And because of relationship with Chelomei, we fell 10 years behind in ballistic missiles. And if you look for some rational reason, you will be lost. When I first came to the General Staff in 1963, I thought that every decision was thoroughly worked out and researched until they got the right answer. Later I understood that this was not so. Often the leadership will come, look, and simply say, "This is all nonsense—do it this way." And that's it.

I assume it is the same with you. Maybe not, because you have somewhat less latitude. But with us, these subjective factors had tremendous significance, although of course, in the final tally, because of objective reasons, our line of behavior paralleled yours. Even in strategic thought and concepts, now you were ahead, now we were, now we both made the same blunder, now we both did something useful. Life imposed certain borders which limited the stupidities. In the end, reality and practice pointed out the voluntaristic errors, which were subsequently corrected.

I have raised only one side of the story—the objective and subjective processes which operated in the Soviet Union. But you have to add to that the political-military situation, the technological policies of the U.S., the breakthroughs that you achieved, the struggles that went on there—all of this was taken into consideration. Take the intelligence data. You confused us terribly. Remember the group missile basing options you considered, and other variants of systems. Or we had information that you were developing silos hardened against 1,000 kg/cm^2 [14,225 psi]. We had to investigate it all. All of this was superimposed on the whole.

RECORD OF INTERVIEW

Subject:	Gen.-Col. (Ret.) Andrian A. Danilevich
Position:	A General Staff Officer from 1964 to 1990. Senior Special Assistant [*Pomoshchnik*] to the Chief of the Main Operations Directorate (GOU) in the 1970s. Assistant for Doctrine and Strategy to Chiefs of the General Staff Marshal Akhromeev and General Moiseev from 1984 and 1990. Director of the General Staff authors collective that composed and refined, between 1977 and 1986, the top-secret, three-volume *Strategy of Deep Operations* (Global and Theater), that was the basic reference document for Soviet strategic and operational nuclear and conventional planning for at least the last decade of the Soviet state.
Location:	Institute of Military History, Moscow
Interviewer:	John G. Hines
Date/Time:	September 24, 1992, 12 noon
Duration:	Approx. 1.5 hrs. total
Language:	Russian
Prepared:	Based on audio cassette tape

Q: Regarding the effect of the development of MIRVs[15] on counterforce vs. countervalue targeting strategies, first strike strategy, etc.

A: Regarding the targeting policy and the choice of targets, when the rocket forces were first created, they possessed certain technical characteristics. One of the shortcomings of these first missile systems, like the R-16,[16] which was one of the main intercontinental systems, consisted in the fact that the probable radius of error was from 2 - 3 km. This despite the fact that they possessed fairly powerful warheads, ranging from 100s of kilotons to 8 or 10 megatons. But their radius of accuracy was limited, and their number was limited. When Khrushchev boasted about how we produced missiles like sausages, the fact was that we could launch only 200 - 250 missiles. So we planned to use them with the maximum possible effectiveness by delivering the maximum possible damage with this limited number of missiles. Therefore, they were all aimed at the biggest cities: New York, Washington, Los Angeles, San Francisco, etc. In order to increase the effectiveness of the strike and yield the maximum possible damage, this group of missiles had to be increased quickly, and this is one of the reasons for Khrushchev's decision to deploy medium-range missiles in Cuba, the so-called R-12 [SS-4]. These were 60 missiles which allowed us to increase the results of a strike. In effect this move targeted practically all U.S. cities with a population of 300,000 - 400,000. As for the military targets, they would be attacked incidentally [*poputno*] because many

[15] MIRV — Multiple Independently Targetable Reentry Vehicle — Each warhead on a MIRV is guided independently to a specific target once released by its missile "bus."

[16] Possibly Korolev's R-16 (NATO description SS-8) of which 23 were deployed.

communications nodes, airfields, control centers are close to cities. Centers of military industry are also in cities. This problem was solved *poputno*. Although in the main, the attack was aimed at population centers, large administrative centers, and it was considered that such a strike would have lethal consequences for the United States. Also it must be mentioned that the majority of the strikes were planned to be ground bursts, not air bursts. This means that the whole territory of the U.S. would be subject to contamination through radioactive fallout, and in the end this would lead to the death of the entire population, or the greater part of the population because ground bursts of such power would produce tremendous levels of radiation. We did not think at the time that this fallout would eventually reach the Soviet Union, and eventually would have dreadful consequences for our own country. There was no research done on this subject at the time. So this was the basis for our nuclear strategy.

What kinds of missiles were there? They were liquid-fueled. It was impossible to keep them fueled continuously. So they were stored empty. Next to them were the fuel stores—the oxidizer and the fuel itself. They were fueled at the very last moment before launch. All of this took 5 - 6 hours. Furthermore, in the 1950s and 1960s most of the missiles were land-based. A part was based in silos with limited protection, but the warheads were stored separately. In order to make the missiles combat-ready the warheads had to be coupled to them. This took another 2 - 3 hours. So the ready times were quite long and it was difficult to talk of a retaliatory strike. The calculus was such that your missiles also had limited destructive characteristics, and therefore a considerable part of the missiles would be left unused [sic]. But the most important thing was to be able to strike. The goal was this: not to be late—to be the first to deliver a strike. To stall as long as possible, but not to be late. The strike must be first because if it is a second, retaliatory strike, then it will be practically ineffective because of the long ready-times. And not just against missiles, because we would not be able to retaliate at all, since our missiles or our control systems would be damaged to some degree.

But in time our missiles were improved. For example there was the mass-produced U-100 missile.[17] This was a missile based in a silo, which had protection against several kilograms per square centimeter overpressure; it was pre-fueled [*ampulizirovanaia*], i.e., all of the fuel components were contained inside tanks within the missile; and it was stored with the warhead on board. Therefore the ready-times were reduced to minutes. This led to other paradigms. As a result, we now had two strike possibilities: a preemptive strike [*uprezhdaiushchii udar*], and a retaliatory strike. There was also an improvement of the tactical-technical characteristics, because not only were the ready-times reduced, but the silo protection was also improved. Whereas before we had protection of 2 kg/cm^2 [28 psi], for incidental nuclear explosions at a range of, say 5 km, now we had to deal with close hits. So there were now two options: retaliatory and preemptive strikes.

The majority of our strikes were directed against administrative-political centers. Later there appeared various large targets, large nodes, large naval bases, but mainly large area targets [*ploshchadnye tseli*], control centers, etc.

Q: Were they targeted in a first strike, or retaliatory strike?

A: Both first and retaliatory. It did not make any difference, because we did not know which would survive, which would not . . . . There remained a reserve of forces so that if

[17] Probably manufacturer's model number for the missile given the NATO designation SS-11. Also identified as the RS-10 by the Soviet Strategic Rocket Forces. The missile was deployed in the early 1970s.

the most important targets were not destroyed in a preemptive strike, we meant to destroy them in a second strike.

Now, how did this situation change with the appearance of MIRVs? First of all, the number of warheads increased 8 - 10 times. So now cities with populations in the 10,000s, rather than 100,000s were targeted. A town of 50,000 or even less was now a target, because there were 12,000 warheads or some such number. In other words, it was now possible to deliver massive destruction of targets on the territory of the United States, although not all of the targets were in the United States. They were planned all across the world—China, England, Europe, other continents, i.e., on a global system of targets.

But most important, the control systems were advancing, and the possibility emerged of a multi-variant use of forces: preemptive, retaliatory, retaliatory-meeting strike [*otvetno-vstrechnyi udar*]. First, there were different variants against specific regions: only Europe, or, say, only America, or both Europe and America, or only China. There was now also the possibility of choosing the category of targets: only military, or only cities, or both. But fundamentally, the planning was to hit both military targets and cities at the same time, although the proportion of military sites to cities was subject to change, depending on the kind of strike. For example, in the case of a preemptive strike, it was important to reduce the effectiveness of the U.S. retaliatory measures against targets on our side. In that case, the majority of targets was to be military. All missiles, airfields, control centers, naval bases were targeted. But a portion was aimed at cities, and, in fact, there was more than enough for every city, and not just one warhead.

Q: What time frame are we talking about here?

A: The turning point came in the period between 1973 and 1975. In the case of a retaliatory strike, or a retaliatory-meeting strike, when there has already been a launch of your missiles, it was senseless to strike at missiles, and those forces that were aimed at your missiles were automatically, from a distance, switched to a different program and were aimed at cities. So the effectiveness of destruction of those cities already targeted was increased, and in addition, less important cities were also targeted. So this was the policy. Thus the changes in technological possibilities were tied to the changes in the nuclear strategy itself. There was a shift from the strategy of massive retaliation [*strategiia massirovanogo vozdeistviia*] which you and we had, to a strategy of a flexible use of nuclear weapons. This involved not only these various variants for strikes, but we also came to accept the possibility of a lengthy conventional war, and did not begin and end the war with the use of nuclear weapons. We wanted to distance ourselves from the nuclear threshold, just as you did. And in this connection there arose the possibility of "dosage" [limited] use of, at first tactical, but later on strategic nuclear weapons, and still later there appeared the possibility of such multi-scenario use. Up until 1975 or 1976 Grechko unequivocally maintained the following position: he rejected all variants for the limited use of nuclear weapons, and asserted that we would respond to any use, in any geographic region, of even tactical nuclear weapons, with a full-scale use of our nuclear potential, both strategic and operational-tactical. We did not hide this. Members of our military leadership considered it essential that the opponent should know this, and that this should act as a means of deterrence. Moreover, we thought that a limited nuclear war is totally unacceptable to us, as it puts us in an extremely difficult position, because the theater of its use would be limited to Europe and the European territory of the Soviet Union, while the U.S. would remain outside of the range of tactical nuclear weapons. So the asymmetrical consequences of such a war forced us to be critical of such concepts. We rejected them and both Schlesinger's and Brown's statements were considered to be provocations and we did not yield to them.

So at first the possibility of a second strike was considered highly dubious. Later on, when the possibility of a second strike was guaranteed, and it was clear that regardless of whether or not there were a preemptive strike by the U.S. we would have enough forces left to deliver unacceptable damage, this, together with the realization of the catastrophic consequences of the use of nuclear weapons on this scale, eventually, with some time lag, forced us to tend toward your concept of "flexible response," although we did not use that term. We introduced the term "new periodization of war." At first there was a two-stage periodization: initial period and subsequent period. The initial period was the massive nuclear exchange, and the subsequent period was the concluding period which was the deployment of operations—land operations and sea operations which would use the results of these nuclear strikes. Now we arrived at a new strategic periodization based on other principles: a period of non-nuclear actions, then a period of limited nuclear actions, then a period of unlimited nuclear actions and lastly the concluding period. So these were four periods designated based not on the character of the use of armed forces, but on the character of the use of weapons [sic].

Q: Approximately when did this periodization change?

A: It was approximately 1976-77. It was arrived at gradually. It did not change overnight. But it was finally, officially documented in approximately 1974-76 [sic]. And we remained at this position up until recent times. Although after 1978, or even 1979 and the beginning of the 1980s, we renounced the use of a preemptive strike. This variant was removed from consideration.

Q: This happened during Ustinov's tenure in June of 1982?

A: Perhaps it did happen during Ustinov's tenure. We rejected the preemptive strike and moved to a two-option use of nuclear weapons, i.e., only in a retaliatory-meeting strike, when systems are launched based on data from SPRN systems,[18] when launches have already been detected, and in a retaliatory strike, when the launches have not only already been detected, but we have already suffered hits and we use our remaining forces to retaliate. These were the two options. As for the preemptive strike, it was completely removed from all theoretical studies and all exercises.

Q: Was the retaliatory-meeting strike conceived of only in the 1980s, or prior to that time?

A: It was created approximately at the boundary between the late 1970s and early 1980s. But it did not depend only on the size of the forces and these other considerations that I have already talked about, but also on the creation of warning systems. At first there were no such systems. Then there were only above-the-horizon systems [*nadgorizontnye sistemy*]; there were no over-the-horizon systems [*zagorizontnye sistemy*]. [Unclear . . . .] These systems were not sufficiently reliable. They did not allow the reliable detection of launches. The only way to reliably determine the beginning of an attack is through human intelligence, but it is dubious that such data could be obtained. And, of course after the fact [after nuclear hits the attack can be detected]. But after the fact you can no longer have a retaliatory-meeting strike, but only a retaliatory strike. But when the network of over-the-horizon systems was developed and deployed, and after that space-based warning systems, artificial satellites, then it was possible to move to the concept of the retaliatory-meeting strike. But, still in the technological sphere, not only this technology played a part, but you also needed an

[18] Early warning systems (probable expansion — *sistemy preduprezhdeniia raketnogo napadeniia* — missile attack warning systems).

automated control system which could provide instantaneous . . . [data on the strike] in seconds. With manual control this is completely impossible. In other words, a whole range of factors: technological, strategic, and political conditioned the whole development of this idea and the rejection of one variant and the adoption of a second and then a third. I think that the same factors played to some degree the same roles in the U.S., although your scientists were in a rush and even though the necessary conditions did not yet exist you would adopt the corresponding concepts or postures. This baffled us, we could not see why you took such steps. We denounced them, then we would begin ourselves to look for solutions, and thus you would push us to further improvements and developments.

Q: But even when, in the mid-1970s, you took the official stand of "all against any," in other words that you use all your potential in response to any use of nuclear weapons, there was already some understanding in the GS or in the Politburo that in case of a real war, you should have the technical ability to react somehow using less than total force?

A: Well, first of all, the "all against any" concept was the simplest policy; second, we counted on the fact that it would be a deterrent, i.e., we would not let you play around, as you intended, for example, by using battlefield nuclear weapons in Europe, and other scenarios which were very dangerous for us. We did not want you to play out any of these scenarios, and so we wanted to deter you [*sderzhat'*] by frightening [*ispugat'*] you into the realization that you would not be left on the sidelines, that we would strike massively against your territory. But how we actually would have acted, I would not venture to say. I suspect that if events would have forced an actual decision, they would have paused to think: do we need to do it? Are we able to do it? Although officially, both theory and practical planning were based on this variant. But theory and practice do not always coincide with real decisions. So these decisions, even at that time might have been different. And later on, as I say, after the mid-1970s, we fully gave up that concept of all against any. We decided that it was not necessary to use nuclear weapons right away, that our answer could be a limited "dosage" or could be proportional. For instance, you deliver 200 hits, and we deliver 200 hits. Or we respond with 250 hits. You deliver 200 battlefield strikes directed at our order of battle, and we strike at your order of battle, plus an additional number of strikes. In other words, it is a kind of escalation. There could also be an inverse proportion: you deliver, say, 20 hits, and we respond with 10 hits. Meanwhile there is an exchange of statements, a diplomatic war is being waged with the aim of stopping this escalation. So in exercises we played out many different scenarios based on different guesses of how you would respond. But they were just guesses. I remember that you had one wargame where different former presidents and former Secretaries of Defense got together, and they played out a scenario of a war based on a confrontation around Iran. There were two teams: one side played the Soviets, and on the other side there was a former president, I don't remember now which one—maybe it was Nixon—and actual former Secretaries of Defense. They made the decisions on the U.S. side. So they played out this scenario and it was very interesting. But if you could have taken those Soviet leaders and forced them to play on one side of this game, it would probably have been a big step forward, in the sense that we would have approached the situation that we are close to now.

I am thinking that, in reality, we have no adversaries now: you do not consider us an adversary, and we do not consider you an adversary. But in a situation such as we had in the 1970s and 1980s when we were afraid . . . . Although I must say that even despite all of the propaganda, we inside the GS did not really believe that you would attack, although there were some frightening situations. I don't know about your military, but your politicians also probably said one thing, but their thoughts were somewhat more

restrained relative to the possibility of a real attack. But the fact that there was no war was due to many factors: technological and political. Both played an important role.

Q: So these plans to retaliate only against Europe, or only against the U.S., existed until the mid-1970s?

A: They existed up until very recently. I told you before that in 1972 there was one exercise with the participation of the political leadership. After that, the political leadership did not participate in any of these events even once. And the military leadership scrupulously developed all of these scenarios of action in exercises, etc., but the political leadership did not participate. I don't know about your side, but by the data that I received, the President would very actively participate in such exercises and in the development of different options for decisions. But our political leadership just did not get around to it. Khrushchev took these questions very seriously. In missile technology, for example, he had a lot of input, including some revolutionary approaches. He destroyed our whole artillery and began deploying the rocket forces instead at a time when there were virtually no missiles. But he ordered a drastic reduction in artillery. He destroyed our whole air force. We had huge fighter aviation and bomber aviation groups. But he was able in a very short period of time to create a new branch of forces—the strategic missile forces, which were created in 1960. All of this was done by Khrushchev.

Brezhnev also was involved in these matters, but in a different way—through the Politburo. He understood and was involved in military and space and missile technologies. Andropov did not have time to get involved. Although at every session of the Politburo military decisions were made, but not in concrete terms. Chernenko did not touch these matters at all. As for Gorbachev, he was involved, but in an incompetent and perfunctory manner. We had one exercise in Minsk in which he arrived, gave a prepared speech, without seeing the exercise itself and left. The military doctrine changed at this time. We were up against a united front when Shevardnadze and Gorbachev criticized us: that we are preparing to fight against the whole world, that we have an offensive doctrine, that it has to be changed to a defensive doctrine, and we did change it in the end, but in a political way. Then the "New Political Thinking" was born, that security was guaranteed not through military means, but through political means, that war was not the continuation of politics, although we disagree with that even now. It *is* the continuation of politics and what we saw in the Persian Gulf confirms it. But all of these established canons were rejected, but on political grounds. As for the strategic and military-technological aspects, here Gorbachev was not sufficiently competent to make any decisions, although he thought that he knew and understood everything.

Q: In Minsk did he speak against the solution of problems through military means?

A: No, in Minsk he gave a different sort of speech. He was attempting to find a basis for the theory of *Perestroika*: the condition of the country, why *Perestroika* is necessary, the essence of *Perestroika*, etc. As regards the military and defense, he did not advance beyond the standard, well-known positions: the strengthening of defenses, the technological improvement of the Armed Forces, the strengthening of discipline, and others. He did not advance any new strategic concepts. Just generalities: that there is a threat, etc.; the idea that there can be no winner in a war came later; that the United States is not an enemy, but a partner in international relations came considerably later, around 1989; that the priorities should be on human values also came later. But back then in 1985 or 1986 he was still swimming with the stream. Although even then he was proposing a more restrained military policy than in the past.

Q: You said earlier that the GS never came to the conclusion that nuclear weapons have no military utility. Instead, you said that it would be senseless to use them only on a very large scale. You also said that, especially after 1980 you had come to a full understanding of the ecological consequences of nuclear use. You then began to think about a way to create realistic and rational options. In developing these options, what did the GS assume regarding the reaction from the opponent? For example, if one side struck in a very limited way, against either the territory or the forces of the other side, how could one control the reaction of the other side?

A: Of course, it is unpredictable. As Clausewitz said, "War is a sea full of underwater rocks which ambush the commander at every step." It is very difficult to guess. There are very many objective factors, but there are also very many subjective factors and random occurrences as well, which can turn the course of events in any direction. And in military industry, military theory and practice, one usually relies on the most adverse, the most difficult scenarios. And this forces one sometimes to keep to the most extreme positions. So, for instance, why did we create such an enormous nuclear arsenal? Or such a large number of tanks? It is because we expected the worst—that we would lose them, they would be destroyed, etc. If we had counted on reasonable or on the most likely outcomes, then maybe such decisions would not have been taken. Our starting point was, "What if?" If we are ready for the worst, then we are also ready for a normal course of events. The events of 1941 showed us what can happen to the country. Because of that the worst was expected. Because of that marginal decisions were made. Because of that we produced more than was necessary.

McNamara conducted a very reasonable calculation of the limits of a strategic nuclear arsenal, but you exceeded it by a large amount, and so did we, notwithstanding the fact that the limit planned by McNamara was quite sufficient to attain the entire complex of strategic objectives that realistically stood before your armed forces. You exceeded this limit, and meant to go on further, and if events had not interfered we both would have gone on building. And now there are new possibilities to build a whole complex of even more destructive weapons, based on new physical principles: laser weapons, low-altitude weapons, [unclear] weapons, hell knows what kinds of weapons, and they might have appeared. And SDI, with all of its pluses and minuses, and space-based weapons systems, and super-EMP,[19] and God-knows what else. All of these would have been superfluous, because what we have now is enough to destroy humanity 10 times over. Lenin taught that we must have all of the weapons that our opponents have. So we strove to produce everything that you had. And the same principle operated for you. I have already said that we designed SSBNs before you did. But Khrushchev rejected them. We began to build submarine-based cruise missiles. Then you developed the Pioneers [sic Polaris],[20] I think. But yours had medium ranges. Your range was at first 2,000 km, then 4,000 km, 8,000 km . . . . But we immediately began to build similar systems with ranges of 8,000 - 10,000 km, i.e., intercontinental sub-based missiles. Then there were the Tridents. So there was a competition. We saw what you were building, and repeated it, but on a higher level. The U.S. first developed MIRVs,[21] but we later not only caught up, but passed you in MIRVed systems, both in quality standards and in control and in accuracy. We strove to avoid an imbalance. We were not always

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[19] EMP — Electro-Magnetic Pulse. [*elektronomagnitnii impul's* (EMI)] An effect of a nuclear explosion that tends to disable electronic and electrical devices and systems—normally beyond the range of the heat and blast effects of a given weapon. Solid state electronics are more susceptible to neutralization than are older, tube-type technologies.

[20] Probably referring to the Polaris SSBN.

[21] MIRV — Multiple Independently Targetable Reentry Vehicle — Each warhead on a MIRV is guided independently to a specific target once released by its missile "bus."

successful: in intelligence systems, in RN[22] systems, in command and control systems, we were consistently behind you. So this process of competition in military technology was very complex and contradictory, not like a straight line. It was rather a pair of ascending, intertwining curves.

Q: You said yesterday that in the technological competition in the means of command and control and in silo protection the U.S. was consistently ahead of the Soviet Union. With regard to silo protection, we thought that the opposite was true.

A: Well, that is not right because, as I say, at the time when our silos had protection of 2 kg/cm^2 [28 psi], you were already building silos protected against 21 kg/cm^2 [299 psi] overpressure. So we thought that we were behind in protection, but we caught up. Later on we had information that you were building silos able to withstand 300 kg/cm^2 [4,266 psi], and later 1,000 kg/cm^2 [14,225 psi] and we started to think about that and decided that this process could be reduced to absurdity. We began to look for other basing options and to create a guaranteed-survivability reserve on submarines and on mobile platforms. So at first we followed your lead, but we saw that it would lead to stupidity, because the cost of such [protection] measures was enormous, and it was still useless, because we could eventually create silo protection of 1 million kg/cm^2 [14,225,000 psi], but if the accuracy and the guidance are good, you could hit the silo, jam the doors or disrupt the control systems, and all of these millions [of rubles] would go to the wind. So we began to look for other means of defense. Also, we were receiving a lot of information, not just from classified sources, but from open sources, newspapers, regarding the basing of a hundred MX missiles in within a limited space, etc. We thought this was stupid, but we tried to look for the advantages of this kind of scheme, although there may not have been any sense to this to begin with.

Q: As I understand it, the Americans were planning to use air bursts at a height of 120 m. You, on the other hand planned to use ground bursts on the basis of tests that showed that ground bursts were much more effective against missiles in silos. At the same time, our estimates of vulnerability differed significantly from yours. Our measure of silo destruction was based on the ability to verify the destruction from space. Your measure of destruction of a missile was any damage that prevented that missile from being launched, even if it was just a jamming of the silo doors. That missile, according to your thinking, was considered killed. Under this definition, it was almost impossible to completely protect a missile from a disabling hit. This is just an observation, and it may not have played an important role. But at the same time, this definition made us think that it would take many direct hits to kill a missile with overpressure so that it could be verified from space. Conversely, based on the Soviet analysis, a kill was much easier to achieve.

A: Generally speaking, to disable a silo it is not necessary to achieve a direct hit. Even if the explosion is nearby, the silo itself is deformed and the missile cannot be launched. So that now there are all sorts of complex systems built into the silo to absorb the shock, because it is like an earthquake. Now, we do not reject fixed launch sites even now because of certain advantages. Take radioactive fallout. Mobile platforms are vulnerable to it. Servicing them is very labor-intensive. Fixed sites are unmanned, except for the guards. Everything else is done by remote control. Next, mobile platforms move around, so the whole process of preparing a strike is complicated, while with fixed sites everything is in one place. But both the positive and negative factors must be considered, and in the end both kinds of launch platforms must be developed in parallel. Now a

[22] Possibly abbreviation of *razvedivatel'no-nabliudatel'nye* (reconnaissance-observation) systems.

wholesale rejection of stationary platforms is untenable. I don't know how it will be in the future, with all of the deep cuts. But the proportion of mobile platforms was always increasing.

Q: In the middle of the 1980s there were big changes which made it possible to target silos.

A: There were two theories which were considered: the theory of the counterforce strike, and the theory of the decapitation strike. The theory of the decapitation strike aimed at disabling the control systems. This is what you were saying, the super-EMI,[23] that is the air bursts, were aimed at disabling semiconductor-based control systems and on-board and external control systems. And the counterforce strike was aimed at the silos. But here it was assumed at first that in order to disable a silo you needed three times the number of hits. But this was not efficient, because it turns out that with an equal number of warheads, you would use more in the counterforce strike than you would keep. But when we got into the very large numbers of warhead stocks—10,000 to 12,000—you could afford it because even with a 3:1 ratio you still had enough warheads left to target all other categories of targets. So if at first this presented a problem, in time it solved itself. Secondly, 60% of your nuclear potential is on submarines. So we began to develop SSBNs, and eventually the number of our nuclear submarines surpassed yours. But we also had problems related to basing these subs. The problem was that our missile-carrying subs had to get close to the shores of the U.S. But you had an advanced system of passive detection and antisubmarine warfare, CAESAR,[24] etc., and this made our subs very vulnerable, not to mention the fact that it took a lot of time to send them out and bring them back. Plus, we were blocked in by your anti-sub barriers, both in the east and in the west, which made our access to open seas very difficult. So we developed intercontinental ballistic missile submarines. But here we also had problems: how to defend them? Then there was the idea of launching directly from the bases. But if we do that, we lose the mobility. So there are many difficult problems. One more thing is significant: you had better hydro-acoustics. So when there is anti-submarine surveillance you can hear us, but we cannot hear you. This worried and continues to worry us.

I just wanted to say one more thing. Now we have declared officially that we have no adversary. But any politician can declare that. These declarations must be based on realistic, material decisions. And in the material sphere, movement is still dubious. Take the missile forces of the U.S. and Russia. Where are they aimed at, the moon? At Africa? At Antarctica? No! They are aimed at each other, just like they were before. What kind of standoff is this, a "friendly" one? So this element is preserved. Or take the armed forces of NATO and Russia. Those whole systems of supply, of technical specifications, etc. Are they designed to wage war against African states, or Saddam Hussein or the Chinese? No! They are objectively, technically adapted for war with one another, between NATO and the former Soviet Union. We prepared them for 70 years for such a war, and they have remained that way. Or take the PVO [Air Defense] system. Your theater-level PVO system is pointed where? It is pointed to defend against an attack from the East. It is politics that has the decisive significance because politics deters the use of these systems. But what if the politics change? What if some new forces come to power here or in the U.S., anything can happen. So in that sense there is a potential danger that cannot be ignored. So I have advanced the idea of a deep *Perestroika*, an extensive integration of our military forces that would alleviate this

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[23] EMI — *Elektronomagnitnii impul's* — Electro-Magnetic Pulse (EMP).

[24] CAESAR — Part of the Navy's overall Sound Surveillance Systems, which provides passive underwater sonar arrays which detect the sound of a submarine and transmit the information to shore installations where data is correlated.

danger. The question of absorbing Russia into NATO, for example. But what does this mean: you will not agree to that because it means giving us access to your strategic planning, etc. There are elements of mistrust which will condition your decision. But if such a decision were made, it would remove the danger because the whole system of planning would change. I don't know about how your planning process has been changed, but right now we have no plans at all, because we do not know against whom and with what to fight. All of our planning and all of our groups of forces, etc. have gone down the tubes. NATO remains and it says that its strategy has changed, but as for the concrete plans for nuclear strikes, I suspect that they remain and are maintained at the ready to this day. As for the whole system of other operations, I cannot envision it. But if NATO were a unified military alliance which would guard against threats to European and global security, on the basis of a partnership and of unified planning, this would be a tremendous step forward. But I guess the time is not ripe for this.

Now a second thing. Cooperation in the area of early warning systems. El'tsin moved on this, but he received no response. Cooperation in the development of unified intelligence systems. Cooperation in the development of, if not unified, then perhaps jointly-vetted air defense systems. Cooperation in the area of joint use of naval forces. Cooperation in other military areas. These are all areas which could remove the lingering elements of distrust.

Kirshin and I have proposed a plan detailing these and other suggestions, entitled, "Military Aspects of the New Complex of Security in Europe." We wanted to propose it through the Germans, but they do not want to move on it without U.S. support.

List of Possible Areas of Cooperation:

1) Joint assessments of strategic situation, planning, decision making

2) Joint intelligence, reconnaissance

3) Joint warning systems

4) Joint air-defense systems

5) Joint work on anti-missile and space systems

6) Joint mobile task forces

7) Integrated combat structures

8) Integrated systems of preventing accidental launch

9) Joint efforts on non-proliferation

10) Joint military-historical research

11) Integrated control links over strategic forces

Q. You said that if the U.S. or NATO had used tactical nuclear weapons against Soviet forces or against members of the Warsaw Pact, then you had possible responses which had been worked out, including limited nuclear strikes against the U.S. In what specific time period were such limited options developed?

A: It was approximately 1978, 1979, 1980. And if you were to connect it with specific personalities, it was associated with the exit of Grechko, and the entry into the Ministry of Defense of Ustinov and the rise of Ogarkov as chief of the GS. But it was connected not only with personalities, and not only with the political situation, but also with military-technical changes which also occurred in the Armed Forces, in the condition of the strategic nuclear arms.

Q: You also said that tank production in the USSR, as I understood it, was influenced by the fact that the production capacity in the U.S. was so high that in case of a prolonged long war, there would not be enough time to produce the necessary amount.

A: Well, during WWII we produced up to 26,000 tanks per year, while our losses were approximately 18,000 - 20,000. So we could not only replenish our losses, but we could actually increase the size of our Armed Forces and raise the level of our technology. This played a decisive role in our victory because the Germans could also produce enough to cover their losses, but not enough to increase their tank force, so the correlation of forces was constantly changing in our favor.

How did we assess the economic situation in analyzing a prolonged conventional war? Take the rates of attrition. Today, with the highly accurate weapons and specific anti-tank weapons, the rate of attrition would be five to six times higher than in the last war. In other words, the rate of attrition per operation was estimated at 120%. This means that if we had 1,000 tanks at the beginning of an operation, we would lose 1,200. This seems absurd. But the fact is that in the course of an operation there is 25% rate of attrition due to repairable mechanical failure. In the course of an operation these tanks would be repaired and put back into action. They would fail a second time, and again be repaired, and the total would be 120%. But now this rate would rise to 200 - 300%. So you needed a tremendous repair capacity within the formations themselves. But even a tremendous repair capacity could not replenish these losses, so you need a huge industrial capacity. But the tanks are much more complex now. To produce a T-34 you needed four plants: one for engines, one for the main body, one for the control systems . . . . Now you need 340 plants to build a medium tank, say a T-64A. You need all of the above, plus night vision systems, laser sights, stabilization systems for fire-on-the-run, fire control systems, anti-radiation systems, various kinds of armor, etc. 340 plants! Try doing all of this during a war. And you cannot use low tech. Well, you can, but if the other side has high-tech, it will be a rout. So you need high-tech tanks. Our tank production was roughly 10,000 - 12,000 per year. But the losses were expected to be 20,000 tanks per year, roughly. So every year of the war our tank force would decline. According to mobilization schedules, the overall size of our forces was supposed to increase four-fold, new formations were supposed to appear. It is because of this capacity that we won the last war. All of this was now out of the question—there was no such possibility. We could not even maintain our forces at the same level, let alone increase them. If we began with 40,000 tanks, by the end of the war we would have 5,000. This, given the fact that our industry and all of our territory would be under constant conventional attack, whereas the U.S. industry would not be subject to any such attack. The mobilization capacity of the U.S. far outstripped ours. So the Americans could not only make good their rate of attrition, but could increase their forces manifold. If our tank production curve was this steep, then yours was much steeper, and the difference was tremendous. So we began to look for a way out. We decided to produce a much larger number than what was immediately necessary and to use the surplus as a mobilization reserve. If one generation of tanks becomes obsolete, we will not remove them from active duty. There was the suggestion to remove them from active units and to concentrate them somewhere in Central Asia. But this required additional servicing and additional personnel. So it was decided to keep them integrated within the units so that

the units would have an increased number of tanks, and have the same personnel master the new generation of tanks. A second point was that we considered our tanks to be our main trump card in a conventional war which would give our side a considerable advantage. Many other factors were negative. We strove to make tanks which were at a higher level than the American tanks. But for this it was necessary to quickly adopt innovations and rearm using new systems. One tank is developed and 5 years later it is replaced by a new one. But by that point we had not yet had enough time to equip such a large army with the old type of tank. We would rearm 10 - 20% of our force, and a new model would come out. So the old type would be mastered and integrated and would already be in mass-production, while the new one was still being produced in single digits. So you had to make a decision: to stop the production of the old type or not. We would decide to produce both types. So it happened that we were producing six different types of tanks. This also added to the total tank force. Now we are scrapping the tank force, and this takes money and resources. A portion of our tanks have been moved to the East and there the sand is ruining them and turning them into scrap metal. It is a scary situation. As for waging war, we are not even thinking about that anymore.

The mobilization capacity of the U.S. military industries was estimated to be very high, according to our intelligence sources. Of course you have a very different structure: you have private firms and government firms that produce military technology. Furthermore you have tested mobilization and shifting to war production many times. Because we have always had economic difficulties, we could never conduct a test of the mobilization readiness of our whole industry. There was one such attempt in which four small plants were tested, and even that experiment was stopped quickly because it hurt production. Therefore the real mobilization readiness of military industry, not to mention the civilian industry, was never tested. We could only estimate this capacity on paper. You, on the other hand, had exercises, and detailed tests, so there were some big differences in this respect.

Q: Regarding the combat-readiness of NATO, what were your estimates of the length of time necessary for NATO to prepare for defense or offense?

A: You would know this better than I, but all of the exercises we conducted were based on the assumption that NATO would attack first. Grechko would always ridicule the West by saying, "The West? Defending? Defending against whom?" So the assumption was always that today you attack, and tomorrow we go on the offensive. Later we began to approach it more soberly, as NATO's capabilities changed, and the period of defending against the attack kept getting pushed back to 6 days, 8 days, then almost a month and only after that we would start the counteroffensive. At some point in the 1970s there were offensive, as well as defensive plans, i.e., a preemptive strike. Later these offensive plans were rejected, forgotten, it was ordered to destroy them, and the only option left was this one of retaliatory actions.

Q: Was it assumed that you could rely on your allies in Eastern Europe?

A: Well, I assume that with the reunification of Germany all of our plans have been revealed, although they tried to destroy them before unification. But all of the internal plans remained. All of the armies of the allies were included in the overall system of operations, although the majority were involved in operations on the flanks. The Hungarians, for example, were included in the order of the corresponding Soviet Fronts as army formations. There was a Czech Front, Polish Fronts, formations, which were used in the second echelon, and so forth. They were all included in the general system of our operations. The planning was centralized within the GS: it refined the plans, controlled their fulfillment, ensured combat-readiness, etc.

Q: Was it assumed that they would take part both actively and responsibly?

A: Yes, I think that they were fairly well-prepared armies. They were supplied with Soviet arms, they conformed to Soviet operational views and doctrine—they did not have a doctrine of their own to speak of—a single system of control, a single system of training, since the bulk, even the whole of the corps of generals were graduates of our military academies. Therefore, neither in operations nor in the technical sphere did we have any problems. There were some language problems, but they were practically non-existent, except at the lower levels. Otherwise, the political leadership was united in its approach. Despite some of the criticisms coming out now, I never saw any contradictions within the military leadership. There was some criticism, but we had full confidence in the military leadership of these countries, and likewise, they had full confidence in the Soviet leadership. Of course, we sometimes went a little too far, pressed them too much, and this sometimes raised national feelings and resentments, that we did not consult them, but these were trivialities which did not play a decisive role in the unified military policy.

Q: You said before that at one point the Soviet Union equaled the U.S. in naval systems, perhaps in submarines. But it is unclear when this point was reached. Perhaps the Typhoon was similar to our Trident. However, you also said that the U.S. was ahead in acoustic detection systems. Do you think that there was a point when the Soviet Union was at the same level as the U.S. in naval systems?

A: In naval nuclear strategy, there were several stages. We had different approaches to naval forces in general. Before and during WWII, our main adversary was on the Continent—Germany. Our naval forces were secondary, and anyway, they were held in check by the naval forces of Great Britain and Germany, and were used in a limited way in our northern communications. But these naval forces did not present any threat for us. Therefore our whole thinking was aimed at the creation of powerful land forces. The naval forces played an important, but ancillary role, although we did create a powerful Northern Fleet, and a Pacific Fleet, and a Black Sea Fleet. But their primary role was to support the land forces.

After the war there was a reassessment. We considered our primary opponents to be the U.S. and Britain, strong naval powers, possessing huge fleets. There was a need to reassess the role of our own fleet. So we began to create not a coastal defense fleet, but an oceangoing fleet, a missile-carrying fleet, an atomic fleet. A totally different strategy: instead of supporting land forces, our navy acquired the ability to achieve its own autonomous strategic objectives, to conduct strategic operations in ocean theaters. This had not existed previously. Before, the fleet was intended largely for combat with the enemy's fleet. Now the fleet took on all of the elements of the military-industrial structure of the enemy. The main objective became the destruction of the military-industrial potential of the enemy. The fleet's primary efforts now extended not to actions against the oceans, but to the whole globe, to all the continents. Therefore the question of the creation of a missile fleet arose. At the first stage, we were the first to create missile submarines—submarines carrying cruise missiles. These cruise missiles were not intended for use against land targets, but against sea targets at long distances, on the order of 100 km. Later these missiles were adapted for the destruction of coastal targets. Later a ballistic missile for submarines was created. When Khrushchev saw a mockup of this submarine, with these rockets inside it standing vertically, as opposed to the cruise missiles which lay horizontally behind a lid, he called it the "Dragon's Teeth" and criticized the system so that it was terminated. At the same time you acquired the Pioneers [sic-Polaris] with a range of 2,000 km. We also scrambled to create subs with ballistic missiles, but ones with intermediate range—1,200 km. One of these subs sank off Hawaii, and there was some question of whether or not the Americans raised it or not.

Anyway, it was difficult to get close enough to the U.S. with these subs. Later, gradually we raised the range to 2,000 km and increased the number of missiles. But you jumped to 4,000 km with the Pioneer II [sic]. We decided that if we would race after you like that, we would never catch up. So we decided to immediately create an intercontinental underwater system. So we created a 20-silo sub, a 12-silo sub, project 607, different projects that you know about. Our thinking outpaced our industry's ability to put it into reality. Therefore there were many different designs. When you had a new design, you would put the new missiles on an old platform. We, on the other hand, did it differently. When a new missile was designed, a new submarine was designed to carry it. This was not economically sustainable, but we did it in order to create a powerful missile fleet. So, as I said, we were the first to create intercontinental ballistic missile submarines. We also were ahead in control systems at a certain stage. Later you began to overtake us and created a more effective system, say, in accuracy. The accuracy of our missiles is lower than yours. Then also in control and in noise. Our greatest vulnerability is high noise related to engines, ball-bearings, etc. We cannot reduce noise to the same levels as you. So the competition also existed in this field. Now 60% of your nuclear potential, as opposed to our 30%, is on submarines. Our main efforts were directed at ground-launched missiles. We created the R-36[25] missile that scared you to death. They carried almost 18 megatons in their warheads. Most important, they could be launched in either global direction, and thereby all of your warning systems could be rendered useless, because it was not easy to create a warning system which looked in the other direction.

The latest doctrine stated that the missile submarines constituted our strategic nuclear reserve. In other words, after the ideology of a retaliatory strike was adopted, the question arose of how to guarantee an unacceptable level of damage after the first nuclear strike had already occurred. To do this you must have a group of forces with guaranteed survivability, which would launch missiles at the most important targets under any scenario of hits. They did not carry flight programs [*poletnye zadaniia*], but they could be programmed remotely to attack the most important targets still remaining—cities and military targets, taking into consideration the real situation. The basis of our strategic nuclear reserve was this volley from nuclear submarines.

Q: Revisiting the question of whether the GS had more influence over the structure of the Armed Forces than the Military Department of the Central Committee [CC].

A: Well, you see, you do not know what the Military Department of the CC was. There was a Department of the Administrative Organs of the CC. It was headed by [Nikolai I.] Savinkin.[26] This department guided [*kuriroval*], the Armed Forces, civil defense, the KGB, MGB,[27] the Prosecutor's office, DOSAAF,[28] things like that. But it

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[25] Identified in one source as the "Tsiklon" space launch vehicle, a space-launch variant of a previously developed ICBM. General Danilevich is almost certainly referring to the SS-18 (the official Soviet designation for the military missile was "RS020"). See Lieutenant Colonel I. Safronov, "19, November is Missile Troops and Artillery Day: Both Shield and Sword," *Voennye znania*, No. 11, 1993, reprinted in translation in JPRS, JPRS-UMA-94-013, 13 April 1994, p. 11. This conclusion is supported by comments made by General Danilevich in a subsequent interview (see Danilevich, December 13, 1992). He commented that "by the end of the 1970s the development of the R-18 [sic-full Soviet designation RS-18, NATO designation SS-19] and R-36 gave the Soviets a throw weight of over 20 tons, surpassing U.S. capability." Both the SS-19 and the SS-18 came on line at the end of the 1970s. The throw weight of the SS-18 was 8.8 tons, the SS-19 was 3.35 tons, exceeding the lift of any Soviet ICBM deployed before or since 1979. See Safronov, "19, November is Missile Troops and Artillery Day," p. 10.

[26] Authors were not able to identify this person in the military-industrial sector.

[27] MGB — *Ministerstvo Gosudarstvennogo Bezopasnosti* — Ministry of State Security.

[28] DOSAAF — *Dobrovol'noe obshchestvo sodeistviia armii, aviatsii i flotu SSSR* — The Voluntary Society for Cooperation with the Army, Aviation, and Navy of the USSR. DOSAAF was a quasi-military organization embedded

mainly prepared the cadres. Then there was also a Military-Industrial Department of the CC which was headed by Sablin[29] and someone else was the last one, I forget his name. Its main concern was the military-industrial complex, the military industry.

Q: Was [Leonid Vasil'evich] Smirnov the head?

A: No, Smirnov was the head of the VPK[30] and the Deputy Chairman of the Council of Ministers. But they [in the CC] were mainly concerned with the selection and placement of cadres. They had no influence on the development of strategy or policy. And therefore the Military Department of the CC . . . . The GS did all of that, and the military structures of the Central Committee had no influence on it. But, who did it report to? To the Defense Council. The Defense Council consisted of 8 - 10 people: the General Secretary, the Chairman of the Council of Ministers, the Foreign Minister, the Defense Minister, the Head of the General Staff, the Head of the VPK, Smirnov was included—a small group of individuals which decided on defense issues. Here the decisions were taken. But this was a government, not a party, structure.

Q: And the Military-Industrial Department was not influential?

A: No, it worked on questions related to the selection of cadres [sic]. They discussed, rejected, awarded ranks, they decided a lot of questions of discipline, sometimes they corrected the political aspects of documents, orders regarding the training of forces. But regarding military strategy, they did not know anything about it. They were mostly political workers who did not understand military matters.

Q: What about the VPK?

A: The VPK, Smirnov, they did work on questions relating to the development of technical policy—the development of concrete systems, OKBs,[31] their management—all of this did take place. But this was a State structure under the Presidium of the Council of Ministers of the USSR.

Q: And the VPK had more influence on the selection of strategic and conventional defense systems than, perhaps, the GS?

A: Well, there was competition here because we argued from operational-strategic grounds, they argued based on military-technical grounds, they argued based on the possibilities, and we were forced to agree with them sometimes. But the decisive voice in the development of military-technical policy belonged to the GS.

Q: What about the relative influence of the various armed services?

A: This had great significance because they served as the customers for their own kinds of armed forces, as their ideologues. They reported to the GS . . . . On most issues, the GS had its own opinion. Of course they [the services] tried to get the most for themselves, just like the case was with you, to get the biggest budget possible. We [in the

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in the Soviet educational system for the purpose of preparing Soviet youth for military service or for support of those who did serve in the military. It was not generally regarded as voluntary by Soviet youth.

[29] Authors were not able to identify this person in the military-industrial sector.

[30] VPK — *Voennaia Promyshlenaia Kommissiia* — (Military Industrial Commission).

[31] OKB — *Opytno-konstruktorskoe buro* — [Experimental] Design Bureaus. These were R&D facilities in the military-industrial sector that originated major weapons designs (aircraft, missiles, etc.) and followed their development through to mass production and deployment.

GS] always approached it in a balanced way, so we rejected some items. We approached it from general, global positions, from the general, overall plans for the conduct of war, while they approached it from the point of view of the interests of their own branch of the Armed Forces. So perhaps they understood more about the technical details, but, again, the GS played a decisive role because, in the end, our positions . . . . Well, of course, the position of the Minister of Defense was of great significance and it was very important whether or not he would support a particular program or project.

Q: So the branches of the armed services played an important role in the choice of weapons systems?

A: Well, yes, in the formulation of the problems, they had very close interactions with the VPK. So did we, but at the level of the OKB the various branches of the armed services were interacting more closely and concretely. They had their own institutes which conducted the research and development for all of these systems. Industry had its own institutes which conducted concrete technical development of systems. But they worked in very close contact with each other. These industrialists showed up at the GS maybe once a month, while these others [the services] worked practically every day, they would show up, the one, the other, going back and forth, resolving problems, etc. That was the system.

SUMMARY OF INTERVIEW

Subject: Gen.-Col. (Ret.) Andrian A. Danilevich

Position: A General Staff Officer from 1964 to 1990. Senior Special Assistant [*Pomoshchnik*] to the Chief of the Main Operations Directorate (GOU) in the 1970s. Assistant for Doctrine and Strategy to Chiefs of the General Staff Marshal Akhromeev and General Moiseev from 1984 and 1990. Director of the General Staff authors collective that composed and refined, between 1977 and 1986, the top-secret, three-volume *Strategy of Deep Operations* (Global and Theater), that was the basic reference document for Soviet strategic and operational nuclear and conventional planning for at least the last decade of the Soviet state.

Interviewer: John G. Hines

Date/Time: December 13, 1992

Duration: Approx. 1.5 hrs. total

Language: Russian

Prepared: Paraphrased summary

Gen. Danilevich painted a broad picture of the evolution of Soviet military doctrine from World War II to the collapse of the Soviet Union. This history falls roughly into five stages, which are outlined below.

I. Full Mechanization: 1945 - 1950

The immediate post-WWII period was devoted to completing the mechanization and modernization of all branches of the Armed Forces, absorbing the lessons of the war, and consolidating them into a doctrine. Soviet strategy emphasized the use of massive conventional armored land forces to gain a threefold to sixfold advantage over the opposing forces, and to defeat them with fast, decisive offensive ground actions. Air and naval forces were modernized and strengthened through the introduction of jet aviation and modern air defenses, but continued to play a supporting role.

II. Acquisition of Nuclear Weapons: 1950 - 1960

By 1950 the Soviet Union had acquired the atomic bomb. At first, nuclear weapons were seen primarily as anti-city weapons, but their strategic and tactical importance was quickly recognized. By 1955, nuclear weapons had supplanted the tank as the central strategic weapon.

Despite the central role of nuclear weapons, their acquisition did not immediately lead to a revolution in military thought. Rather, at first nuclear weapons were absorbed into the existing structure of WWII strategic and operational thinking. Like the tank

before it, nuclear weapons would be used to achieve a strategic breakthrough on the battlefield, which would be exploited by a massive conventional steamroller advancing at 20 - 30 km per day. The new doctrine was even more clearly offensive in nature. Strategic defensive plans were nonexistent.

III. "Nuclear Euphoria": 1960 - 1965

The revolution promised by nuclear weapons arrives with Khrushchev. A strategy emerges based on global and theater preemptive nuclear use. Nuclear weapons gain in importance almost to the point that all other weapons are seen as superfluous. Strategic Rocket Forces are created as a separate military branch. Aviation, especially the massive fighter force, is sacrificed, as is artillery, which is replaced by tactical nuclear forces. Khrushchev even considers reducing the armored forces because they are deemed unnecessary. Defensive actions, including Front- and army-level defense, are now totally and explicitly rejected. Defense is seen as possible only on the level of tactical maneuvers.

The new thinking found its most vocal advocate in Marshal V. D. Sokolovskii, who lectured on the new strategy at the General Staff Academy in 1962 and edited the influential book, *Modern War*. These ideas were embraced as doctrine at a Ministry of Defense conference in the same year and were put into practice during exercises in 1962 and 1963. The core of the strategy was an attack in two phases:

1) An intercontinental preemptive strike against the U.S. The plan to use Cuba as a base for intermediate-range missile attacks on the U.S. had backfired during the "Caribbean Crisis". However, the new R-16[32] missiles gave the USSR a limited ability to strike U.S. territory.

2) A single, strategic offensive along the entire Front, with the use of preemptive nuclear strikes, followed by a decisive, uninterrupted land advance. R-12[33] and R-14[34] medium-range stationary missiles would be used to attack strongpoints in Europe. Although their numbers were relatively small, these missiles carried powerful 1.8 and 2.4 megaton warheads. Following the nuclear strikes, land armies would sweep west, using envelopment, cleanup, and other offensive operations. The rate of advance was now planned to be 40 - 100 km/day and the entire strategic operation was expected to take no more than 10 days.

Such optimistic forecasts were made based on the assumption that the opponent would be preempted in his use of nuclear weapons. Missile technology of that era put a heavy premium on preemption because the long time required to fuel the missiles and attach their warheads made a "retaliatory-meeting strike" impossible and a purely retaliatory strike highly unlikely.

IV. "Descent to Earth" and ICBMs: 1965 - 1975

With the ouster of Khrushchev, conservatism and realism returned to military thought. Their return was marked by the realization that the usefulness of nuclear

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[32] Possibly SS-8.
[33] SS-4.
[34] SS-5.

weapons had been overestimated, and by the acknowledgment that the enemy has a large number of nuclear weapons which could cause "unrecoverable losses." The new thinking proclaimed that a single type of weapon cannot be relied upon to achieve victory and that each type of weapon, including conventional weapons, has an appropriate role in war. Conventional forces, decimated during the Khrushchev period, began to be restored. Greater attention began to be paid to strategic theater operations, which were broken down among several Fronts and included expanded naval and air operations, as well as strategic anti-air operations. It was no longer thought possible to conduct a one-stage strategic operation. The strategic advance was divided into two operations—the advance to Germany's western border, and the advance to La Manche. The rate of advance was scaled back, with the projected time for the conquest of Europe pushed back to one month. Defense was gradually revived, first on the level of army, then Front, and finally, around 1972-75, on the strategic level.

Despite the changes, war was still seen to be ultimately nuclear. A purely conventional war was not seen as a realistic possibility. However, technology and experience bred a greater sophistication of thought regarding the use of nuclear weapons. The growth in the strategic arsenal and the beginnings of a secure second-strike capability on SLBMs,[35] made possible options for Strategic Forces operations. Instead of a single massive salvo, multiple nuclear strikes were now planned.

Also during this period a clearer appreciation of the devastating consequences of a full-scale nuclear exchange began to emerge. At a nuclear exercise in 1972, Brezhnev, Podgornyi, and other high-ranking Politburo members were presented with the results of a simulated U.S. first strike using ground bursts against the Soviet Union. The simulated damage shocked the leadership: 100% of non-strategic aviation wiped out; 100% of ground forces wiped out; 80% of strategic aviation destroyed; 100% of naval forces destroyed; the European part of Russia suffers radiation contamination from fallout with levels of 400 - 3,000 roentgens.

Meanwhile, ferment in strategic thought in the U.S. yielded new theories of escalation, flexible response, limited use, etc. At first the Soviets considered these theories to be unrealistic and strongly rejected any notion of a limited nuclear war. Officially, Soviet policy was to respond with a full nuclear attack to even a single hit. However, from 1970 to 1975 the position shifted away from rejection toward the necessity of a "controllable conduct of nuclear war." In concrete terms, this shift manifested itself in three doctrinal changes:

1) Preemptive strike is not the only option. Retaliatory-meeting and retaliatory strikes become valid options.

2) Multiple-scenario strikes: either global, or regional, depending on the military situation.

3) "New Periodization of War." The course of the war was expanded to four stages: a non-nuclear phase, a nuclear phase, follow-up actions, and concluding actions. Of these, the most important addition was the non-nuclear phase, which gradually grew in length from several hours to 7 - 8 days. Still later, it was planned that the first frontal operations would remain non-nuclear up through the advance to the Rhine. Strategic operations, however, remained nuclear.

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[35] SLBM — Submarine-Launched Ballistic Missile.

V. Strategic Balance: 1975 - 1991

This long period was characterized by rough parity in strategic systems between the two superpowers, rapid growth in both sides' nuclear arsenals and bitter technological competition. Although the Soviets still lagged behind in C^3 and silo protection, a series of technological advances greatly expanded Soviet strategic capabilities. A new, more efficient method of "direct drilling" was developed, which allowed 200 silos to be built every year. Missiles with self-contained fuel tanks [*ampulizirovannye rakety*] and, later on, solid fuel missiles reduced ready times to 1 - 2 minutes. Strategic bomber aviation was advanced with the deployment of the Tu-16 and Tu-22 bombers. The Soviets very quickly matched and surpassed U.S. MIRV technology. By the end of the 1970s the development of the R-18 and R-36 gave the Soviets a throw-weight of over 20 tons, surpassing the U.S capability.[36]

The period can be broken down further into three parts, each of which saw profound changes in the Soviet military doctrine as a result of technological and political developments:

1975 - 80 Limited nuclear war was still officially rejected, but it was now considered possible to conduct the war at the conventional level from beginning to end.

1980 - 85 Limited nuclear war now accepted in documents and planning for options presented to the political leadership. Different options became available for use of nuclear weapons during the new limited phase: only on the battlefield; only against military targets; limited strategic strikes; proportional retaliation for enemy limited strikes (either with escalation or de-escalation). Gradually, the projected length of the limited phase was expanded from hours to several days.

1985 - 91 Adoption of a defensive doctrine. Realization that a nuclear war cannot be won. Preemptive strike ruled out—only retaliatory strike. The new foundations of doctrine becomes: deterrence, war prevention, and limited war, if war must be fought.

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[36] The R-18 was the RS-18, NATO designation SS-19. The R-36 almost certainly refers to the SS-18 (see Danilevich interview, September 24, 1994). Danilevich comments in the earlier interview that the R-36 could carry 18 megatons in its warhead. The "20 tons," asserted here may also refer to the potential megatonnage of the warhead. The *throw weight* of the SS-18 is listed elsewhere as 8.8 tons. See Safronov, "19, November is Missile Troops and Artillery Day," p. 10.

RECORD OF INTERVIEW

Subject:	Gen.-Col. (Ret.) Andrian A. Danilevich
Position:	A General Staff Officer from 1964 to 1990. Senior Special Assistant [*Pomoshchnik*] to the Chief of the Main Operations Directorate (GOU) in the 1970s. Assistant for Doctrine and Strategy to Chiefs of the General Staff Marshal Akhromeev and General Moiseev from 1984 and 1990. Director of the General Staff authors collective that composed and refined, between 1977 and 1986, the top-secret, three-volume *Strategy of Deep Operations* (Global and Theater), that was the basic reference document for Soviet strategic and operational nuclear and conventional planning for at least the last decade of the Soviet state.
Location:	Institute of Military History, Moscow
Interviewer:	John G. Hines
Date/Time:	December 14, 1992
Duration:	Approx. 1.5 hrs. total
Language:	Russian
Prepared:	Based on audio cassette tape

Q: Based on what you said earlier, there was no acceptance of the notion of selective strikes prior to the 1980s. But after 1980 the notion that it was possible to respond with less than full nuclear force, or even with selective strikes, gained currency. Is this accurate?

A: Yes.

Q: And when we met in October [sic] you said that if NATO forces had struck Soviet territory with 3, 4, or 10 warheads, the leadership would have at least considered responding with selective strikes on the territory of the U.S.

A: There was a time when our thinking was: retaliate with full force to even one hit. Later we adopted the concept of a dosage nuclear response—a limited use of nuclear weapons. But this was only after we rejected the policy of preemptive strikes and replaced it with the policy of meeting strikes and retaliatory strikes.

Now, we never discussed or developed at any of the exercises the option of using selective strikes first, in a premeditated way. The exercises always developed scenarios of retaliatory actions. It was never planned for or envisioned. The plans involved only massive use of nuclear weapons on a regional or global scale. There were no plans for selective strikes. It was assumed that decisions would be based on the particular situation at hand. So all exercises involving strategic weapons were conducted based on particular scenarios and decisions. We had concrete scenarios. For example, the enemy attacks with, say, five strikes against our troops, three against German cities, one strike against

Brest, etc. The leadership would meet to decide what to do. First there would be a warning to the American president and a strike would be delivered. There were various options. For example a strike using tactical forces. If the U.S. delivered 20 hits, we might have responded with 15. There were other times when you struck with 15 and we retaliated with 30. Mainly the targets would be military. I don't remember an exercise where we developed the option of targeting U.S. territory, although in principle this was considered possible. But because your limited strikes were always limited to the Theater of Operations (TVD)[37] and we did likewise in our wargames. But there were no general plans. The principle was that we must have adequate actions at our disposal, as well as preemptive and deterring actions, which included a larger number of strikes than the opponent. But this was considered less desirable because if we used less, then the Americans also may use less. Otherwise there would be escalation. The best option was considered to be an equal number of strikes against analogous targets.

Q: Even on U.S. territory?

A: We never considered a scenario where you hit the Soviet Union immediately. [In our scenarios] you hit the army formations, the nuclear forces, control centers, etc. But I don't remember any scenarios where you hit Soviet territory. So the question of hitting the U.S. never came up. But as to further, massive strikes, this was considered. In that case we would strike indiscriminately.

Q: Based on some interviews here in Moscow, I know that in one exercise, the U.S., in order to demonstrate resolve, launched three or four warheads at targets on the territory of the Soviet Union.

A: Yes, in theory such a possibility was considered possible. But in practice, in the conduct of exercises, of which there were not many during those years, and I was present at all of them, I do not remember any where this possibility was played out. It all depended on the people who designed the scenarios. They could do it one way or another. The Chief of the General Staff could make certain adjustments. Akhromeev did that a lot. Ogarkov did too. But Akhromeev especially got down to the details of the launches, the work at the command centers, the process of decision making, the development of preliminary orders, final orders, the playing out of the scenarios, like in a movie.

Q: In our exercises, only the highest level staff officers participated. When we developed options and strategies, it was done at the highest levels. Was it the same with you?

A: The thing is that we did not conduct this kind of wargame using maps during that period. All of the strategic training exercises were conducted at the command centers. There were four people at the controls: the Minister of Defense, the Chief of the General Staff, the Chief of the Main Operations Directorate, and I was present also because I wrote all of the analysis. The group commander was not always present—sometimes he would participate by telephone. It was a very narrow circle. There would be a colonel with a telephone link to the President or the Chairman of the Supreme Soviet who would be presented with various options for action.

Q: Was the dosage strategy applicable only to the Theater of Operations, or did it also apply, at least nominally, to intercontinental exchanges?

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[37] TVD — *Teatr voennykh deistvii* —Theater of (Strategic) Military Action, for example, Central Europe from Ukraine to the western shore of Ireland.

A: After 1980 this strategy became dominant. On the tactical level the process of decision making was not thoroughly worked through, but the background for army exercises was not to go to nuclear war immediately, but to start with a conventional phase, then limited nuclear use, which would range from 3 or 5 to 100 warheads. The exercises were conducted against this background. The process of decision making itself did not concern the theater-level forces. The methodology of decision making was worked out here, at the top: what are the targets, when to react, in what form, how to give warning, and so on. Usually, at the last stages before retaliation, there would be political statements and warnings, both from your side and from ours. It was a game, a theater. But as for the actual war plans, none of this was precisely envisioned. It was impossible to develop plans for every situation. You may develop 1,000 scenarios, but the reality may turn out to be the 1,001st. You must have principles, but the actions have to be based on the situation at hand. The main targets for selective strikes were: troop formations, airfields, control centers, and missile fields. As for cities, as a rule they were not targeted. Sometimes, in the course of more massive exchanges, up to 100 warheads, some cities were also hit. And as a rule, all strikes were delivered by means of air bursts. When we were developing earlier options, almost 80% of the hits were ground bursts, both against military and non-military targets—it did not make any difference. The important thing was the contamination that followed.

Q: This is an important source of misunderstanding. In general, the Soviet Union employed ground bursts until the end of the 1970s?

A: Yes, approximately. We used a combination of both, but the proportion of ground bursts gradually decreased because as the strike grew more and more massive, and the number of bursts grew, the consequences grew more unpredictable. Also, we tested our predictions of the spread of contamination during several exercises. We had maps and slide rules, and we made computer calculations of fallout zones to forecast the radiation spread. But when we actually exploded the weapons,[38] the shock wave and everything else would often not go where it was forecast. So there are many dangerous and unpredictable factors.

Q: So during the 1960s and 1970s the rocket forces planned to use mainly ground bursts, especially, or exclusively against military targets?

A: Yes, against hardened military targets. But we planned air bursts against unprotected targets.

Q: Even during the 1960s?

A: No, then 80% were ground bursts. But in the 1970s we had a more reasonable approach.

Q: And your approach changed because of your assessments of the fallout and contamination caused by ground bursts?

A: Well, at first our understanding of the contamination was very simplistic. We thought that it would drift somewhat, but that would be all. Later we came to the conclusion that it travels much farther than we had thought earlier. It was like that with Chernobyl. There are even some areas near Moscow which are contaminated from it, while regions closer in have no contamination. This unpredictability gradually began to

[38] The Soviets apparently did not violate the Treaty Banning Weapon Tests in the Atmosphere, in Outer Space and Under Water. Tests were conducted with underground detonation, high explosive simulation, and computer simulation.

be taken into consideration. Also, before we did not have enough warheads—only 200, 250, which could reach the U.S. This was not thought to be enough to destroy the country. Later when it became possible to target cities with populations of 50,000, then 10,000, then this was no longer an issue.

Q: Before 1972, while most of the missiles in your silos had liquid fuel, the leadership had a very narrow window of decision in case of a crisis. It took hours to get a missile ready. In a crisis, it would not be possible to plan for multiple options.

A: That's right. To fuel the missiles and attach the warheads it took 5 - 6 hours. At this time—the 1960s—the strategy was different: the earlier and the more you launch, the better. Therefore the strategy was to preempt. You cannot have a retaliatory strike if you have to ready your missiles for 6 hours after the strike. But when we acquired missiles with internal fuel tanks, which had ready times of 1 - 2 hours, now there was also the possibility of a retaliatory strike. So both the political-military, and the military-technical aspects of the strategy changed.

Q: When did you acquire your first missile that was completely ready to fly?

A: The R-100.[39] This was one of our primary missiles. It had internal liquid fuel tanks and had a ready time of 1 - 2 minutes. This was in 1970. In the 1960s our main ICBM was Korolev's R-16.[40] The main intermediate-range missiles then were the stationary R-12[41] and R-14,[42] half of which were in silos, and half on open ground launch platforms. For this second half, the missiles were stored in hangars and had to be taken out, installed on the launch pads and fueled before being fired. This was the missile we brought to Cuba. They were detected when we placed them on the launch pads and the fueling equipment was brought in, etc. It was a complex system which encouraged one to strike first.

However, we in the GS never for a minute thought seriously about it. Recently there have been rumors and questions floating about: is it true that you had certain plans? What were these plans? Was there a plan in 1957 deliver a first strike against the U.S.? We never had a single thought of a first strike against the U.S. I mean in a practical, not theoretical sense. Theoretically there were mountains of plans and writing, and exercises. But in practice, to hold discussions at the political level to decide such questions, this was absolutely out of the question. The ministers of defense and the GS were very careful with respect to these issues because they understood the consequences. There was one officer, Tolubko, a commander of the rocket forces, who made extremist speeches in favor of such an attack. But he was not taken seriously by anybody. Khrushchev also made threatening noises. But the question of a first strike was never considered at the political level. Even during the Caribbean Crisis, when nuclear war was a real possibility, the question of a preemptive strike was not considered. Then the issue was that if the U.S. made a strike against Cuba, then we would respond. So we understood what it all meant and what the danger was to us. Then there were also the calculations of damage I told you about.

Q: What is the difference between your concepts of first use and of the preemptive strike?

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[39] Probably the SS-11, called the U-100 elsewhere in the interview record.

[40] Possibly Korolev's SS-8 (NATO designation) of which twenty-three were deployed.

[41] SS-4.

[42] SS-5.

A: There is no difference—first use is a preemptive strike. The meaningful difference is between first use and simultaneous use, as soon as your remote early warning (EW) sensors detect an attack within the first 5 or 10 minutes, and the command is immediately given, in order not to be too late. But this approach was considered to be problematic because of false warnings caused by flocks of geese, etc. So a new decision-making procedure was created, involving several individuals. Later on we created a nuclear briefcase, the same as you, with codes that the president had to dial in. So the procedure became better developed and standardized. Before there was no special procedure to speak of. Looking back, there was a certain unseriousness on this subject. The thinking was, "we've got nuclear weapons and we will use them if we need to." Khrushchev took the most hard-line position, because of his personal character. Brezhnev was quite different. After Brezhnev there was a power vacuum. As for Gorbachev, he did not even take part in any of the exercises at the command center, like Khrushchev and Brezhnev.

Q: So until the mid-1970s it was not practically and technologically possible to make a retaliatory-meeting strike?

A: Before we had satellite EW systems we had land-based above-the-horizon radar systems, like your BMEWS[43] system. There was the Riga array, which looked out 5,000 km and provided 5 or 10 minutes warning, which was very little time. Later there were over-the-horizon radars, but these did not work very well. The most important advance was when we began building systems of EW satellites. Then the automation of the [unclear], control displays, launches, controls, etc.

Q: Other people who took part in this process, described an automated system of last resort called the "Dead Hand," that would automatically launch missiles which were to give commands to ICBMs and which was triggered by overpressure or radiation.

A: Well, you had such a system. At first we were working on a system to prevent unauthorized launches of nuclear weapons. This was a whole complex of organizational and technical means to ensure that no one could launch a weapon. This was considered important and it was done. Then the next question was how to guarantee that they would be launched—the opposite question. We developed a system of automated transmission of commands which was made redundant across several means of communication and on many channels—by telephone, by radio. Then they built [sic] this system with missiles. In the event of a hit, a missile was launched which gave a signal for the automatic use of the remaining nuclear weapons. But only after the hit had already taken place and the seismic activity indicated that a massive hit had taken place. The same as you had. But you had it earlier and we built the same type of system.

Q: As I understand it, our system was called ERCS.[44]

A: Yes, I remember the name . . . we called our system something different.

Q: . . . But in our system, someone had to push a button to launch the rocket which would then give launch signals to the automatic equipment.

A: Yes, that's right. The missile was launched and the signal was transmitted automatically. Now we are facing a different threat—super-EMP weapons—very high-altitude nuclear bursts which can knock out control equipment. This is what we are afraid

[43] BMEWS — Ballistic Missile Early Warning System.

[44] ERCS — Emergency Rocket Communications System — The Air Force system providing a UHF communications package launched by Minuteman to provide Strategic Air Command communications in the event of nuclear attack.

of and we are developing systems to protect control centers from this kind of weaponry. But whereas before our two sides were developing parallel weapons systems, and each side gauged its progress by the other side's successes and failures, now all of these advanced technology programs have been put on hold. There is no money, we are not allocating anything for research and development, the research institutes are barely surviving, only the most urgent, tactical problems have priority: to guard the new borders, to deploy border guards, to build air bases for long-range aviation, since we have lost all of our airfields, to build testing grounds, to build living quarters for all the officers—there are 200,000 or 300,000 of them—and the leadership is afraid of rebellions and mutinies, if not by the officers themselves, then by their wives. Like in the Baltics, where we were forced to halt the pullout because the children were living in tents. All of our expenditures now go for this. And the high-tech development projects have been abandoned. They may recover some time, but maybe they won't—I do not know what their fate will be.

Q: It would be interesting historically to explore the difference between the Soviet and American approaches to automatic systems like Dead Hand, which would have guaranteed a retaliatory strike even if the leadership and the command centers have been destroyed.

A: I know that you had such ideas, and so did we. But this is a dangerous business because automation is automation . . . . Anyway, today such systems don't make any difference because with modern early warning systems and missile readiness measured not in minutes but in seconds, a whole quorum of decision makers can be gathered together, rather than having only one or two minutes to make a decision. But be that as it may. But, if one were to create such a system, and, as I say, there was such an idea—and it is [unclear—not being realized?] by the way—but it is very dangerous because it can cause accidental nuclear war with unpredictable consequences. So this idea was rejected and it was not developed in practice.

Q: But if it were possible to turn such a system on or off, it would at least be possible to defend the Soviet Union . . . .

A: Well, now there is a different approach. You create a reserve of absolutely protected weapons, like mobile missiles and SLBMs, which practically cannot be destroyed, with a corresponding system of automated signal transmission, as well as with autonomous capabilities. We had a redundant system of command centers: you could send the command from the GS, from the central command center of the Rocket Forces, from the central command center of Strategic Aviation, from the central command center of the Navy, from the central command center of the Army, and finally from the system of automatic missiles. And the command and control system continued and continues to be refined and its readiness is not a cause for concern. Also, it was thought that a reserve of just 1/10 of the original nuclear potential would be sufficient to cause unacceptable damage.

Q: One of the most difficult questions to analyze is the differences in the understanding of "deterrence" on the part of the Soviet Union and the U.S. Under Gorbachev the Soviet Union first accepted the principle of deterrence. Before Gorbachev the official position rejected deterrence. But your force development, the development of certain systems, including Dead Hand, had an effect on American decision makers which depended on their understanding of the fact that these systems already existed and that it would be useless and dangerous to start a nuclear war. This is the essence of deterrence. We are trying to understand to what extent there existed in the minds of political and military leaders the expectation that their American counterparts knew that, in case of a first

strike, a retaliatory strike was inevitable. To what extent did Soviet leaders understand that this was a very important component of Soviet security?

A: You are right. We tried to convey this [message]. For example, the threat that we would respond with full nuclear force to the use of a single nuclear weapon on the part of the U.S. This message was repeated at all levels, from the Minster of Defense on down. But these statements had purely propagandistic and political targets. If it ever became reality, we would not have acted like that. If the U.S. did make such a strike, we would have gathered together to discuss what to do, even though we officially and loudly proclaimed the opposite, and it was written up in documents, etc. So by doing this we wanted to convey the message that retaliation was inevitable. Also, we had the capability because of various systems. For example, our systems of early detection, although less reliable than yours, still provided this capability. This included all three kinds: over-the-horizon radar, above the horizon, and the third one. Then, there were the protected hardened silos. We thought that it was impossible to destroy all of them. Then the mobile missiles: as their number grew we gradually phased out the "Pioneer"[45] missile. That was a powerful missile and we were sorry to see it go. The railroad arsenal and the SS-25 mobile arsenal had some drawbacks: they were complicated to control because they were so unwieldy, required special roads, and maneuvering was very complex. Finally, they carried single warheads, and had many shortcomings. So right now there are many in military circles, and in military publications, who oppose this latest [START] agreement because it puts us in a difficult position. They feel that the elimination of silo-based MIRVed ICBMs would give the U.S. a big advantage. It would also leave untouched the sea-based missiles and takes a convoluted approach to counting bomber-based warheads. Some think that our concessions are unfounded. But our politicians were firmly convinced that the agreement is sufficiently justified. And our military leaders are such that if they are ordered to do something, they will. The main point is that, although the concessions were unequal, we would still have enough in our arsenal to deliver an unacceptable level of damage.

Q: Several times during the interviews you have said that one can plan for 1,000 scenarios, but the reality will be scenario number 1,001. Nevertheless, much energy and resources were spent on finding the best strategy for fighting a nuclear war, even though by 1970 everybody understood that it would be very difficult to reasonably . . . .

A: You see, before the 1960s we had a different point of view. We thought that if there were ever a nuclear exchange, we would have an advantage: more territory, less concentration of industry, of population, certain spiritual arguments—we thought that in the event of an equal exchange the U.S. would be destroyed but we would survive. But by the 1970s we had concluded that there was no chance in hell that we would survive. By the 1980s we concluded further that we would be destroyed by our own strike, so that we could not strike at all. As our nuclear arsenal grew, the political environment changed and our views changed. The scientists also gave us a scare with their Nuclear Winter and Nuclear Night forecasts. I don't know about your military circles, but most of ours do not trust these sorts of calculations. But a large number do believe it.

Q: The last question. In the U.S. Army, artillery is a very important branch and even in the 1950s we were building nuclear artillery. Why did the Soviet Union not develop similar weapons until as late as the 1980s? Was this a political decision, or a technological decision?

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[45] The Pioneer was the Soviet name for the SS-20 Medium Range Ballistic Missile (MBRM), Soviet military industrial designation, "RSD-10."

A: We had a 17-fold advantage in tactical [nuclear] means in Europe. So Bush's proposal to destroy tactical nuclear weapons was correct, but it affected us very disproportionately. Regarding nuclear artillery, we did have it—203mm as well as special weapons. We did not consider it essential to build it. But when you began building it, we thought, "Why don't we also build some?" So we did. We built nuclear shells for ordinary artillery—152mm guns. We don't have a special nuclear artillery, but we do have nuclear shells which can be fired from dual-use guns. So the atomic guns and 160mm atomic mortars appeared. Although their missions could easily have been carried out by means of tactical missiles.

There was also another factor—our acceptance of limited strikes. We needed weapons we could use mainly on the battlefield, and mainly against front-line troops. Tactical missiles were not sufficiently accurate and in this situation we needed precise hits. Because of this we decided to create nuclear shells. Consequently a great number were built and right now we surpass you by two or three times. And now they are being destroyed, along with nuclear land mines. You developed nuclear land mines faster than we did, and we fell behind. They were created as a means of defense, to create a nuclear belt along the borders. So at first we aimed at overcoming this obstacle, and afterwards, when we accepted strategic defense ourselves, we began to build our own nuclear land mines.

SUMMARY OF INTERVIEW

Subject: Gen.-Col. (Ret.) Andrian A. Danilevich

Position: A General Staff Officer from 1964 to 1990. Senior Special Assistant [*Pomoshchnik*] to the Chief of the Main Operations Directorate (GOU) in the 1970s. Assistant for Doctrine and Strategy to Chiefs of the General Staff Marshal Akhromeev and General Moiseev from 1984 and 1990. Director of the General Staff authors collective that composed and refined, between 1977 and 1986, the top-secret, three-volume *Strategy of Deep Operations* (Global and Theater), that was the basic reference document for Soviet strategic and operational nuclear and conventional planning for at least the last decade of the Soviet state.

Location: General Danilevich's home in Moscow

Interviewer: John G. Hines

Date/Time: December 9, 1994, 2:00 p.m.

Language: Russian

Prepared: Paraphrased summary

For the first time in the almost 5 years I had known him, General Danilevich invited me into his home for an interview. Because his wife had for many years suffered from a fairly serious, lingering illness, we normally met in the Institute for Military History located next to his apartment building in the center of a special apartment complex for senior general officers. (General Gareev's apartment was located in a similar building on the other side of the Institute.) His wife seemed to be in better health and the Military History Institute seemed to be less and less willing to tolerate meetings between retired generals and foreigners who provided no (financial) assistance to the Institute itself. His apartment was located on the tenth floor of his building. It was better maintained and more cheerfully decorated than the apartment of Gareev, although in size and basic layout, the apartments were identical. General Danilevich was proud of his home and pointed out that many of the buildings visible from his windows were foreign embassies or residences.

He explained that he and his fellow retired general officers had formed a Russian Academy of Military Science of which General Gareev was president. He explained that he was involved in a number of projects through the Academy, some of which were resulting in published works. He gave me a copy of one such book, *Mezhdunarodnaia i natsional'naia bezopasnost'* (International and National Security), written under his

direction in 1994. He was more animated and in better health than during many previous interviews. He clearly thrives on work and his memory and interest in the subjects discussed was very keen.

In our conversation over lunch he asked me again when I had left the military and what I had done in the U.S. Army. He knew that I had been trained as a Soviet specialist so I mentioned that I had spent the late 1960s and much of the 1970s in the Signal Corps in Germany and Vietnam. He smiled broadly and explained that he had been commissioned as a signal officer before the Great Patriotic War and had actually commanded a Soviet signal battalion during the war until mid-1942 when he went on to other operational and command assignments. This led him to repeat that he had joined the General Staff in 1964 and became a special Assistant to the Chief of the Main Operations Directorate in 1974, and special Assistant to the Chief of the General Staff in 1984.

The primary purpose of the interview was to review some issues on which there were differences in views among various general officers and party officials, especially on topics such as deterrence and selected use of nuclear weapons.

Q: Early in the discussion, the interviewer raised the general question of personal relationships and the effect on decisions of key leaders in the MoD and General Staff.

A: General Danilevich responded that personalities and relationships mattered a great deal, especially in the areas of force structure development [*voennoe stroitel'stvo*] and organization of the Armed Forces. He cited, as an example, the well-known support of Khrushchev for the chief designer, Chelomei (favoritism that continued even under Brezhnev) and Ustinov's long-standing alliance with chief designer Iangel'. Such conflicting sponsorship led to decision stalemates typically resolved by producing everything.

General Danilevich was close to Ogarkov for much of both of their careers in the General Staff. Danilevich indicated that Minister of Defense Malinovskii launched Ogarkov's General Staff career when he appointed him a Deputy Chief of the General Staff in the 1960s. Minister of Defense Grechko greatly favored Kulikov and appointed him Chief of the General Staff as soon as possible after he had replaced Malinovskii as minister (Malinovskii died in 1967). Ustinov held Kulikov in very low regard and fired him immediately when he became MoD and appointed Ogarkov whom he found more capable and intelligent Over time Ogarkov and Ustinov developed very deep disagreements not, as the interviewer suggested, because Ogarkov wanted to put in place a professional contract system to replace conscription for part or all of the Armed Forces, but rather over technical questions of procurement and organization of the Armed Forces. Ogarkov wanted to eliminate or radically alter the Strategic Air Defense Forces, for example, and to rationalize the procurement process and practices. Danilevich said that both were very assertive leaders. If Ustinov did not like what he heard in a discussion, he would cut off the speaker or briefer and throw him out of his office. Ogarkov, in contrast, would hear out the entire argument, ask questions, and then do what he wanted to do anyway. In many instances, the results were the same.

General Danilevich cited a more recent example from the Gorbachev period (Danilevich left the General Staff at the end of 1989). He said that, regardless of who was Minister of Defense—Sokolov or Iazov—Gorbachev talked to and worked with Marshal Akhromeev (Chief of the General Staff) on military and strategic questions. They could communicate and they developed a level of trust. Even when the Defense

Minister accompanied the Chief of the General Staff Marshal Akhromeev to meetings with Gorbachev, the President would address his comments and questions to Akhromeev. Danilevich was present for a number of such exchanges.

Q: The interviewer raised again the question of deterrence and preparation for war. Did key General Staff planners think about what they were doing primarily in terms of fighting a war with minimum damage to the Soviet Union, punishing the U.S. and NATO for initiating war and striking first, or of preventing war by so intimidating the U.S. that American leaders would not initiate a war nor try to strike first?

A: The Soviet military leadership evolved through a number of phases in its understanding of the nature and role of nuclear weapons and senior military leaders often were not in agreement. The general did not repeat his previous comments on this question but rather summarized them. He said that "we in the General Staff came to describe our approach thus: we have a policy of deterrence [*politika sderzhivaniia*] but a strategy of overwhelming destruction [*strategiia sokrusheniia*—which denotes "smashing" or "shattering"]. If we could no longer hold off [*sderzhat'*] an attack we wanted to be able to destroy decisively the U.S. We had a small joke in the General Staff under Gorbachev that our posture had changed. We now had a policy of deterrence, but a strategy of capitulation [*strategiia kapitulatsii*]. It was a bitter joke."

Q: The interviewer raised with General Danilevich that the General's earlier descriptions of General Staff interest in, and planning for, selected and limited nuclear strikes were contradicted by very senior General Officers from the Strategic Rocket Forces (SRF), the analytical institute of the Strategic Rocket Forces (TsNII-4), and by senior staffers in the Defense-Industrial Department of the Central Committee of the Communist Party of the Soviet Union. A senior SRF general had indicated that, to his knowledge, the SRF had never exercised selected strategic nuclear strikes either in theater or intercontinentally. A senior NII-4 analyst declared that the institute, in his 20 years of experience, had not examined the question of limited use of strategic missiles. The senior staff from the Military-Industry Department of the Central Committee claimed that limited use had been raised as an issue affecting support of various missile weapons programs and that, at such meetings, designing weapons to support selective strikes was explicitly rejected as was, they believed, the concept of selective use.

A: General Danilevich waited and listened patiently (which he often does not do) and he began to smile with an expression of slightly exasperated forbearance at the question. First, he stated that the General Staff, and specifically the Main Operations Directorate, not only considered selected strikes but also designed various strike options for various scenarios. For example, they had designed one option for eight missiles against the U.S. and NATO in which six missiles were targeted on Europe and two missiles were targeted simultaneously on the continental United States. The purpose of such an option was to assure U.S. leaders that even a limited nuclear war would include the U.S. He said that most General Staff officers most closely associated with such planning had no idea whether "we really could do it," whether any of it would work or how it would turn out.

He said that senior General Staff planners were "forced into looking at many variants" as we came to understand better the real operational and other consequences of nuclear use. We first had to get over our "naive" expectations of facile use of nuclear weapons on the battlefield and rates of advance of 100 kilometers per day. Some never did. Tolubko (Commander in Chief of the Strategic Rocket Forces), for example, was still dying "to push the button" until the very end (Tolubko retired in 1985).

He indicated that such planning was not widely discussed, even within the General Staff. Major commands such as the Strategic Rocket Forces were not normally involved in this level of planning, and the various institutes outside direct General Staff oversight definitely were not included in such discussions and analysis. As for the Politburo and Central Committee, "they had no real idea of what they were doing," in the area of strategic nuclear planning. He repeated what he had said in earlier interviews, that after the 1972 high-level exercise in which Brezhnev and the Politburo participated, the political leadership, including even Minister of Defense Ustinov, ignored strategy. "They never really asked what we were doing," after that experience. This did not change under Andropov, Chernenko, or Gorbachev. He supposed that, had there been a real crisis or emergency, they would have become concerned and would have turned to people who, they would have hoped, had been thinking about what to do if some real strategic emergency had come up.

RECORD OF INTERVIEW

Subject:	Gen.-Maj. Vladimir Zinovievich Dvorkin
Position:	Director of TsNII-4, the Central Scientific-Research Institute of the Strategic Rocket Forces
Location:	Georgii Arbatov's office in ISKAN (Institute of U.S.A. and Canada), Moscow (neither the Director, Georgii Arbatov nor his scholars were present)
Interviewer:	John G. Hines
Date/Time:	June 24, 1993, 4:30 p.m.
Language:	Russian
Prepared:	Based on notes

Q: Did the Soviet Union have a policy or strategy of deterrence [*sderzhivanie*]?

A: We did not use the word "deterrence" [*sderzhivanie*]. We really didn't discuss what we were doing as deterrence. Instead, we consistently spoke of "not allowing" [*ne dopustit'*] the U.S. to believe it could strike the Soviet Union first without experiencing a devastating retaliatory blow. We said we would not allow [*ne dopustit'*] the U.S. to exercise its will in Europe with impunity and without fear of consequences. We would not allow the U.S., on a broader, global scale, to feel such a sense of overall military or nuclear superiority that U.S. leaders would pursue adventuristic policies in the various regions including the Third World.

Q: Did the Soviet Union ever consider the use of selective nuclear strikes on a global or theater level?

A: I can only say that we at TsNII-4 never to my knowledge looked at the question of making selective nuclear strikes in any scenario. We did not analyze it as a variant.

Q: Why did the Soviet Union begin to develop mobile ICBMs in the 1960s?

A: Primarily to improve survivability. Our silos were hardened to only 2 kg/cm^2 [28 psi] and hence were very vulnerable to a U.S. first strike. Later in the 1970s, we hardened our land-based ICBM facilities much more thoroughly, some to 400 kg/cm^2 [5,688 psi]. We expected the U.S. to strike first and therefore survivability was a critical consideration.

Q: Did the Soviet leadership consistently assume that the U.S. would strike first?

A: That was our basic planning assumption in our models and testing. Once, in the early 1980s, however, Defense Minister Ustinov asked us to model a depressed trajectory launch of ICBMs against your silo fields to determine the probable destructive effect.

We found that the angle of attack and depression of our missiles would be such that the strike would not be very effective against your ICBMs. We recommended against such an attack mode.

SUMMARY OF INTERVIEW

Subject: Gen. Makhmut A. Gareev

Position: Deputy Chief of the General Staff for Scientific Work and Operational Readiness (1984-1989); Deputy Chief of the Main Operations Directorate of the General Staff for Training and Readiness (1977-1984); Chief of the Tactical Training Directorate of the General Staff (1974-1977)

Location: Institute of Military History, Moscow

Interviewer: John G. Hines

Date/Time: April 30, 1993

Duration: Approx. 1/2 hr. total

Language: Russian

Prepared: Based on written notes

Q: When was OMG[46] decided upon?

A: Ogarkov and I implemented the idea of the OMG during 1979-80.

Q: Did the Soviet side ever plan to use selective strikes against NATO?

A: In theory, a selective strike was considered a possible option for a response to a selective strike from NATO. The Soviet Union took steps to ensure that selective strikes were technically possible. This was not a trivial task, because it required replacing the older "all or nothing" command and control system with a sophisticated control system which allowed launches from individual silos. However, in practice the Soviets did not believe that selective strikes were possible. The Soviets believed any nuclear use would lead to uncontrolled escalation.

Q: Who were the inside opponents of the OMG?

A: Opponents included Kulikov and Danilevich. Opponents generally thought that individual divisions were capable of exploiting their own successes on the front line.

Ogarkov believed that the military should be modernized and made more competitive on the high-tech battlefield. He favored professionalizing the services, reducing spending on infantry, civil defense, air defense units not located near the periphery, aircraft carriers, etc., and closing unneeded academies. Savings would go toward developing modern high-precision weapons.

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[46] OMG — *Operativnaia manevrennaia gruppa* — Operational Maneuver Group. OMG were highly mobile division-to-army-sized formations subordinated to first-echelon Warsaw Pact armies and Fronts and were designed to disrupt and destroy preemptively the enemy's rear-area control, lines of communications, and nuclear capabilities very early in any theater conflict.

The Soviet Union did not possess the technological base to compete with the U.S. in developing high-tech, high-precision weapons. In this sense Ogarkov's opponents were not entirely incorrect in their opposition to his proposals for restructuring the military. Instead the Soviets concentrated on developing cheap, effective counter-measures to NATO's technology. The OMG was one such counter-measure: if you are highly mobile, your opponent's precision weapons are ineffective, since he never knows your position with certainty.

NATO's combined arms strategy was conceptually close to the thinking behind the OMG. However, in implementing its strategy, NATO kept its existing units and simply reorganized them to combine coordinated air and ground operations. The mission of each individual unit remained the same. By contrast, the Soviets developed the OMG as a special group with its own mission distinct from other units.

SUMMARY OF INTERVIEW

Subject: Gen. Makhmut A. Gareev

Position: Deputy Chief of the General Staff for Scientific Work and Operational Readiness (1984-1989); Deputy Chief of the Main Operations Directorate of the General Staff for Training and Readiness (1977-1984); Chief of the Tactical Training Directorate of the General Staff (1974-1977)

Location: Subject's home in Moscow

Interviewer: John G. Hines

Date/Time: June 20, 1993, 12:30 - 4:00 p.m.

Language: Russian

Prepared: Based on notes

Q: Why did the General Staff decide to put nuclear warheads on operational-tactical and tactical missiles?

A: Because it was possible. The General Staff thought that tactical nuclear weapons were a good idea once their yield was small enough to avoid friendly casualties. No serious disagreements regarding tactical nuclear weapons arose between defense industrialists and the operational military.

Q: Was the employment of tactical nuclear weapons in Europe expected to slow down a Soviet advance?

A: The General Staff conducted quantitative analysis in the early 1970s on the effects of battlefield nuclear weapons and found that if those weapons were used, all significant movement would cease for several days. Before the 1970s, the GS expected the rate of advance to be 20 - 30 km per day with only conventional forces and 40 - 50 km employing nuclear weapons.

Q: East German NVA [National People's Army] documents describe nuclear use, including nuclear preemption, in Warsaw Pact exercises before 1981. Was this evidence of the Soviet intention to initiate nuclear use in the European theater?

A: No. The Soviet Armed Forces did not plan to use nuclear weapons first and were forbidden to exercise initiation of nuclear use. All exercises, tactical to operational-strategic, passed through my hands from 1974 to 1988. Before that I was assigned to high-level staff and command positions in various Western military districts, and I would almost certainly have known if such a scenario were used.

Soviet forces exercised for many reasons: (1) to train command, staff, and troops; (2) to test new operational concepts; and (3) to prepare forces for execution of war plans. In training, we often included nuclear strikes in scenarios because we assumed that NATO would employ nuclear weapons and that we must be prepared to respond and to continue operations under nuclear conditions. In most exercises we would train people in all possible requirements in the event of war and most armies of the world that I'm aware of do that.

Q: Was "dosage use" considered an option against the U.S. or only in Europe?

A: Intercontinental selective use might have been considered but would be very likely to lead to a general nuclear exchange. The level at which "dosage use" was given any serious thought was within the TVD.[47]

Q: If the U.S. had launched a selective strike on one or two radars in the USSR, how would the Soviet High Command have reacted?

A: Any initial selective nuclear use by the U.S. against Soviet missile attack-detection radars as a signal to the Soviet leadership would be extremely dangerous. The Soviet military almost certainly would regard such an attack as a precursor strike against Soviet radars to be followed immediately by strikes against central systems. We very likely would assume we were under general attack and would launch massively.

Q: Are there specific examples of weapon systems that were developed despite objections from the General Staff or were produced in larger numbers than the GS wanted?

A: First, many in the GS opposed development of aircraft carriers. Second, the Ministry of Defense opposed the development and deployment of mobile ICBMs but ultimately was overruled by the defense industrialists. Third, in 1964, as a division commander, I had major problems with high failure rates of tank engines and demanded a programs overhaul from the Ministry of Defense Industries, but to no avail.

Q: In what year was the "all or nothing" command and control system replaced by a system that allowed launches from individual sites?

A: In the early 1970s when MIRVs were deployed.

Q: In the 1960s, did Soviet plans for a preemptive strategic nuclear strike envisage participation of naval forces?

A: No. SLBMs only had accuracy for use against economic potential and industrial infrastructure and therefore were very poor weapons for anything but retaliatory strikes. Communications to SSBNs were not sufficiently responsive to rely on in an initial response or a retaliatory-meeting strike. Even in a retaliatory strike, there was a high enough probability that the control system to the submarines would be damaged that SSBNs were not a very reliable retaliatory system.

Q: In your written comments prepared in April you noted that the military was not represented in the final phase of key defense decisions such as, for example, the move into Afghanistan. You said that Ustinov was involved, but that he was not military. What effect did Ustinov have on the military's role and influence when he became Minister of Defense in 1976?

A: At first, for the first year to year and a half, the effect was positive in the sense that, as the most influential industrialist he was able to cut through the bureaucracy and disagreements between the MoD and the industrialists and get things done. After all, they were his people. Then we realized that we had been taken over by the enemy. He really wasn't representing the interests of the military.

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[47] TVD — *Teatr voennykh deistvii* — Theater of (Strategic) Military Action, for example, Central Europe from Ukraine to the western shore of Ireland.

Q: Throughout the late 1960s, the 1970s and early 1980s several military and civilian military-industrial institutes, using quantitative analysis and models of various kinds, had carried out extensive analysis of the likely forms of warfare and the forces that would be needed to carry out such warfare. Did this analysis actually affect decisions taken at higher levels?

A: Not really, because nothing ever changed. The industrialists kept producing what they wanted to produce and the desires of the military customers [*zakazchiki*] continued to be ignored.

SUMMARY OF INTERVIEW

Subject: Dr. Fred C. Iklé

Position: Under Secretary of Defense for Policy, 1981-1988

Location: Center for Strategic and International Studies, 1800 K Street, NW, Washington, D.C.

Interviewer: John G. Hines

Date/Time: December 11, 1991, 11:00-11:45 a.m.

Duration: 45 minutes

Prepared: Based on notes

Dr. Iklé pointed out that none of the Reagan Administration's documents provided a definitive interpretation of Soviet actions. Individuals in the administration had their own views on Soviet military intentions.

The Soviet Union was not preparing to initiate war but was planning, if war broke out, to fight and win. The Soviets were serious about nuclear warfighting. They believed that nuclear weapons had military utility, as evident from their investment in nuclear forces, such as SS-18s and SS-20s.

The USSR built up its nuclear arsenal in order both to deter and to fight. In Dr. Iklé's personal opinion, the Soviet buildup was intended mainly to deter U.S. first use of nuclear arms. Soviet weapon programs were not influenced much by U.S. force deployments. The USSR had its own seven-year cycle and track for arms procurement.

The Soviets did not share the U.S. view of mutually assured destruction. Instead of settling for a SALT-like approach, they sought an edge. Their force deployments created the image that they wanted more than parity. Dr. Iklé tried to silence talk of a "window of vulnerability" (though U.S. concerns about C^3 vulnerability were real). By his assessment, the Soviet Union wanted a coercive (not a first strike) capability, but some administration officials genuinely thought that the USSR was out to acquire a first-strike capability.

Dr. Iklé also made the following points:

- The Soviet Union, due to its growing strength, was moving toward acceptance of limitations on nuclear war.

- The USSR could win a war with limited objectives using only conventional forces.

- The U.S. government was concerned about the possible Soviet employment of chemical weapons.

• The Soviet Union probably would not escalate from theater nuclear to global nuclear use, but the Reagan Administration had no sharply chiseled views on this question because when deterrence failed, thinking stopped.

In Dr. Iklé's personal view, first use was a useful doctrine for NATO in peacetime but would be dangerous in war, because London and Bonn would do everything to prevent nuclear first use and would thus leave NATO open to Soviet blackmail. Secretary of Defense Weinberger probably did not accept Dr. Iklé's argument that the NATO decision process, which was slow and which the Soviets could listen into, would give the USSR time to preempt. The Soviet Union was geared to preempt.

The analysis which Dr. Iklé received was of mixed quality. Mr. Andrew Marshall produced good stuff. The analysis from the acquisitions part of the Pentagon was poor. Dr. Iklé relied much more on the data than on the analysis provided to him.

Dr. Iklé complained that too much attention was devoted to arms control. In his view, the Reagan Administration also made too much of the MX missile. Secretary of State Haig pushed for the MX in order to prevent the USSR from acquiring a coercive nuclear potential. If the D-5[48] had been ready earlier, the U.S. could have done away with the MX.

[48] Trident II D-5 SLBM.

SUMMARY OF NARRATIVE

Subject:	Gen.-Col. Igor' V. Illarionov
Position:	Following Ustinov's death in 1984 worked with Marshal Sokolov in Ministry of Defense; from 1976-84 Ustinov's Aide on special assignments in Ministry of Defense specializing in Air Defense, Rocket Forces, Aviation; from 1965 Aide to Ustinov at Ministry of Defense Industries, Council of Ministers, Central Committee, MoD
Location:	Institute for Defense Studies (INOBIS)[49] Offices, Moscow
Interviewer:	INOBIS
Date/Time:	April 1993[50]
Duration:	Approx. 1.5 hrs. total
Language:	Russian
Prepared:	Based on audio cassette tape

During the late 1940s and early 1950s, several Main Directorates for special technologies were created within the structure of the Council of Ministers of the USSR. I was quite familiar with the Third Main Directorate (TGU), which dealt with air defense technology. The Design Bureau-1 (KB-1) was created to design all air defense systems. At first this was a relatively small research organization with its own experimental production plant. Later on it grew into a huge scientific research organization, which developed almost all air defense missile systems. The first project of TGU and KB-1 was to create the Moscow air defense system. This was an enormous fixed-site construction consisting of two large rings designed to combat American "flying forts"—the newest bombers—and to protect Moscow and the Moscow industrial region. This system had a code designation S-25.

During the early years KB-1 had working for it several German specialists who had worked on air defense systems in Germany during the last year of the war. They worked in KB-1 with a small group of our own specialists, chief designers, but all the rest were isolated. The system was very large and expensive, but since we had no experience of this sort, we decided to build it. As a result, several years later the system was built and put in place. The TGU existed for a relatively short time and in the 1950s all of its divisions were turned over to the ministries. It should be noted that TGU employed civilian specialists from all branches of industry who could take part in the development of such a large system, as well as military specialists who later on moved into the Ministry of Defense to work on the operation of the system.

The TGU had considerable rights and the decisions it made were signed by the Council of Ministers without any discussion. It was allowed to use any ministry and any production facility, and use funds from any source. It was not limited in anything and

[49] *Institut Oboronnykh Issledovanii* (Institute for Defense Studies). Scholars from INOBIS assisted in the collection of some of the taped interviews.

[50] INOBIS carried out the interviews resulting in this narrative at various times during the month of April 1993.

this speeded up the development process considerably and created an atmosphere in which work was relatively easy and fast, which cannot be said for the ministries. In the ministries you had to fight with GosPlan, GossNab, and the Council of Ministers every time you introduced any little innovation—a new, relatively simple design. All of this took a lot of time and slowed down work. When the TGU was eliminated, a department called the Military-Industrial Commission (VPK) was formed inside the Council of Ministers there. The task of this Commission was to coordinate all development of military technology, planning and preparation of Council of Ministers decisions on these questions. The VPK played a very important role in directing new R&D efforts, and thus, was responsible for conducting the arms race from the Soviet side. In later years it also worked on questions of arms reductions and prepared materials for our delegation at the arms reduction negotiations, together with the Ministry of Defense and other government bodies.

We were always behind the U.S. in the development of nuclear missiles, and because of this a first strike was not even discussed. I don't know of a single document or discussion in which a first-strike doctrine was adopted. But individual highly-placed officials sometimes stated that if we did not keep up with the U.S. in armaments, then in a crisis, upon observing U.S. preparations for a nuclear strike, we would have to preempt. But I repeat that officially there was no such doctrine in the documents with which I was familiar. During the Khrushchev era and prior to it I was not in the center of international affairs and cannot say that such views did not exist then. The retaliatory-meeting strike doctrine began to be worked out in the late 1960s and early 1970s. Conferences held under the chairmanship of the MoD (Grechko et. al.) and conferences involving the Chief Designers (Ustinov, Riabikov, et. al.) came to the conclusion that at the time we did not have the capability to conduct a retaliatory launch before the enemy's warheads hit our missiles. There were many debates and calculations, but the doctrine was not worked out. One of the most difficult and labor intensive tasks was coming up with a decision at the highest level of leadership. The commander-in-chief—Khrushchev, and after him Brezhnev—did not want to take on the personal responsibility, and a meeting of all of the top-level officials, discussion and taking of decisions would require not minutes and seconds, as would be required by the time of flight of a missile, but hours.

During this time development began of the second generation of ICBMs with MRVs[51] as a counterweight to the American Minuteman II missile. In consideration of the special importance of this system, Ustinov and Smirnov, on the instructions of the Ministry of Defense, assigned the preliminary development to two design bureaus—those of Iangel' and Chelomei. Both designs were completed and discussed at a meeting of the Defense Council. There was a difference of opinion: the MoD backed the Chelomei design, while the VPK (Ustinov, Smirnov) and the Academy of Sciences (Keldysh) preferred the Iangel' missile. [Sergei Aleksandrovich] Afanas'ev, the Minister of General Machine Building, sided with the MoD, but inside his ministry the chief of the head Scientific Research Institute (NII)[52] Mozzhorin, and the First Deputy Minister Tiulin did not go along with him. The meeting of the Council was held in the Crimea, in the mountains overlooking Yalta in a forest clearing near a small cottage. The people who lived in the cottage had been temporarily moved out and replaced by workers of the Ninth Main Directorate of the KGB. The number of participants in the meeting was quite large: ministers of the branches of defense industry, the top-ranking military men,

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[51] MRVs — Multiple reentry vehicles as distinct from Multiple Independently Targetable Reentry Vehicles (MIRVs) which were developed later. MRVs fall in a "footprint" determined by ballistic momentum once released over the target area by the last stage of a missile. Each warhead on a MIRV is guided independently to a specific target once released by its missile "bus."

[52] NII — *Nauchno-issledovatel'skii institut* — Scientific Research Institute.

general and chief designers, heads of the Central Committee and Council of Ministers apparatuses, academicians from the academies of science of the USSR and UkrSSR. In all there were at least 50 - 60 people.

The meeting of the Defense Council was chaired by Brezhnev. The Secretary of the Defense Council, M. M. Kozlov, played a passive role, kept a thick folder full of documents and took notes. Seeing this, Ustinov sat me and the head of the Defense Department of the Central Committee down next to Kozlov to take careful and accurate notes, and to make sure that Kozlov did the same.

Iangel' and Chelomei made their presentations. Chelomei was usually very self-congratulatory, always exaggerating the capabilities of his designs. By contrast, Iangel' and Piliugin, who designed the missile's control system, were cautious and always gave themselves a margin for error. Chelomei, knowing that Brezhnev and Grechko were predisposed towards him, as Khrushchev and Malinovskii had been before them, lavishly praised his brainchild. Iangel' emphasized the innovations of his design: survivability, etc. Although he did not state it directly, it became apparent that Chelomei considered protection of missiles and silos against nuclear blast to be superfluous. The uniformed military did not pay particular attention to the details of the presentations and focused instead on the quantitative characteristics. Iangel' had four MIRVs,[53] and Chelomei had six.[54] Most of those who spoke and who depended on Grechko and Afanas'ev for one reason or another supported their position. Mozzhorin, the chief of the leading NII[55] of the Ministry of General Machine Building gave a detailed comparative analysis of the two missiles which clearly showed that the Iangel' design was preferable. The president of the USSR Academy of Sciences, Keldysh, touched on questions of doctrine, as well as technical questions. He proved that all debates regarding missiles stemmed from questions of doctrine—first strike vs. retaliatory strike—and that certain circles still held on to the vain hope of destroying the opponent with a single strike. Instead, he argued, we should use all of our technical capabilities to guarantee a retaliatory strike, as this is the only way to deter the U.S. from first use of ICBMs. Afanas'ev declared with pride that the Ministry had carried out the instructions of the Party and government, had developed both missile designs, and had begun preparations for production. He took the side of Chelomei saying that he supports the position of the Minister of Defense because most of the specialists had spoken in favor of this missile. For the first time he spoke against Ustinov. He said to Brezhnev, "Unfortunately, Leonid Il'ich, Dmitrii Fedorovich has become an opponent of Chelomei and greatly hampers our efforts." Before this meeting he had always sworn allegiance to Ustinov and was fond of saying, "Dmitrii Fedorovich, you are our teacher and we—your students."

Tensions were very high. Despite the tents that had been set up, the July sun had made it very hot. Brezhnev announced a 20-minute recess. We all got up and split up into groups, continuing the discussion in the shade of the trees. Brezhnev called Ustinov and Grechko over to him and talked to them in a fairly loud and agitated way. I could hear phrases like, "What kind of position have you put me in? Why was it not possible to discuss these questions beforehand?" They replied that they had discussed this problem many times, but were unable to reach consensus. Epishev came over and said to Brezhnev, "Leonid Il'ich, since when have the industrialists begun to dictate to us in the military what kind of weapons to buy? We know better than they what we need." I could not hear the reply to this of the others, but it seems that he was ignored.

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[53] The Iangel' missile probably was an early version of the SS-17 (Russian designation RS-16).

[54] Chelomei's design became the SS-19 (Russian designation RS-18).

[55] Mozzhorin's institute, TsNIIMash, employed over forty thousand scientists and engineers.

After the break there were no more speeches, and the chairman stated that objections had been raised to the draft decision prepared by the Council. The problem would need to be reworked by Ustinov, Serbin,[56] Keldysh, and Kozlov. Usually meetings like this ended with a traditional dinner and toasts to the leadership, but I don't think that happened this time. Maybe they had a dinner down in Yalta, as all of the main participants quickly left to go down from the mountain. Ustinov, Keldysh, Alekseev, Serbin, and I stayed behind. We discussed how to prepare the draft decision and what to put in it. Keldysh played the most important part. His suggestions were adopted. He proposed to outline the requirements for a strategic missile system—practically a military doctrine for the country. Also, to write a compromise—to produce both missiles. This decision, which was very harmful to the country's economy, was made because of Brezhnev's indecisiveness and unwillingness to quarrel with his closest friends. The decision was written by Keldysh and Ustinov, and the rest helped. When the signatures were collected, Grechko tried to delay the decision and even hid from Serbin at his dacha when Serbin arrived with the documents. The Marshal left his dacha through the back door and did not return for several hours. Ustinov and Keldysh liked working together very much and switched to the familiar form of address—*ty*—in their conversation.

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[56] Serbin, Ivan — Chairman of the Defense Industry Department of the Central Committee of the Communist Party of the Soviet Union in the 1960s and early 1970s.

SUMMARY OF INTERVIEW

Subject:	Gen.-Col. Igor' V. Illarionov
Position:	Following .i.Ustinov;'s death in 1984 worked with Marshal Sokolov in Ministry of Defense; from 1976-84 .i.Ustinov;'s Aide on special assignments in Ministry of Defense specializing in Air Defense, Rocket Forces, Aviation; from 1965 Aide to .i.Ustinov; at Ministry of Defense Industries, Council of Ministers, Central Committee, MoD
Location:	Institute for Defense Studies (INOBIS), Moscow
Interviewer:	John G. Hines
Date/Time:	June 23, 1993, 1:00 p.m.
Language:	Russian
Prepared:	Based on notes

Q: Could you discuss the role of the Military-Industrial Commission (VPK)[57] at the time of the July 1969 meeting of the Defense Council in Yalta and Dmitrii Ustinov's position at that time.

A: The VPK was responsible for the formulation of military-industrial policy. Specifically, the commission had responsibility for defining what weapon systems and equipment were necessary and in what quantities, who would build them, etc. The VPK also was responsible for saving resources on arms building where possible.

By 1969, relations between the Military-Industrial Commission and the military were hostile. There were continuous battles over weapon systems. This was true even though the Ministry of Defense was represented on the VPK by a First Deputy Minister of Defense.

In 1969, Dmitrii Ustinov held no state positions. He was CPSU Party Secretary for military-industrial cadres and armaments where, among his responsibilities, was the definition of the probable enemy and the enemy's present and future capabilities and objectives. Before he assumed the Party position as Secretary, he was First Deputy Chairman of the Council of Ministers, and before that, Chairman of the military committee within GosPlan, the state economic planning agency. For much of his career, up until he became Minister of Defense, Ustinov held the military rank of General-Colonel, but he was not military.

Q: Could you please expand on the nature of the issues and personalities that were debated. Who was on which side of the main issues?

A: The debate concerning intercontinental missile systems focused on the differences between the proposals for missiles by Iangel' and Chelomei. Early in the history of

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[57] VPK — *Voennaia Promyshlenaia Kommissiia* — (Military Industrial Commission).

missile development, Chelomei had received Khrushchev's blessing (Chelomei had concentrated on the development of cruise missiles, and Iangel' on ballistic) and such support gave Chelomei an advantage vis-à-vis other chief designers for some time.

Of the two missile systems presented in July of 1969, Chelomei's was the less survivable and less reliable for a retaliatory strike. At the same time, Chelomei's design, which was for a MIRVed[58] system, included six warheads whereas the Iangel' system, admittedly more reliable and systemically more survivable, had only four warheads per missile.

These contrasting characteristics led the participants in the Yalta Defense Council meeting to take sides. The military, especially Minister of Defense Grechko, liked Chelomei's design because it provided more warheads per missile and because Grechko didn't care about survivability. Others on Chelomei's side included the Minister of General Machine Building (MOM) Afanas'ev, his deputy Tiulin.

Supporters of the Iangel' system tended to include those who believed that survivability was an important factor. Most of those who supported Iangel' were from the VPK or people associated with the VPK. This included Ustinov, Smirnov, and Keldysh, the President of the Academy of Sciences. For slightly different reasons, Mozzhorin, the Director of TsNIIMash, the Central Research Institute for MOM, opposed his boss, Afanas'ev, and supported Iangel'.

Q: Was the concept of survivability defended on the basis of any concept of deterrence?

A: No, there was no formal concept of deterrence. If we had accepted a concept of deterrence in which survivability of a smaller number of missiles was the logic we would have to follow, we would be forced to reduce radically the number of missiles in our inventory. We did not formally accept that logic. We did consider survivability, however, including the possibility of missiles launching in time to avoid destruction by an incoming nuclear attack. We called this a "retaliatory-meeting strike" [*otvetno-vstrechnyi udar*] which is what would happen under such circumstances. The July 1969 Defense Council meeting was the first time retaliatory-meeting strikes were discussed seriously as something we might be able to do. It was clear that it would be preferable to simple retaliation where we would absorb a first strike before launch.

I would say, however, that Grechko himself did not really care about survivability. Grechko canceled the mobile ICBM program in 1968 and he prevented the hardening of silos beyond 2 kg/cm^2 [28 psi]. He alone, a simple cavalry officer with very little ability to understand technical and strategic questions, was able to hold back much of the MoD and the technical analytical specialists in the military industries and military-political staff in making progress in improving systems and systems survivability. He overruled many including the Chief of the Strategic Rocket Forces (SRF) who relied for advice on his own military-technical committee [NTK—*nauchno-tekhnicheskii komitet raketnykh voisk*]. We understood that Grechko took such a position because he did not really believe in retaliation nor in retaliatory-meeting strikes. He believed in first strikes even though it violated our official military policy [*Voennaia Politika KPSS*] of not initiating nuclear strikes.[59]

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[58] MIRV Multiple Independently Targetable Reentry Vehicle — Each warhead on a MIRV is guided independently to a specific target once released by its missile "bus."

[59] The *Voennaia Politika KPSS* represented the most authoritative, high-level expression of the will of the Communist Party with respect to issues of defense and state security.

Q: Could you comment on the relationship between Marshal Ustinov and Nikolai Ogarkov?

A: That is a very difficult, uncomfortable question. I would prefer that you ask Ogarkov himself.

Q: Marshal Akhromeev in the book he wrote with Kornienko, which was published posthumously, explained that when he (Akhromeev) left in 1980 to be the representative of the Supreme High Command in Afghanistan, Ogarkov and Ustinov were getting along very well. When he returned in 1982, relations between the two officers were terrible, so bad, in fact, that the work of the General Staff and the Ministry of Defense were very negatively affected. Routine work and decisions would be prepared in the General Staff and never be approved, or not even transmitted, to the Minister of Defense because of the hostility between the two senior Marshals in the Armed Forces.

A: Yes, that sounds like an accurate description of what it was like.

Q: Was it personal or professional?

A: Well, Ustinov liked the high-technology and nuclear strategic systems and strategies, and Ogarkov thought conventional war, the ground forces, and preparation for war in the TVD [*teatr voennykh deistvii*—Theater of Strategic Military Action] were more important. In 1980, Ogarkov even argued for a cut in strategic forces and an increase in conventional forces. But that was not the main problem. The major differences seemed to be personal.

Addendum to June 23, 1993 Interview on July 1969 Crimea Meeting of the Defense Council

The opposing blocs according to Illarionov:

Chelomei design (SS-19):

Favored by Ministry of Defense specialists and uniformed military
Weakly protected/first strike weapon
Six warheads
Principal supporters: Grechko (MoD), Afanas'ev (MOM), Epishev (Deputy MoD for Political Issues)

Iangel' design (MR-100/SS-17)

Favored by VPK/industrialists
High protection, survivability/retaliatory-deterrence weapon
Four warheads
Principal supporters: Ustinov, Mozzhorin (head of TsNIIMash), Keldysh (Academy of Sciences), Serbin (head of defense department of Central Committee), Alekseev, Illarionov (assistant to Ustinov)

Although as a compromise Brezhnev put both types of missiles into production, the Iangel' bloc won the doctrinal argument, leading to the formal adoption of the retaliatory-meeting strike doctrine.

SUMMARY OF NARRATIVE

Subject: A. S. Kalashnikov

Position: Missile and nuclear weapons tester; former member of Military-Technical Committee of Ministry of Defense and Chairman of Strategic Rocket Forces; former chairman of the commission on nuclear testing at Semipalatinsk

Location: Institute for Defense Studies (INOBIS), Moscow

Interviewer: INOBIS

Date/Time: April 1993[60]

Duration: Approx. 1.5 hrs. total

Language: Russian

Prepared: Based on audio cassette tape

Both the U.S. and the Soviet Union always stressed the vulnerability of strategic and tactical nuclear weapons, especially fixed, land-based missiles, which can be successfully destroyed using conventional weapons. Therefore the Soviets continually improved the protection of silos, de-concentrated and dispersed silo groups, and created mobile ICBM systems which could roam the vast territory of the country. The principal Soviet strategic advantage was this vast territory—22 million square km. The principal U.S. advantage was its access to warm water, of which the Soviet Union had virtually none. Even when Soviet submarines came out into open waters they were immediately detected and tracked. In order to fully exploit their advantage Soviets created mobile land-based systems. By contrast, the U.S. had only approx. 1,000 land-based Minuteman III launchers and 54 Titan II launchers. But in general the U.S. based its missiles away from its territory in order to draw the fire away from its territory.

Tactical Nuclear Weapons

Kalashnikov was a member of the military-technical council of the MoD; Kalashnikov argued that it was a grave mistake to outfit operational and tactical missiles with nuclear warheads. However these arguments were in vain because it was the industrial complex that dictated procurement and production.

First Definition of Missile Role and Silo Design

From 1950-61 Kalashnikov worked at Kapustin Iar as head of First Testing Directorate testing virtually all ballistic and cruise missiles designed during that time. After observing a test on Sept. 14, 1958, Khrushchev commented that in the future missiles would be the sword and shield of the country. The following day Kalashnikov

[60] INOBIS carried out the interviews resulting in this narrative at various times during the month of April 1993.

was directed to draft a highly secret report on options for silo designs to increase survivability of Soviet missiles. The report outlined three options:

1) single-launch dispersed silos

2) groups of four silos

3) re-fire: single silo containing missile drum

The first option was selected for prototype testing using an R-12[61] missile. The first launch occurred in spring of 1959. Kalashnikov considered the type of basing to be the single most important determinant of system effectiveness.

Threat from NATO Countries

The following technological developments particularly threatened security:

1) Technological achievements of the U.S. generally, particularly the ever increasing accuracy of U.S. missiles. Accuracy doubled every 5 years:

1960	Minuteman IA	4 km radius
1965	Minuteman II	2.1 km
1970	Minuteman III	1.2 km
1975	Minuteman IIIA	.8 km
1980	M III (single warhead)	.5 km
1985	MX (self-guided)	.25 km
1990	MX (self-guided)	.15 km

2) Cruise missiles with self-guiding warheads

3) Reconnaissance-strike systems with separate self-guiding elements used as anti-tank weapons in Europe

Threat from Warsaw Pact Countries

The following Warsaw Pact systems were the most destabilizing:

1) The Tem 2-S [probably SS-16] mobile missile system, which had an astounding effect on the U.S.

2) The Pioneer SS-5 [SS-20] mobile missile system

3) Silos of the "Oss" type with super-hardening for SS-18 liquid fuel missiles

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[61] SS-4.

4) Nuclear tactical/operational missiles and nuclear artillery

Regarding Periods of High Tension and Danger

Crises were primarily manufactured in the highest echelons of party and government leadership, some for political, some for economic or other reasons. An example: in June 1966 Kalashnikov was assigned to conduct a demonstration test of the R-16[62] missile for De Gaulle. What De Gaulle saw had a profound effect on him. He turned to Brezhnev and asked, "You've got quite a lot of missiles. Where are they aimed?" Brezhnev replied, "At cities, including Paris." At that time NATO headquarters was located in Paris. After the exercise De Gaulle cut short his visit and left the country. This story illustrated how the high leadership periodically deliberately brought about political tensions.

Mutual Assured Destruction

Soviets did not accept the concept of mutual destruction. But the doctrine of retaliatory-meeting strike (RMS)[63] in effect produced the same result—mutual destruction. This (RMS) was a senseless doctrine. The targets of retaliatory strikes for both U.S. and USSR were administrative-industrial centers, air bases, C^3 centers, and others, which resulted in the destruction of the industrial and military potential and of the population. The targeting of launchers did not make sense from our point of view because RMS relieved the launchers of their missiles and it did not make sense to hit empty silos. It was impossible for either us or for the Americans to destroy warheads in flight.

Protection from Surprise First Strike

Soviets had several concrete projects for protection against a surprise first strike.

1) Silo protection was continually improved.

2) More attention began to be paid to the early warning system. This was done primarily by organizations subordinated to the Radio Industry Ministry, headed by Valerii Dmitrievich Kolmykov. Kalashnikov was a strong advocate of a sophisticated early warning system, including introduction of "noise-like" [scrambled] C^3 signals. His arguments were resisted by Kolmykov who got bad advice from his chief designer and consultants. The need for a strong early warning system was finally made clear by Pleshakov,[64] an arms control negotiator in Geneva and Kolmykov's deputy, who claimed that Radio Ministry's resistance to modernizing the system had put the Soviets far behind the Americans and undercut the Soviet negotiating position.

The situation regarding EW protection against a surprise attack was quite serious. In 1975 a commission, of which Kalashnikov was a member, was set up to study the problem. Kalashnikov, after consulting with bright young specialists whose views were often suppressed, pointed out that Soviets could not keep up with the U.S. in terms of

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[62] Probably the SS-8.

[63] Referred to elsewhere in interview records by the Russian phrase, *otvetno-vstrechnyi udar.*

[64] Authors were not able to identify this person in the military-industrial sector.

accuracy. However, as U.S. accuracy increased, the velocity of the reentry vehicles (RVs) also increased, and their size decreased. This leads to the possibility of disabling the RVs by putting ordinary chaff in their way. This idea led to preliminary R&D on the SAMBO system led by Kalashnikov in conjunction with Sergei Pavlovich Nepobedimyi, who was designing a similar system for protection of tanks against missiles. The preliminary work led to four or five abstracts [*avtorskie svidetel'stva*]. The outlines of the system: burst 500 - 1,000 m above the silo or C^3 center scattering "ordinary elements" in a horizontal plane with a velocity of 2,000 km/s (in addition to the speed of the RV itself).

Support was found for this idea, and it was proposed to Ustinov and presented to an MoD Collegium in April 1980, which included Gorshkov (VPK—Smirnov's first deputy) and members of the industrial complex. Gorshkov was opposed to the idea because PRO[65] was developing its own anti-missile system, under the direction of the Nudelman KB[66] at the time. However, eventually the protocol was signed by all the members of the Collegium and Nudelman's work was subordinated to this project. This was a serious project, which continues to undergo development and has yielded some positive results. Work is now continuing in the KB headed by Nikolai Ivanovich Vushchii. The work involves both radar/radio and optical detection methods, including a phased array system for electronic scanning. If the system is built and deployed, it will eliminate the possibility of a surprise attack on our silos.

Right now the emphasis continues to be on precision weapons which can destroy silos and other targets with reasonable accuracy. Weapons are not developed in a vacuum, but in response to something.

Scenarios for Limited Global Nuclear War

Scenarios for limited global nuclear war were not developed. NATO's medium-range missiles (with ranges to 2,000 km) did not present a threat to us. Our medium-range SS-20s had a range of 4,500 km; the SS-4, SS-5 have ranges of 2,500 and 4,500 km.

Strategic Superiority

The Soviet Union did strive for strategic superiority. It achieved superiority in the following areas:

1) Number of launchers

2) Silo protection

3) Yield of warheads

4) Range and power of missiles

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[65] PRO — *Protivoraketnaia oborona* — Anti-Missile Defense. Anti-missile defense was a responsibility of the commander-in-chief of the Air Defense Forces (Voiska PVO).

[66] KB — *Konstruktorskoe buro* — Design Bureau. The complete designation is *opytno-konstruktorskoe buro* (experimental design buro). Authors could not identify Nudelman's first name and biography.

However, the Soviets were never able to create a sophisticated, survivable, integrated command, control and communications system. This was their "Achilles' Heel." Kalashnikov produced an analytical report for the General Staff comparing C^3 systems of the U.S. and USSR. This analysis had a devastating effect on the GS because it reported that the U.S. possessed eight command and control centers which were absolutely protected, while the Soviet Union had none. This report created some movement toward modernization. Kalashnikov calculated that after sustaining an all-out nuclear strike—the Soviets would be able to launch only 2% of their missiles. This calculation was based on data supplied by several industrial NIIs, including TsNIIMash [the Research Institute of the General Machine Building - Missile - Ministry] (which reported a figure of 6%) and NII-4 [the Research Institute of the Strategic Rocket Forces] (10%). However, a figure of 2% is most realistic—out of 100 surviving silos, only two would be able to launch their missiles.

Kalashnikov produced an *avtorskoe svidetel'stvo* to build two spherical command centers inside mountains: one for the General Staff, one for the SRF (Strategic Rocket Forces) command. However, a major difficulty was the lack of an adequate communications infrastructure. The Soviets had [have] only one military communications cable linking Moscow with the Far East. By contrast, the U.S. has a network of command centers linked by a computerized communications system. If one region or sector of this communications net was knocked out, bypass links could be set up in a matter of seconds.

Therefore, Soviet superiority in the number of launchers did not give them any real advantage. This numerical superiority reflected a mechanistic, wasteful approach to force building.

The Soviets had amassed a superior first-strike arsenal. But they were not able to destroy an aggressor in a retaliatory strike because they did not have an adequate C^3 system for launching their surviving missiles.

Nuclear War in Europe

The Soviets tried to plan for nuclear scenarios, however they were all senseless. The main threat for NATO was the large number of Soviet tanks located in Europe. The Soviets had no incentive to escalate the war to the nuclear level because the consequences would be equally devastating for Europe and for the European part of the Soviet Union. The leadership believed, with good reason, according to Kalashnikov, that Soviets could certainly win a strictly conventional war in Europe and advance at least to the English Channel. The ban on tactical nuclear weapons has without question drastically reduced the level of the Cold War.

Economic Competition

The Soviets were not on even ground with the U.S. economically. U.S. GDP in 1981 equaled $2,925 billion. 1981 Soviet GDP equaled R939.16 billion. But they spent more on weapons, which led in the end to the ruin of the economy and the pauperization of the people. The arms race and instability were aggravated by military bases outside the borders of the two superpowers, considering that they reduced flight times, etc.

1972 Exercises

During this time there were tests held at Semipalatinsk to determine the nuclear survivability of all existing silo and command center designs. For this underground nuclear tests and above-ground tests using conventional explosives equivalent to 10 kilotons were used. For the above-ground tests many kinds of equipment were used, including mobile missile platforms, SS-20s, planes, tanks, other kinds of armor, etc. Kalashnikov was deputy in charge of missiles on the commission conducting the tests. Findings: ground bursts were generally effective at disabling silos, but results were somewhat mixed. Air bursts were very effective against planes, tanks, etc.

Deployment of SS-20

There were several reasons for the deployment:

1) Obsolescence of existing medium-range missiles. Existing missiles were: R-12 [SS-4] - deployed March 1959, unprotected, above-ground launchers, with range of 4,500 km and carrying a .5 megaton single warhead; R-14 [SS-5] above-ground, unprotected with 4,500 km range and 1 megaton warhead. Both were liquid fuel missiles with low combat readiness. These two systems were deployed in the European and Central Asia parts of the USSR, first on unprotected above-ground launchers, then, as a result of Khrushchev's decree of May 30, 1960 (mentioned above) in group silos, hardened to withstand only 2 kg/cm^2 [28 psi]. Deployed in silos 1964. The Soviets wanted to eliminate these obsolete systems and replace them with solid-fuel missiles.

2) The Soviets wanted to deploy a mobile missile system.

3) By this time the Tem-2S mobile ICBM [probably SS-16], using the MAZ-500 mobile launcher, had been developed, and was in production, but it was banned by the SALT II agreement. Kalashnikov pointed out that it was technically a simple matter to convert the 60 existing ICBMs into the Pioneer [SS-20], which was permitted by the agreement: simply remove the second stage of the missile. Thus the SS-20 was born. The Central Committee decree was prepared in a matter of days. The creation of the SS-20 caused a great uproar in the West, particularly in American military circles.

Strategic Superiority Revisited

The Soviet Union did strive for strategic nuclear superiority. In 1975 the U.S. had 1,710 launchers operational. We had 2,558. After 1968 the U.S. practically did not add any launchers.

Soviet megatonnage per warhead was two to three times that of the U.S. However, the *udel'naia moshchnost'* [warhead size in proportion to weight, thrust, and range of the missile] of the U.S. warheads was 25% greater than Soviet. Soviet missiles had far greater launch weight than U.S., e.g., the Minuteman weighed 35 tons, carried three warheads and had a 10,000 km range. Soviet missiles compensated for the inadequacy of their designs by their great launch weight and throw weight. The pressures in their burn chambers were lower because of less sophisticated materials. Even the Soviet solid fuel missiles had far greater weight than their U.S. counterparts.

NATO Threat

The Soviet Union perceived a threat from NATO behavior. The main goal of the U.S. during the Cold War and the arms race was to force the Soviet Union to commit the maximum resources to nuclear and other weapons in order to destroy its economy. This strategy was in the end successful because when the Soviet Union was committing 60 to 70% of its industry to defense needs, the economy crumbled.

During a meeting involving Central Committee Defense Secretary Dmitrii F. Ustinov and Chief of the General Staff Zakharov,[67] Kalashnikov argued that industry was overextended and committed too much to armaments. This economic over-extension was driven by the arms race and by the growing complexity and sophistication of modern weapons. During and after WWII, four industrial plants were required to build a tank. Now, after the arms race at least 150 plants are needed. This means that many industrial plants, which under normal conditions would be non-defense, were deliberately and systematically drawn into defense production. The U.S. was much stronger economically. U.S. industry was working at 75% capacity throughout the Cold War period, while Soviet industry was working at full capacity. The U.S. GDP rose consistently. From 1967 to 1981 real GDP actually declined in the Soviet Union.

Every year since 1969 the U.S. produced 280 - 300 missiles. The Soviet Union produced 540 - 570. This vast industrial base devoted to the production of missiles destroyed the national economy and pauperized the people. Most important, the Soviet Union had more than 20 types of missiles serving essentially the same roles. The military's ambition had always been to eliminate this redundancy and have just two or three types, e.g., one heavy and one light ICBM. Kalashnikov repeatedly made proposals to this effect. But these arguments were always rebutted with the question of what would happen to the workers if KB [design bureau] Chelomei or KB Iangel', which operated the Iuzhnoe facility, were closed down. During one particular meeting of the Defense Council held by Brezhnev in the Crimea, the redundancies were clearly demonstrated and the proposals for design of MR-100[68] and R-37[69] were also presented. Brezhnev made the militarily senseless and economically destructive decision to keep all designs in production.

At this meeting Kalashnikov argued for the design of a solid-fuel missile to replace the SS-18 to be known as the SS-21 and developed at Iuzhnoe. The SS-18 was not canceled, but Kalashnikov's proposal was received favorably. Some of these missiles would be rail-based. Grechko was strongly opposed to the rail option because he thought that the railroads, which are the Soviets' lifeline, would be seriously disrupted by rail-based missile launches. Kalashnikov headed the development team for this missile [ultimately produced as the SS-24].

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[67] Zakharov, Matvei Vasil'evich — Marshal of the Soviet Union — Chief of the GS from 1960 to 1963 and from 1964-1971.

[68] The MR-100 is probably the manufacturer's number for the SS-17, the Iangel' four-warhead missile proposed in July 1969. The Strategic Rocket Forces (SRF) designation for the same missile was the RS-16 (missiles often were known under two or three designations; the manufacturer's number, the SRF number and, for some systems, a number for general space applications).

[69] Almost certainly a general space missile system number for Chelomei's SS-19 known also by the SRF number RS-18.

Closing remarks

Kalashnikov is convinced that throughout the period of the development of nuclear missiles, especially when the Soviets began their production in earnest, the U.S. was very afraid of Soviet nuclear power, and of the possibility of accidental or unauthorized launch. The fact that Bush agreed to equal numbers of warheads for each side in the recent START II agreement, even though Russian warheads are of much higher yield, reflects this concern, especially in view of the political instability in Russia, and constitutes a great concession in favor of the Russians. Kalashnikov noted that it would be a great loss for history to lose a civilization like the United States. History shows that advanced civilizations have always been destroyed by more primitive ones (Rome, the Moors in Spain, etc.).

SUMMARY OF INTERVIEW

Subject: A. S. Kalashnikov

Position: Missile and nuclear weapons tester; former member of Military-Technical committee of Ministry of Defense and Chairman of Strategic Rocket Forces; former chairman of the commission on nuclear testing at Semipalatinsk

Location: INOBIS, Moscow

Interviewer: John G. Hines

Date/Time: April 14, 1993

Duration: Approx. 1.5 hrs. total

Language: Russian

Prepared by: Ellis Mishulovich, based on audio cassette tape

The communications system was the Soviets' Achilles' Heel in the late 1960s and early 1970s. The U.S. cable communications system is very survivable because it consists of a computerized grid with many nodes that is difficult to knock out completely. U.S. command centers are very well protected and employ long-wave communications. By contrast, the Soviet cable communications are very weak, leading to poor survivability in models. This vulnerability has not been corrected to this day. A new cable system linking Moscow with the Far East has not been put in.

The Soviet Military-Industrial Complex was very resistant to change and innovation and there were "titanic battles" for the quality of weapons. For example, there was great resistance to introducing scrambling devices [*shumoobraznye signaly*] into Soviet naval communications. Kalashnikov became convinced of the need to introduce these devices in the early 1980s after talking with Admiral Lobov, commander of the Northern Fleet. Lobov described shadowing a U.S. fleet on maneuvers and not hearing any radio traffic. A tremendous battle ensued involving the Minister of Radio Industry Kolmykov. Such battles were commonplace during the Brezhnev period, when the Military-Industrial Complex became entrenched.

A great tragedy for rational weapons development was the closing of the General Staff Scientific-Technical Council (NTK) by Grechko. The NTK was an independent body not responsible to any of the ministries. It was therefore difficult to muffle. After Grechko disbanded it the only NTKs left were ones belonging to the services of the Armed Forces. However, they were greatly weakened.

Q: Did the Soviet Union conduct tests to compare the effects of ground-bursts vs. height of bursts?

A: When the first silos were built Soviets needed data for building shock absorption. The first tests to assess the effectiveness of shock absorption were conducted in 1963-64. At first these tests used conventional high explosives, but later on more elaborate tests using nuclear blasts were conducted. These later tests were made using silos and a

command center. Later still, above-ground tests were conducted using conventional explosives to measure the effect on equipment like tanks, planes, etc. A series of tests was conducted in Novaia Zemlia in 1961, but only to measure warhead yields.

SUMMARY OF NARRATIVE

Subject:	Vitalii Leonidovich Kataev
Position:	Former Senior Advisor (1967-1985) to the Chairman of the Central Committee Defense Industry Department (Renamed "Defense Department" in 1991) of Central Committee of CPSU responsible for strategic arms and defense policy, arms control negotiations, and military doctrine
Location:	Institute for Defense Studies (INOBIS), Moscow
Date/Time:	May 1993[70]
Language:	Russian
Prepared by:	Ellis Mishulovich, based on audio cassette tape
Note:	Also present: Viktor Popov, former senior staff member of the Central Committee Defense Industry Department.

Since the times of Stalin, decision makers worked in very close contact with the chief designers. Most chief designers were very erudite, capable people who understood well the problems facing the country, the economic constraints, and the scientific aspects of the problems. The military industrial complex absorbed the best technical and scientific capabilities of the state. The benefits and privileges inside the complex were also greater. In the end these circumstances gave the complex its own life which contributed to the fact that, despite the lack of necessity for massive series production of armaments, and without any military actions in which these arms were depleted, arms were stockpiled and the industry continued to grow independently of military needs. In the 1970s and 1980s certain branches of industry, such as the munitions industry, grew at three or four times the rate of the defense industry as a whole.

The defense industry never accepted simple solutions. Changes were made only in favor of the growth of the complex. All intelligence assessments of the probable opponent were skewed in favor of the maximal threat when they were made available to the leadership. The principle was always that it is better to overestimate than to underestimate the opponent. Our retaliatory measures were always taken in response to the opponent's maximal capability.

The corps of directors [comprised of directors of major defense conglomerates or "NPOs"][71] also helped to maintain high production levels. When the military was fully saturated with heavy strategic missiles, there were concrete instances when directors of production facilities, such as the director of IuzhMash, Makarov, would visit Minister of Defense Ustinov and would say: "Dmitrii Fedorovich, please take a few dozen missiles." And Ustinov would reply, "But what will I do with them, Aleksandr Maksimovich?" To which the director would reply, "But if you don't, how will I feed the working class?"

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[70] INOBIS carried out the interviews resulting in this narrative at various times during the months of May 1993.

[71] NPO — *Nauchno-proizvodstvennoe ob'edinenie* — Scientific-production conglomerate.

And Ustinov would take the missiles, which the army did not really need. But they were produced, and the Ministry of Defense had to buy them.

The army and the industry had a common interest in producing more and more powerful systems in greater and greater numbers, independent of changes in the international environment. And the pressure to produce was greatest on the most sophisticated kinds of systems, especially on the strategic systems. So, in the structure of the defense industry, space, missile building, and aviation accounted for 34% of all specialists; communications and radio electronics took up 20%; shipbuilding took up 9%; artillery, munitions, and small arms took about 12%. Only 55% of the capacity of the defense complex was employed in the production of military goods. 40% was employed in the production of civilian industrial and consumer goods. For example, at the Ural Railroad Car Plant in Nizhnii Tagil—the largest tank plant in the world—the proportion of defense production was 64%; at the Votkinsk missile technology plant, the proportion was also 64%; at Volgograd's "Barricade" works, which produced missile launch equipment and artillery, it was 72%; some of the shipbuilding plants were 80 - 95% dedicated to defense production.

Although generally speaking the defense industry was a monolithic structure, there were occasional rifts. While some designers were orthodox in their thinking, others were not. For example, the question of protection of strategic missile complexes led to a drawn-out debate. Iangel' and some others designers proposed to create silo-based, protected strategic missile complexes, with protection of at least 100 atmospheres. This proposal was opposed by some designers, including Rudiak,[72] who insisted on retaining the old silo design, with in-silo engine startup, and which were not well protected against nuclear attack. As a result of lobbying by Iangel', Glushko and Piliugin, Rudiak was removed from his position.

The need to get ahead was not always determined by military necessity or by the scientific capabilities of the design bureau. It was largely determined by the military-technical leadership. In the early 1960s the well-known Miasishchev aviation design bureau was transferred to the Chelomei missile design bureau, where Khrushchev's son was working. Khrushchev relied on the information supplied by his son, which gave Chelomei great advantage. His missiles were not bad, and were highly esteemed by the troops for their reliability, ease of use, and good design. In order to avoid slighting the other design bureaus, their missiles, which were of the same class as Chelomei's, were also put into series production simultaneously. This caused some difficulty in the Rocket Forces, which at one time had more than 10 different missiles serving the same mission. This led to a kind of internal arms race inside the defense industry, which did not always adequately reflect the country's defense requirements. Of course, this arms race was defended on a theoretical basis, found expression in mini-doctrines of development of one kind of technology or another, and was supported by those members of the military who always believed that there could never be enough weapons.

The defense plants never stopped production of defense goods, but rather aimed to increase production, independent of the demand, which led to the stockpiling of expensive technology. For example, there were at different times up to four, five, and, in the case of particular systems, eight nuclear basic loads [*boekomplektov*] of naval strategic missiles. The submarines themselves permanently carried approximately 0.7

[72] Authors were not able to identify this person in the military-industrial sector.

nuclear basic loads, which was quite sufficient for all sorts of testing, etc., as was also the case with the American side. Not more than 1.5 nuclear basic loads would have been sufficient.

While working in the Defense Department of the Central Committee, I attempted to bring these facts to the attention of the leadership, but was simply told not to concern myself with these matters. The work of the Defense Department aimed constantly to increase weapons production, to make sure that the technological level of the weapons being produced did not fall behind that of our probable opponent. The role of the Defense Department was limited to the development of new kinds of weapons, organization of their series production, and their transfer to the active forces. Use of new systems and their incorporation into the force structure was entirely the role of the military. What the army did with their weapons was not under the control of the specialists inside the Defense Industries Department. The traditional approach inside the Defense Industries Department, which dated back to the days of Stalin, was that the customer, that is to say the MoD, is always right. However, what was meant by the MoD was often the view of the Minister of Defense. This subjective view was the decisive one in the creation of new weapons systems and in the arms race in general. So, for instance, in the early 1960s the Iangel' design bureau suggested responding to the Americans' increasing accuracy by designing mobile missiles which would in effect counter accuracy by creating uncertainty about the location of our missiles. It should be noted that with the appearance of the highly precise MX missile, we faced a significant gap in retaliatory capability using silo-based missiles. Bringing on-line the mobile missiles eliminated this shortcoming. When the science committee of the Rocket Forces agreed with this view, Minister of the Defense Grechko disbanded the committee and unilaterally rejected the rail mobile missile complex, thereby stalling its development by 10 to 12 years. If the decision to develop these mobile missiles had been made in the mid-1960s, as was planned, it is doubtful that the U.S. would have invested in the MX. In this case we [Soviets] would not have invested in various other countermeasures to the MX.

In practice, our government did not have a structure for making important political-military decisions of this type. Such decisions were made by the top three or four leaders: the Secretary of the Central Committee, the Minister of Defense, the Central Committee Secretary responsible for the defense industry, and the Chairman of the Military-Industrial Commission (VPK). However, these decisions were not always made based on a balanced discussion of options. For example, the decision to build the Krasnoiarsk radar site was made by this troika or foursome in violation of the ABM Treaty. But this was easily demonstrated, and in the end led to the liquidation of this site. A similarly thoughtless decision was made regarding the deployment of Pioneer [SS-20] missiles in the European part of the USSR. In response to this we got the Pershings, which led to a complete strategic destabilization in Europe and we later had to liquidate these missiles at great political and economic loss to us.

RECORD OF INTERVIEW

Subject:	Vitalii Leonidovich Kataev
Position:	Former Senior Advisor (1967-1985) to the Chairman of the Central Committee Defense Industry Department (Renamed "Defense Department" in 1991) of Central Committee of CPSU responsible for strategic arms and defense policy, arms control negotiations, and military doctrine
Location:	Institute for Defense Studies (INOBIS), Moscow
Interviewer:	John G. Hines
Date/Time:	June 23, 1993, 3:30 p.m.
Language:	Russian
Prepared by:	John G. Hines, based on notes
Note:	Also present: Viktor Popov, former senior staff member of the Central Committee Defense Industry Department.

Q: In your narrative discussion, you indicated there was no formal structure for political-military decision making but that a "troika," or perhaps a foursome of top officials actually made such decisions; the Defense Minister, the Central Committee Secretary for defense industries, the Chairman of the Military Industrial Commission (VPK), and the Secretary, I assume General Secretary, of the Central Committee. In our earlier discussion you and Viktor Popov mentioned the "piaterka" [the five] who had the final say on defense issues. The five you mentioned were: Smirnov, Chairman of the VPK; Ustinov, the Minister of Defense and Secretary for Defense Industry; Gromyko, Minister of Foreign Affairs; Andropov, the head of the KGB, and Brezhnev, the General Secretary.

A: The broader "piaterka" with Andropov and especially Gromyko was more likely to be involved on defense questions that went beyond the interests of only the military or the industrialists, questions related to doctrine and high-level, international decisions related to arms-limitation negotiations.

Q: It has come up in earlier discussions that the Chelomei missile [SS-19] presented for decision in Yalta in July 1969 was assessed to be less reliable than the Iangel' missile [SS-17]. What determined the reliability [*ustoichivost'*] of a missile system?

A: First of all, Chelomei's missile had a low survivability [*zashchitnost'*] rating, low reliability [*ustoichivost'*] rating, and an overall reliability [*obshchaia nadezhnost'*] rating of 90%. (The Minuteman was rated between 70% and 80%.) The overall reliability is the product of several factors—the missile's inherent stability and the hardness of onboard control and launch systems, the silo, the local control system, the central control system, especially to include its survivability and the survivability of the control links under nuclear attack (including Electromagnetic Pulse, EMP)—that would affect a missile system's ability to launch and strike its target in the aftermath of a nuclear attack. Kataev made clear that, by Soviet criteria, the Minuteman was systematically less reliable

under or after attack than the SS-19 (even though, in the late 1960s, Minuteman was hardened to 20 kg/cm^2 [284 psi] versus the Soviet Union's 2 kg/cm^2 [28 psi]).

Q: In your calculations, what assumptions did you make about U.S. intentions and capabilities to launch against the Soviet Union?

A: We assumed that the U.S. would launch first and, given your focus on accuracy and relatively smaller yields per warhead, that you intended to strike our weapons and control systems in an attempt to disarm us.

Perhaps the single most important factor affecting our calculations was the accuracy of your strategic missiles. In our estimation, the U.S. began its pursuit of very high accuracy in 1963 in what we called the MX program. Your determination to increase warhead accuracy led us to be more and more concerned about the survivability of our systems. By 1965 we had decided to develop mobile ICBMs. By the early 1970s, we were to have tested the first rail-mobile system. Grechko, however, canceled the mobiles program.

Nuclear power [*iadernaia moshch'*], in our assessments, is a function of yield, number of weapons, and accuracy. Accuracy can have a decisive effect as a multiplier to greatly increase the effective power of a nuclear missile. Several factors, especially accuracy, for example, increased the power of the U.S. nuclear arsenal by a factor of three in the years leading up to difficulties associated with RIaN [*Raketno-Iadernoe Napadenie*—nuclear missile attack] in the early 1980s.

Q: Could you expand on the role of the "Dead Hand" missile communications system?

A: "Dead Hand" represented one of two trigger mechanisms on a basic system of command missiles [*komandnye rakety*] designed to launch Soviet ICBMs. The basic command-missile system is comprised of a command missile or missiles deployed near, but not in, clusters of silos. The command missiles are well concealed, physically hardened well beyond the hardening of weapons launch platforms and especially well hardened against damage from electro-magnetic pulse [EMI—*elektro-magnitnyi impul's*]. Each command missile is linked in its communications package with a specific set of launch platforms. Upon command, the missiles are launched into near space from which each missile transmits launch orders to that cluster of ICBMs to which it is linked. (The scenario under which the system would be used assumes that all ICBMs are retargeted from enemy missiles to objectives that have economic and infrastructure value.)

There are two means by which each command missile might be launched to transmit its message to the ICBMs. The first is under positive control from the central control system. The decision is taken to launch and the time before impact of the enemy's strike is seen to be insufficient to permit normal launch procedures. The second is the "Dead Hand" launch mechanism. Under the "Dead Hand" mechanism, the decision maker at the center unblocks [*razblokirovat'*] the no-fire mechanism at the center, thereby releasing launch control to local automatic triggers associated with each command missile. The triggers, fed by numerous sensors, will launch its local command missile and, in turn, its associated cluster of ICBMs once the sensors are excited by the light, or seismic shock, or radiation, or atmospheric density associated with an incoming nuclear strike.

Q: Were the missiles operational by 1981?

A: Yes, definitely operational by the early 1980s.

It is important to understand that unblocking of "Dead Hand" assumes the scenario of a situation that is extremely threatening to the political and military leadership of the state. The basic expectation is that all decision makers are dead when the command missiles automatically fire.

Q: I would like to touch once more on the question of selective strikes.

A: We never accepted a limited strike option, not in the Central Committee, not as an element of the military policy of the CPSU [*Voennaia Politika KPSS*].

Q: But very well informed generals in the General Staff claim that they analyzed limited options of various kinds, and, under some conditions, would be prepared to implement them.

A: Of course the military played with this inside their own little box to which they would then pull down the cover, shutting themselves in the dark away from exposure to what was really going on. [He formed a box around his eyes with his hands and then pulled an imaginary cover out and down over his eyes]. Even though the military looked at limited options I know, personally, that they were not accepted. I attended many very high-level [the Defense Council supported by Central Committee Defense Industrial Department] meetings where major weapons and other development and procurement decisions on missile systems were debated and made. At many if not most such meetings, the doctrinal and strategic rationale for such force development decisions were reviewed and sometimes challenged. At such meetings selective use was occasionally raised as a possible option and was always rejected. Selective use was not approved, even for the tactical level.

Q: It seems to me that holding on to a position that "one little nuclear weapon from the enemy will end the world," was designed to deter [*sderzhat'*] the U.S.

A: (Kataev and Viktor Popov, with recognition and enthusiasm): Of course. Exactly so!

Q: All right, what if for some reason deterrence failed and the Americans did what General Korobushin said we exercised in the mid-1980s, two or three nuclear missiles on remote military facilities in Siberia—or even seven to twenty tactical nuclear strikes from NATO in Europe against Soviet Forces in the course of an ongoing war? What would the Politburo do—in the 1980s or 1970s? End the world by retaliating with a massive strike? Ignore the strike? Respond with limited strikes and negotiate?

A: [After a fairly lengthy and very serious pause] I just don't know. That would be a very tough decision. [Viktor Popov also thought that the actual response would be very difficult and very hard to predict. Both seemed to be caught by surprise by the question—as if they actually had never considered it before.]

SUMMARY OF DISCUSSION

Subject:	Gen.-Maj. (Ret.) Iurii A. Kirshin
Position:	Self-employed International Security Specialist, Former Deputy Director of the Institute of Military History, USSR/Russia (1985-1992), Former Chief of the Strategy Department of the Military Science Directorate of the Soviet General Staff
Location:	Cambridge, England
Interviewer:	John G. Hines
Date:	January 9, 1990
Language:	Russian
Prepared by:	John G. Hines, based on notes

I met General Kirshin for the first time at a conference on East-West security issues held at St. John's College, Cambridge University. At an informal meeting toward the end of the conference, General Kirshin and I became better acquainted and he answered some of my questions related to his work with General of the Army Makhmut Gareev and Marshal Nikolai Ogarkov.

I commented that Marshal Ogarkov impressed me as a very thoughtful, intelligent officer who had written a great deal of interesting articles and monographs. General Kirshin countered, almost dismissively, *"on ne pisal, on podpisyval"* (He didn't write these things, he signed them).

I asked then, that if Ogarkov had only signed these writings, who wrote them? Kirshin replied that the military theoretician and author behind Ogarkov for many years was General-Colonel Danilevich. Danilevich, he stressed, was a major military thinker and presence in the General Staff but not well known nor widely published. He was well known, however, within the General Staff. He said that Danilevich was retiring at the end of the year. I asked if Kirshin could arrange a meeting. He promised that he would.

Kirshin added that, even though he didn't always write his own material, Marshal Ogarkov was a very intelligent, active Chief of the General Staff who closely reviewed and critiqued everything that went out over his signature. When asked what happened that caused Ogarkov to be reassigned in September of 1984, Kirshin replied that Ogarkov was fired, personally, by Minister of Defense Marshal Ustinov. Kirshin, seemingly on the basis of detailed knowledge, added that the firing was carried out abruptly and with considerable rudeness. Ogarkov had gone on vacation to the Crimea in August of 1984. Ustinov telephoned Ogarkov in the middle of his vacation and informed him that he could extend his vacation because he had been fired [*uvolen*] and given a new assignment. Ogarkov returned immediately to Moscow to confront Ustinov who refused to change his decision and who assigned Ogarkov to the High Command of Forces of the Western TVD. He said that the events in August of 1984 represented the culmination of months and years of bad and deteriorating relations between Ustinov and Ogarkov.

I mentioned General Gareev, and Kirshin volunteered that Gareev was a serious thinker and scholar. Gareev, he said, wrote his own books and articles.

SUMMARY OF DISCUSSION

Subject: Gen.-Maj. (Ret.) Iurii A. Kirshin

Position: Self-employed International Security Specialist, Former Deputy Director of the Institute of Military History, USSR/Russia (1985-1992); Former Chief of the Strategy Department of the Military Science Directorate of the Soviet General Staff

Location: Moscow

Interviewer: John G. Hines

Date: June 26, 1993

Language: Russian

Prepared by: John G. Hines, based on notes

I mentioned to General Kirshin that I had heard that General Danilevich, as part of his responsibilities in the Main Operations Directorate of the General Staff, had been responsible for preparation of a major work on strategy for use, in the event of war, by the Armed Forces of the USSR. I mentioned that it was a large, three-volume book. General Kirshin corrected me. It was not a book but rather a *nastavlenie* (directive) of the General Staff for the conduct of strategic operations in the event of war. It was years in preparation under General Danilevich's direction and covered every aspect of strategy: intercontinental and theater, nuclear and conventional, in space and at sea. I asked if it might be possible to obtain a copy of the directive. Kirshin laughed and said that the entire set was top secret and protected by restricted access.

I asked about the relative knowledge of various general officers on questions of strategic nuclear doctrine—issues such as first strike and use of selected nuclear strikes. Kirshin asked me to be specific. I asked who would be better informed on such questions, General Varfolomei Korobushin or General Danilevich? Kirshin responded that General Korobushin, while technically very knowledgeable based on his many years in the Strategic Rocket Forces (SRF), would not necessarily know the context within which he was carrying out orders in training and exercises. The services, including the SRF, were not privy to the most sensitive details of scenarios and doctrinal questions which were developed and resolved among a relatively small group of officers within the Main Operations Directorate (GOU) of the General Staff. General Danilevich worked as special Assistant to the Chief of the Main Operations Directorate for over 15 years and worked in sensitive positions in the General Staff for 26 years. He had long been a major influence on questions of strategy and doctrine as witnessed by his responsibility for preparation of the most comprehensive document on strategy ever prepared by the Soviet General Staff. He believed that in the area of questions on strategy Danilevich would be among the best informed in the Soviet Armed Forces.

SUMMARY OF INTERVIEW

Subject: Robert W. Komer

Position: Advisor to the Secretary of Defense for NATO Affairs, 1977-1979; Under Secretary of Defense for Policy, 1979-1981

Location: Washington, D.C.

Interviewer: John G. Hines

Date/Time: October 22, 1991, 3:00-5:00 p.m.

Duration: 2 hours

Prepared By: Daniel Calingaert, based on notes

The Soviets, in Ambassador Komer's view, were reluctant to wage war because they were not sure that they would win. The more they developed their nuclear capabilities, the more aware they became of the destructiveness of nuclear war.

The Soviets thought that the United States had strategic superiority into the late 1970s. They had achieved parity and were striving for superiority. Mutually assured destruction was too sophisticated a concept for the Soviets. They built up their nuclear arsenal in order to enhance deterrence and also to gain leverage over the U.S. They spent a great deal on intelligence to copy U.S. nuclear weapons programs.

The U.S. government hoped that limited nuclear strikes would work but was unsure whether the USSR would back down if the U.S. fired nuclear warning shots. There were no hard indications of what the Soviet leaders thought.

The Soviets would try to wage war with conventional weapons, but if the U.S. were about to use nuclear arms, the USSR would preempt. The advantage gained from preemption would be large in a theater war.

The Soviets considered chemical weapons more useful than the U.S. did; nevertheless, they were deterred by U.S. stockpiles of CW.

SUMMARY OF INTERVIEW

Subject:	Gen.-Col. (Ret.) Varfolomei Vladimirovich Korobushin
Position:	Former Deputy Chief of Staff of Strategic Rocket Forces
Location:	Office of Vitalii Kataev, Former Central Committee Building, Moscow
Interviewer:	John G. Hines
Date/Time:	December 10, 1992
Duration:	Approx. 1 hr.
Language:	Russian
Prepared by:	Ellis Mishulovich, based on notes
Note:	Vitalii Kataev participated in the exchange.

Throughout the mid-1970s and up through the mid-1980s, I firmly believed that the U.S. was willing and capable of a first strike against us. NATO's official stance, which did not rule out this possibility, only affirmed my belief that this was possible. We were very much afraid of this possibility.

I was responsible for control systems for the Strategic Rocket Forces. Because our main fear was of a U.S. first strike, our main objective was to design a system that was capable of launching as soon as launches were detected. I believe that we reached this objective.

As for our side, I am deeply convinced that no one on our side was capable of initiating a first strike.

Q: Even at the theater level?

A: At the theater level, in case of a war in Europe, we would have crushed NATO forces in a conventional conflict, and NATO would have been forced to use nuclear weapons first.

Q: Our relations with Europe were always very complicated. In discussions with former Secretaries of Defense, it was clear to me that nuclear use would have been unlikely.

A: In the mid-1980s the U.S. held exercises in which it used three to five preventive selective nuclear strikes against the territory of the Soviet Union during an imaginary conflict in Europe. This was done in order to demonstrate U.S. willingness to use nuclear weapons if necessary. A conflict in Europe was possible.

We came closest to nuclear war during the Cuban crisis. This was Khrushchev's adventure and I did not agree with what we did there. But we in the military did our job. Marshal Biriuzov, the commander of Soviet forces in Cuba, informed us of the decision

to couple our existing nuclear warheads to our missiles. We had very few missiles at that time capable of reaching the U.S. There were some in Plesetsk. But in Cuba there were around 40 missiles, including 9 R-5[73] missiles with a 5,000 km range and carrying 1 megaton warheads. [*According to Danilevich, the missiles based in Cuba carried two types of warheads: 1.8 and 4.2 megatons.*] If it had come to war, we would have wiped out Europe, Africa, Israel, Turkey.

We never planned any selective strikes [*vybornye udary*]. As Grechko stated on more than one occasion, we would answer with full force to any use of nuclear weapons on the part of the Americans, no matter how limited. We never conducted any exercises using selective strikes, and I know because I participated in all our nuclear exercises. I suggested to Akhromeev that we conduct exercises using limited strikes, but he rejected this idea. We never considered using selective strikes even in theory. There were never documents or studies suggesting their use. Up until the 1970s we never even considered that the Americans might use limited strikes, so we did not consider how to respond to them. Limited nuclear use only occurred in American exercises in 1982-85.

Q: What led to fears in the early 1980s that a U.S. attack was imminent?

A: All U.S. actions pointed in this direction: the deployment of more Minuteman missiles, the deployment of MIRVs, the deployment of the L-492 flying command centers which used the recorded voice of the president to activate launch commands. These command centers began development in the early 1970s. In 1977 we developed a similar but better system which could order missile launches.

Q: Did the issuing of Presidential Directive No. 59 (PD-59)[74] influence General Staff perceptions?

A: Yes, but your PD-59 would have been futile. Right now we have a system in place which would automatically launch all missiles remaining in our arsenal even if every nuclear command center and all of our leaders were destroyed. This system, called the Dead Hand [*Mertvaia Ruka*] would have been triggered by a combination of light, radioactivity, and overpressure, and would cause several command rockets to be launched into orbit, from where they would send launch codes to all our remaining missiles. These special rockets were protected in special hardened silos with protection to 240 kg/cm^2 [3,412 psi]. Thus, there was no need for anyone to push a button. All of our ground-launched missiles are protected to over 100 kg/cm^2 [1,422 psi]. Your missiles are not as well protected. We assumed this was because they were meant to be first strike weapons.

Q: What about accidental triggering, by earthquakes, for example?

A: The system is not on. It is to be activated only during a crisis.

Kataev: We in the Central Committee's Defense Department considered the early 1980s to be a crisis period, a pre-wartime period. We organized night shifts so that there was always someone on duty in the Central Committee. When Pershing IIs were deployed, there appeared the question of what to do with them in case they were in

[73] Probably the missile NATO designated the SS-5, although other Soviet sources identified the SS-5 as the R-14. R-5 may be an abbreviated industrial designation for the same missile.

[74] Presidential Directive 59, a key White House statement, on U.S. nuclear strategy that was discussed by knowledgeable U.S. government officials in the U.S. press. Published accounts reinforced the concept of selective use of nuclear strikes under various scenarios and suggested early targeting of Soviet leadership and command and control in the event of Soviet aggression.

danger of falling into Warsaw Pact hands during a war. These missiles had to be launched. This made them extremely destabilizing. Furthermore, the only possible targets of these missiles was our leadership in Moscow because Pershings could not reach most of our missiles.

Korobushin: I offer one more piece of evidence that we had no intention of initiating a first strike. In case of a conventional attack against us, we always planned to destroy all our missiles and silos, rather than use them to launch missiles. This was standard operating procedure. We had on hand mines and destruction devices which we would have emplaced in our silos if they were ever in danger of being overrun.

Q: Were there also provisions for destroying mobile missiles in Europe?

Kataev [after come hesitation]: Yes. The same was planned for theater weapons.

Korobushin: I argued with Akhromeev that because of our nuclear shield, we no longer had any need for East Germany and that we needed to negotiate directly with the FRG, not with the U.S. regarding the withdrawal of all our troops from Germany. I argued that it did not matter how many men the Americans had in Europe. I did not care if they increased their forces in Germany. We had to get out. But Akhromeev was solidly against this kind of move.

Kataev: Shevardnadze and the Foreign Ministry argued that the number of U.S. troops and our troops in Europe should not be linked. However, the military and the political-military leadership were against it.

Korobushin: We were very afraid of the Americans. If we were not afraid, why would we need missiles and silos with ready times of 60 seconds!? Our EW satellites were able to detect a strategic missile attack upon launch, approximately 30 minutes from impact but we did not consider the attack confirmed until our radar confirmed the trajectory to target approximately 14 minutes prior to the first splash. Yet our control system was so well prepared that this was more than enough time to launch a retaliatory strike, even if it took the leadership over 10 minutes to make a decision. It took just 13 seconds to deliver the decision from Moscow to all of the launch sites in the Soviet Union. This shows that we were preparing only for a retaliatory-meeting strike [*otvetno-vstrechnyi udar*]. Why else would we have spent billions of rubles to design and build such a sophisticated command and control system?

Q: Was such a term as "deterrence" [*sderzhivanie*] ever used in regard to strategy?

A: Maybe among the leadership there was such a concept. But speaking as a military man I have to say that all of our calculations for force building were based on the scenario of the retaliatory-meeting strike, not on the idea of deterrence. We calculated that a 40 - 45% destruction of the U.S. GDP would be enough to be considered unacceptable damage. Likewise, we know that the Americans calculated that 30 - 40% destruction of our GDP would be considered unacceptable.

Our early missile, the R-4,[75] was not capable of a retaliatory-meeting strike. It had a ready time of 20 minutes. It was only in the mid-1970s that we had acquired a generation of missiles with retaliatory-meeting capability.

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[75] Probably the liquid-fueled designated, "SS-7" by NATO.

SUMMARY OF INTERVIEW

Subject:	Gen.-Lt. (Ret.) Nikolai Vasil'evich Kravets
Position:	Currently Deputy Director of Joint Stock Company "ASKOND"; 30 years of experience in the Strategic Rocket Forces working on force design, systems acquisition, testing and evaluation, and final acceptance
Location:	Chartered bus en route from Moscow to NPO NIIKhimMash outside Zagorsk
Interviewer:	John G. Hines
Date/Time:	June 22, 1993, 10:30 a.m.
Language:	Russian
Prepared by:	John G. Hines, based on notes

Q: Were you aware of a meeting held in July 1969 in the hills above Yalta and attended by Brezhnev and virtually all senior industrial directors and military officers involved in the force development process?

A: Yes. I did not attend the meeting. We (the SRF) were represented by Marshal of the Soviet Union (MSU) Krylov, CINC of the SRF, but I am very much aware of the meeting because I had staff responsibility after the meeting for working out how to implement in the SRF decisions taken at Yalta in July 1969. The 1969 Yalta meeting *was* attended by the entire senior military-industrial leadership to include all Politburo members with any interest in force development [*voennoe stroitel'stvo*]. The meeting was a very special meeting of the Defense Council (which normally met every 4 months or so) whose purpose was to establish a fifteen-year plan, or at least guidelines, for development of the Armed Forces of the USSR. The meeting was called specifically to get arms building under some kind of central direction. This was driven by the realization, at the highest levels, that arms building in the Soviet Armed Forces had become an unguided process [*neupravliaemyi protsess*], with each service [*vid*] pushing for its own systems and for as large a part of force authorization as possible uncontrolled by any central concept, and such a concept and overall plan was to be established clearly by the Defense Council at the Yalta meeting.

[General Kravets added that he was personally very familiar with the process in the missile-building industries. He complained, for example, that the general designers [*glavnye konstruktory*] and military industrialists created a complicated and wasteful situation because, in the continuous aggressive internal competition among various designers and industrialists, each participant ultimately had his own way. That is to say, competing missile systems would be developed and tested and all variants, usually two but sometimes more, would be accepted for production and put into the forces. This led to a situation where the USSR had 12 types of ICBMs, which created a situation of great waste of resources, time, and research and development effort for the Soviet Union. "The U.S.," he said admiringly, "has only three types of ICBM, a more rational arsenal."]

Q: When did the mobile ICBM program begin?

A: We started by developing operational-tactical mobile missiles in 1964 in Chelomei's design bureau. Iangel' tried to put together a longer range mobile missile by combining a liquid-fueled first stage and a solid-fueled second stage. He tested it in 1968 with terrible results—there was a massive explosion. The program was canceled, I believe in 1969. Another mobile ICBM program was initiated in 1968 as we improved our competence with solid fuel.

Q: Were any of these systems what NATO called the SS-16, or some other designation?

A: No. NATO never had a designation for these two systems. They were very closely guarded programs that we hid successfully from many, certainly from NATO.

Q: Why did the USSR invest in intercontinental mobile missile programs?

A: Because of Minuteman. You had a solid-fuel missile with a 10,000 km range. It was responsive, simple, and accurate. We had nothing like that.

The second reason is that our silos were hardened to only 2 kg/cm^2 [28 psi] and yours were hardened to 20 kg/cm^2 [284 psi]. Our silos weren't improved until somewhat later into the 1970s.

SUMMARY OF INTERVIEW

Subject:	Gen.-Col. Gregorii Fedorovich Krivosheev
Position:	Deputy Chief of the General Staff, Chief of the Main Directorate for Organization and Mobilization
Location:	Room 8074, (General Krivosheev's Office) General Staff Building, Moscow, USSR
Interviewer:	John G. Hines
Date/Time:	December 20, 1990, 11:00 a.m.-1:00 p.m.
Duration:	Two hours
Language:	Russian

"General Krivosheev's Proposed Agenda for U.S. Visit"

The General revealed an interest in:

Issues of force building, force organization, and force manning. Of special interest was the recruiting and maintenance of an all-volunteer force and the integration of reserve components into the active force.

He discussed issues of the industrial mobilization potential of the state. He realized that this may be a sensitive area but that he was prepared to discuss it.

A range of questions about recent events in Europe and the results of recently completed arms control talks. The general seemed to feel that it was useful to explain to us in person the impact of recent events on the whole process of force planning in the Soviet Union. His presentation of these questions was amicable but firm:

The basis for NATO continuing to identify the USSR as the main threat. He pointed out that the Warsaw Pact collapsed several months ago and that the strategic structure in Europe had changed markedly. He explained that this was important because the General Staff must take seriously this pronouncement by such a powerful coalition located on the Soviet doorstep in Europe.

Perceived inequities of the CFE agreement - He invoked Supreme Soviet deputies reactions to bolster his case. Subissues included:

Asymmetrical cuts - He clearly felt CFE was unfair in the distribution of force reductions. He cited 80 NATO tanks to 8,000 Soviet as an example.

Destruction of old equipment first by both sides - He indicated that he was hearing complaints from the U.S. about this and claimed to be puzzled because the U.S. was doing the same thing.

New equipment east of the Urals and in the U.S. - He again claimed that the U.S. was saving and hiding equipment in the U.S. and elsewhere and was excessively self-righteous on this question.

The U.S. Navy's evasion of arms control constraints - He stated that the U.S. Navy has at least three times the combat potential of the Soviet Navy against a Soviet threat that is diminishing measurably.

Continued concern about Germany - He seemed genuinely to fear German irredentism in Poland and even Kaliningrad. His greatest concern was that they would get back former German lands without war because of weakening European and American resolve vis-à-vis Germany.

He indicated that many of these questions, especially the German question, were far too sensitive to put in an official written agenda. Consistent with this attitude, he was concerned that the visit be informal and unofficial and not widely advertised. He asked for an invitation from the Deputy Secretary of Defense to MoD Iazov but he did not want any publicity for his visit. General Filatov told me later that he was especially concerned about European reactions.

Despite his preference for a quiet visit, the General volunteered to make a presentation at "the institute" where we prepare our officers for planning industrial and force mobilization and to give a talk in the Pentagon.

General Krivosheev and General Filatov both made it clear that participation in the visit by general officers from the Center for Operational-Strategic Research and from his own directorate was acceptable but not welcome. Filatov promised a much more open General Krivosheev if he were not accompanied by younger generals and officers.

"Krivosheev on Future Force Manning Option"

General Krivosheev explained that the USSR is still in a demographic hole [*iama*] with respect to 18 - 19 year old males. Recovery is expected by 1994-1995. Many of his solutions are affected by this situation.

He indicated that he planned to move toward a professional contract force incrementally and that the process would be monitored to help to determine the nature and direction of subsequent changes. As a first step toward changing force manning practices he plans to:

Draft young men for 6 months of specialist training, e.g., equipment operator, PVO [Air Defense] specialists, etc. At the end of the 6-months training period, the soldier would be offered two options:

1. Sign a contract for 2 (or more) years additional service at better pay

2. Or serve out the remaining 18 months service without a contract at a conscript salary level

By 1994 the total length of conscript service would be reduced to 18 months (in anticipation of getting well demographically). By 1994-95, he expects the Armed Forces to be 50% professional. (He believes it is 30% professional today, taking into account all officers, warrant officers, and extended-service enlisted men.) He will augment the professional force by accepting a larger number of women into the Armed Forces than is now the case. Based on experience with a 50 percent professional force, decisions on further changes will be taken.

"Plans for Reducing Force Levels"

General Krivosheev stated that:

The current strength of the Armed Forces is 3.8 million men. This number includes:

MVD (Internal Security), Civil Defense Forces, construction troops, DOSAAF,[76] and what the General called the real military—the combat, combat support and combat service support troops who would actually defend the Soviet state.

By May 1991, the Armed Forces will be reduced to 3.6 million men. By the year 2000, strength will be at 3.0 - 3.2 million.

Forces are being reduced through attrition, early retirement, and, an area very important to him, elimination from Armed Forces accountability of civil defense and construction troops, DOSAAF personnel, and others. General Krivosheev explained that he was charged, for example, with the members of "hunting clubs" who made no real contribution to the readiness of the Armed Forces.

The General stressed that the present figure 3.6 - 3.8 million far exceeds the number of real soldiers who would actually defend the Soviet state. He almost gave me the real number, looked askance at the silent Soviet interpreter by my side, and said that the actual strength was restricted. I proposed that the figure might be approximately 2.6 million and he responded that I was probably "right," or at least very close.

The General spent a great deal of time venting his frustration at the proliferation of civilian "defense specialists" such as Georgii Arbatov who had the temerity to publish the "real" strength of the Soviet Armed Forces in foreign journals. The numbers, he said, were absolutely incorrect but that he was unable to correct him openly. I suggested to him that it might improve the quality of the defense debate if the General Staff were to find a way to participate more openly and actively. He responded that there was movement in that direction already. He then cited the fact that I was in the General Staff building in his office as indicative of major changes in the MoD's approach to dealing with "outsiders." He said that my visit was unprecedented and that he had received

[76] DOSAAF — *Dobrovol'noe obshchestvo sodeistviia armii, aviatsii i flotu SSSR* — The Voluntary Society for Cooperation with the Army, Aviation, and Navy of the USSR. DOSAAF was a quasi-military organization embedded in the Soviet educational system for the purpose of preparing Soviet youth for military service or for support of those who did serve in the military. It was not generally regarded as voluntary by Soviet youth.

permission from Iazov himself to see me in his office. This event, he offered, reflected a new type of Soviet-U.S. relationship based on dialogue which he fully supported.

SUMMARY OF INTERVIEW

Subject:	Colonel Petr M. Lapunov
Position:	A director of a department for force analysis, Center for Operational-Strategic Research (TsOSI) General Staff, Russian Federation
Location:	Moscow
Interviewer:	John G. Hines
Date/Time:	May 5, 1991, 10:00 a.m.
Duration:	3.5 hours
Language:	Russian
Prepared by:	John G. Hines, based on notes

"Purpose of Interview"

• To review with the interview subject his expectations about the course of military reform from the perspective of the General Staff.

• To discuss the influence of the development of new weaponry on future force structure.

• To solicit his views on the likely outcome of the struggle for control over force development and procurement between the Defense Ministry and the Military Industries/Design Bureaus.

• To discuss the political-military games and role playing planned for the June 1991 Joint Simulation conference to be held in Garmisch, Germany.

"Military Reform"

Contrary to comments by others I interviewed in April and May, the interviewee said with considerable conviction and authority that the military reform plan receiving primary attention within the General Staff did not differ substantially from the one published by *Military Thought* [*Voennaia mysl'*] in November of last year. The principles on which the work is based remained unchanged. These include:

• One Army—The Soviet Armed Forces must function as an integrated organization at the federal level.

• Mixed conscript and professional (contract) force—The General Staff reform plan does not even hold out as a goal eventual total professionalization of the Army. According to the General Staff plan, conscription will be preserved as one of the chief means for manning the Soviet Armed Forces "over the next 10 to 15 years."

• The Armed Forces must be adequate to counter, but not to exceed, the scale of the threat to the Soviet Union.

• There must be a reasonable balance between research and development and force procurement (overcoming previous excesses on the side of procurement).

The issue of conscription is key for military planners. The interviewee conveyed to me the dominant General Staff justification for retention, indefinitely, of a conscription system on some scale. The Soviet Union, he explained, is surrounded by potentially hostile states that individually or collectively could some day threaten the USSR. As a consequence, the Soviets could be forced into a war at a time and on a scale not of their choosing. To hedge against this unfortunate possibility, the Soviet Armed Forces must maintain a reserve mobilization base on which to expand the Armed Forces in the event of a national emergency. In contrast, according to the General Staff argument, the U.S. sits behind two oceans and very secure land borders that virtually assure war will not come to the U.S. The U.S. can choose the wars in which it wants to become involved in on terms that do not seriously threaten the basic security of the state.

Conscription, in turn, is closely tied to the relative level of centralization of the future Soviet Armed Forces. According to the interviewee, the nine republics (all except Lithuania, Latvia, Estonia, Georgia, Moldova, and Armenia) that signed a preliminary agreement on the nature of the future union with the Center on April 23, agreed to the concept of "one (central) army" and continuation of conscription. The republics would retain police forces appropriate for maintenance of security within each republic. The key determinant of the nature of republic-level forces would be the capabilities of the weapons and equipment assigned. Republic-level forces would be restricted in their equipment to armored troop transport vehicles (BTRs and modified BMPs) with heavy machine guns. No republic would be allowed artillery, tanks, combat helicopters, or high-performance combat aircraft.

The key concession the republics have gained from the center thus far, according to the interview subject, it is the right of each republic to determine how it will generate the conscripts levied by the Center. Laws on exemptions, age limits, etc., governing each citizen's vulnerability to conscription would be determined at the republic level. The interviewee indicated that concessions would not be made on extraterritoriality since insistence that each soldier must be allowed to serve in his native republic would eliminate, in effect, the possibility of truly centralized, unified Armed Forces.

The interview subject indicated that the size and structure of the Armed Forces would be responsive to any new arms control or general political agreements reached by the Soviet Union and other major powers such as the U.S. At the same time, he indicated that considerations beyond arms control were tending to strongly influence future force planning. For example, internally imposed budget and force sizing constraints led him to predict that the Soviet Ground Forces west of the Urals would be limited to 52 divisions (with an upper limit of 58 divisions). Included in the 52 divisions would be 16 to 18 tank divisions and "several" machine-gun artillery divisions. The machine-gun artillery divisions were considered to be limited in their operational mobility and would be assigned to locations where relatively static defense was expected. The interviewee identified mountainous regions of the Transcaucasia, the Far North, and Far East as probable deployment sites for such divisions. He commented that differences between tank and combined-arms divisions would be maintained but that the difference in the number of tanks in each type division would be relatively small.

"The Military-Industrial Complex (VPK), the Ministry of Defense, and the General Staff"

The interviewee confirmed that the Ministry of Defense is fighting for control of the entire military budget to include military procurement. He stated that to date the MoD has controlled what he called the artificial budget of approximately R20 billion representing salary, quarters, and "housekeeping" expenses for the Armed Forces. The MoD is now striving to wrest control over military research and development and procurement from the military-industrial complex.

To make clear the significance of MoD's current struggle, the interviewee explained how the weapons procurement process has worked in the past. Force development was carried out within the military-industrial complex (VPK), specifically the major design bureaus, in a process that operated essentially independently from the Defense Ministry. The MoD, moreover, had relatively little control over either the R&D or production processes. The VPK system was optimized for continuity of production rather than for innovation or force rationalization based on operational requirements. The design bureaus and military industries were rewarded for plan fulfillment and production stability rather than for conformance to operational demands generated by the General Staff or even the services. There were absolutely no incentives for the VPK to explore radically new designs or technological departures that involved high risk of failure or production delays, which were to be avoided at all costs. The military (MoD, General Staff, Services) were unable to exert any significant pressure to counter this extremely conservative, self-serving military production complex.

The interviewee cited several indicators to bolster his argument. He claimed that the Ground Forces, the service with which he has the most experience, has been forced over the years to take 1,000s of tanks that were neither ordered nor required. Moreover, the Ground Forces were issued three to four variants of various weapons rather than a single, carefully designed and produced weapon of each type because each design bureau produced its own variant to ensure continuity of production regardless of the needs of the service for which it was nominally produced. He added, angrily and resentfully by way of example, that the Soviet system couldn't produce an "MX" tank in which designers disappeared for a decade and began with a "blank sheet" to produce a tank that captured the most advanced technologies available. The Soviet ground forces, in contrast, received large numbers of marginally improved, unnecessary different tanks with essentially the same capabilities.

"Joint Simulation Political-Military Games Conducted by the European Center for International Security"

I mentioned to the interview subject Albrecht von Muller's interest in having the "red" side work out in some detail its estimates of probable "blue" threat assessments after completion of CFE implementation. The interviewee reacted by rejecting the idea of even continuing to consider scenarios built upon the assumption of possible conflict in Central Europe. He advocated moving on to other types of considerations of common security requirements and abandonment of such "useless" exercises.

SUMMARY OF INTERVIEW

Subject: Andrew W. Marshall

Position: Director, OSD Net Assessment, 1972-present

Location: OSD Net Assessment, The Pentagon

Interviewer: John G. Hines

Date/Time: October 22, 1991, 8:30 a.m.

Duration: 3 hours

Prepared by: Daniel Calingaert, based on notes

The view held by Henry Kissinger, certainly in the late 1960s and through the 1970s, was that the Soviets were ambitious expansionists whose ideology prevented them from acting like a normal country. The United States had to reach the best deal possible with the USSR. Kissinger was concerned about the Soviet Union converting its increased military power into political influence.

In the prevailing view under President Carter, the USSR was not anxious for war, but if war broke out, the Soviet military would be serious about warfighting. Soviet forces had made provisions for conducting operations in a nuclear war. For example, as part of the targeting review (run by Mr. Marshall and Walter Slocombe) connected to PD-59,[77] DIA found extensive facilities built to protect the Soviet leadership, which reinforced the warfighting posture of the USSR.

PD-59 was developed to reinforce deterrence by making it clear to the Soviet leadership that they would not escape destruction in any exchange. The objective was to clarify and personalize somewhat the danger of warfare and nuclear use to Soviet decision makers. Publication of selected elements of the contents of PD-59 was an integral part of the strategy, and Secretary Brown directed and personally cleared certain articles and discussions of the directive to ensure that Soviet leaders were made aware of some of its most important aspects.

The Carter Administration was split over whether or not American accommodation would encourage moderation on the part of the Soviet Union. Harold Brown observed some relation between U.S. moves and Soviet actions, but he expected the Soviet arms buildup to persist even if U.S. modernization stopped. His conclusion was based partly on the Soviet investment in power projection capabilities and the Soviet weapons modernization rate which exceeded that of the U.S.

During the 1960s and 1970s, the United States did not have a policy for forcing the Soviets to spend their way into economic defeat. In fact, the Joint Chiefs were worried

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[77] Presidential Directive 59, a key White House statement, on U.S. nuclear strategy that was discussed by knowledgeable U.S. government officials in the U.S. press. Published accounts reinforced the concept of selective use of nuclear strikes under various scenarios and suggested early targeting of Soviet leadership and command and control in the event of Soviet aggression.

that the USSR could always spend more than the U.S. because the Soviet Armed Forces did not face the sort of budget constraints placed on the U.S. military.

The first Reagan Administration undertook a large effort to catch up with the Soviets in strategic military power. Senior members of the administration intended to make up for the previous years of reduced U.S. defense expenditures.

President Reagan believed that the Soviet economy was in trouble. In contrast, Casper Weinberger refused to believe in Soviet weakness.

SUMMARY OF INTERVIEW

Subject: Rod McDaniel

Position: NSC Staff Member, 1985-1987

Location: Mr. McDaniel's apartment, Crystal City, VA

Interviewer: John G. Hines

Date/Time: November 12, 1991, 3:30 p.m.

Duration: 2 hours

Prepared by: Daniel Calingaert

Mr. McDaniel was involved in a strategic planning project for the Navy in 1983-85. He later served on the NSC Staff, enjoying in 1986 much personal access to President Reagan.

President Reagan did not spend much time thinking about the Soviet military threat. He simply wanted to rebuild U.S. strength and to stand firm until the Soviet leaders were ready to negotiate. Defense Secretary Weinberger had no strong views aside from caution in using the U.S. Armed Forces. Mr. McDaniel described the views prevalent among the Joint Chiefs.

The Soviet military was risk averse. It was eager not to fight but also not to lose if war broke out. President Reagan felt that the USSR accepted his view that nuclear war cannot be won and should not be fought. By the NSC's assessment, the Soviets made mischief in the Third World but did not seriously contemplate the use of force against the U.S. or NATO. They were, however, dangerous when pushed into a corner.

The Soviet Union believed in deterrence. In fact, the United States was deterred by Soviet nuclear forces. The USSR did not consider nuclear weapons militarily useful.

President Reagan thought that the Soviet Union rejected strategic parity, but after meeting Gorbachev, he changed his mind. He believed that the Soviet leadership wanted a first-strike potential, not to use militarily but instead to surpass American capabilities. Soviet force building was influenced by U.S. weapons programs.

No one expected the USSR to absorb a large U.S. nuclear strike without response. The Soviets were worried about being trapped by their lack of response time. They would probably launch on tactical warning and they might even preempt strategically.

The Soviet Union clearly preferred to keep a central war conventional. The U.S. military always assumed that if nuclear war broke out, NATO would be the side to go first. The USSR probably did not have limited nuclear options. In the view of the Joint Chiefs, the Soviets probably would retaliate against NATO's first use with 100s of nuclear weapons, and they would escalate rapidly from theater nuclear exchanges to global nuclear war.

Given the large Soviet stockpiles of chemical weapons and the frequent Soviet exercises with CW, the USSR was likely to employ CW and to have no particular restraints on CW use.

SUMMARY OF NARRATIVE

Subject: Iu. A. Mozzhorin

Position: For 30 years General Director of TsNIIMash, the main research and design institute of the Ministry of General Machine Building (MOM), responsible for missile production

Location: Institute for Defense Studies (INOBIS), Moscow

Date: April 1993[78]

Duration: Approx. 1.5 hrs. total

Language: Russian

Prepared by: Ellis Mishulovich, based on audio cassette tape

A clear, dependable strategy for the maintenance of peace, even in conditions of large nuclear arsenals on both sides, was not always understood by the leading military commanders, veterans of WWII. Based on their experience of the preemptive attack, utilizing massive armed formations, they viewed the doctrine of the retaliatory strike as a passive anticipation of attack and a repetition of 1941, which had greatly complicated the ensuing military operations, and had led to great losses which could have been avoided. Although this view did not win out in the end, it was reflected in specific technical characteristics of the missile designs being developed during a certain period.

The debate regarding the size of our warheads illustrates this lack of understanding. Some commanders demanded the biggest possible warheads, regardless of the complications to missile design, starting mass (launch weight), etc. I often spoke about the advantages of introducing small missiles with warheads of limited size. They would invariably reply, "What are you talking about? They hit us with megatons and we hit back with peanuts?" When we tested a 50 megaton bomb they suggested that we develop a missile with a 50 - 100 megaton warhead. It took a lot of effort to prove the uselessness of this idea, and instead we got the Proton missile.

It was equally difficult for the military to understand the idea of the single-missile silo designed for a single missile launch. "What kind of cannon is this, with only one shot in it? We have to have three to four missiles. Otherwise it is too expensive," they objected. As a result we built group silos with four launch tubes. The evolution of this idea was quite interesting. The reserve missiles needed to be protected from the effects of the shock wave. Horizontal surface storage sites were large and expensive, while the silos were considerably better. Silos eliminated the need to move missiles from one launcher to another. Later it became much easier to demonstrate the expediency of single silo launches.

The question of the need to create silos with enhanced protection against attack, as a result of increased accuracy of the Minuteman and Trident missiles employing MIRVs,[79]

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[78] INOBIS carried out the interviews resulting in this narrative at various times during the month of April 1993.

[79] MIRV — Multiple Independently Targetable Reentry Vehicle — Each warhead on a MIRV is guided independently to a specific target once released by its missile "bus."

was also difficult. My Institute was practically alone in proposing this against the objections of the leadership of the Ministry of Defense and the Ministry of General Machine Building, and eventually won over Brezhnev, Ustinov, and Smirnov. This was known as the "debate of the century," in which the views of the Ministry of Defense, and in particular, of the Minister of Defense A. Grechko, were clearly formulated regarding the question of warfighting strategy. This should be described in detail.

After a series of technical delays, the resolution on strategic nuclear missiles for 1966 went into the planning and implementation stage, having satisfied both the customers and the producers. Naturally, the arguments of my Institute regarding the necessity of building missile silos with a high degree of protection, and the upgrading of protection on existing ones, did not meet with support from either the Ministry of Defense or of the Ministry of General Machine Building. It violated the established process of force building. There were Institute reports on the matter. There were sessions of the Scientific-Technical Council, but the decision was not taken. Certain arguments were developed justifying the rejection of these proposals: lack of experimental data on the spread of shock waves in soils and their effects on underground constructions; cost too high; the same money could be spent on production of more missile complexes, thereby increasing the chances of survivability through greater numbers. General Designer Chelomei put forward some data showing that the problem of the survivability of missiles could be solved more effectively through the creation of an ABM system. Some high-ranking military people began more and more assertively to promote the idea that we would launch prior to the arrival of the attacking side's missiles; therefore, silo protection was not critically important. This idea was disturbing. In 1966 D. F. Ustinov, the secretary of the Central Committee of the CPSU, convened a high level meeting of the leadership of the Ministry of Defense and the Ministry of General Machine Building. I asked my minister to get me an invitation to attend. D. F. Ustinov, opening the proceedings, said that a proposal had been made to create hardened silos and wanted to know whether a mistake had not been made in keeping the existing design. The response was unanimous: "Not at all, Dmitrii Fedorovich, there's been no mistake." The Deputy Minister of Defense for production reported that the savings had allowed the production of 72 extra missiles. I could not control myself and quipped, "If you had built them of wood, you could have built much more than that." Ustinov looked at me sternly, but did not say anything. Some of the military again expressed the view that they will employ the retaliatory-meeting strike and will clear the silos in time. I jumped into the conversation of my superiors uninvited one more time, saying, "Dmitrii Fedorovich, this is not realistic. We discuss considerably less complicated questions for hours. Do you really think it is possible in 10 minutes to make a decision based on the report of a general on duty looking at a radar screen, to push the button that may take millions of lives?" Everyone was silent in response to this second tactless remark. As a result of the discussion it was decided to work out in detail the designs for hardened silos and hardening existing ones. The final decision would be taken pending the design review.

After 1 1/2 years the matter had not advanced much further, as there was no one particularly interested person, and a number of technical and political stumbling blocks had also come up. Furthermore, a new divisive matter having to do with options to modernize aging missiles had come up. I felt that the whole matter was wilting. Grechko announced in my presence, "We will not repeat the mistakes of 1941 and will not sit and wait until we are hit over the head, as some are proposing." I decided to raise the question of military doctrine with the General Secretary, L. I. Brezhnev. The attempt to discuss the matter with the leadership of the SRF was not supported. I was told not to bother about matters that did not concern me. They told me, "Your business is to build good missiles, and our business is to use them." I tried to continue the conversation by saying, "There is no such thing as a 'good' missile, as such, just as there is no such thing

as a 'good' airplane, as such. There are good interceptors, good attack planes, good bombers, etc. The missile designer has to know whether the missile he is designing is intended for a retaliatory strike or a preemptive strike."

In June of 1968 the Ministry of Defense held a military-technical council on the expediency of building hardened silos and ways to modernize missiles. It was chaired by the Deputy Minister of Defense S. L. Sokolov. Grechko also was present, as were General Designer Chelomei, other designers-integrators, representatives of the Ministry of General Machine Building, and Ministry of Defense specialists. Everyone who spoke unanimously rejected the proposal to upgrade the protection on existing silos and those under construction. Silo hardening was postponed, along with the creation of a new generation of missiles. I was the only one in favor of the proposal. During my 15-minute presentation the Minster of Defense stood up and cut me off by saying, "Don't scare us, we will not act according to your scheme." I replied as politely as possible: "We have thoroughly worked out and modeled the results of preventive and retaliatory-meeting strikes. The war cannot be won. I don't have time to give you the results of the modeling effort. Please, invite me to come in and I will give you the detailed results of all our materials." Without sitting down, he pointed to his watch, letting the chairman know that it was time to quit. I objected that in the preceding two and a half hours of talks only one side of the issue had been presented, and that I was the only opponent on this super-important question. I was allowed to finish my presentation, but it had no impact on the decision of the council. Only G. N. Pashkov, Deputy Chairman of the VPK, supported me. After the conclusion of the council I said to Sokolov, "I am defending the interests of the Ministry of Defense, but the Ministry is so sharply critical of me." To which he replied, quite amicably, "We cannot doubt the General Designer. The Design Bureau stands behind him." "But 1,000s of workers of the Institute stand behind me. Such complicated questions should not be decided by a vote of the Council, but by examination by objective experts," was all I could do to register my objection.

RECORD OF INTERVIEW

Subject: Iu. A. Mozzhorin

Position: For 30 years General Director of TsNIIMash, the main research and design institute of the Ministry of General Machine Building (MOM), responsible for missile production

Location: Office of Vitalii Kataev, Mayor's Building, Moscow

Interviewer: John G. Hines

Date: April 14, 1993

Duration: Approx. 1 hour total

Language: Russian

Prepared by: Ellis Mishulovich, based on audio cassette tape, notes

Q: Why was the military not concerned about protecting its missiles from nuclear attack?

A: The Minuteman missile represented a qualitative leap in accuracy and other missile design characteristics. Many in the military argued that investment should go into improving Soviet missiles, rather than silos. There were two sides to the debate. One side was taken by aggressive wartime leaders who wanted at all costs to avoid a 1941-style surprise attack. On the other side were those who believed in the retaliatory strike. While the U.S. protected its strategic forces, the Soviets sought superiority in numbers. I opposed this philosophy, warning that it would lead to an arms race. Eventually the Soviets acquired very good silo protection, including protection against EMP,[80] neutrons, gamma radiation, and other blast effects.

Q: To what extent did the military rely on a rapid political decision to launch missiles?

A: This was the most difficult problem [with the retaliatory-meeting strike]. No launches could be made without a political decision. I argued in favor of giving the SRF the physical quick reaction capability, but not the "practical" capability to launch.

Q: Was the concept of deterrence ever adopted?

A: Yes. Brezhnev supported it, despite the opposition of Grechko and others. Deterrence was officially adopted as doctrine during the July 1969 meeting [of the Defense Council] in Yalta. This meeting took place approximately on July 23-25, 1969. At this meeting it was decided to manufacture invulnerable missiles, rather than many vulnerable ones.

Q: Did the Soviet Union test the vulnerability of silos to air bursts vs. ground bursts?

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[80] EMP — Electro-Magnetic Pulse.

A: Yes, silo stability was modeled and tested. As a result of this testing silos were eventually overprotected and made virtually invulnerable to both ground bursts and air bursts. We assumed Americans did as much or more of similar kinds of tests as Soviets. We would have communicated to Americans the survivability of Soviet missiles if this was deemed necessary in a conflict situation.

Other points:

- The Soviets thought the U.S. was far ahead of them in testing "Super-EMP" weapons.

- After approximately 1965, when the Soviet Union had obtained the "long arm", i.e., ICBMs in sufficient numbers, the Soviets did not seriously expect a war and thought it would not happen.

SUMMARY OF INTERVIEW

Subject: Vladimir Rubanov

Position: Special adviser to the President of the Russian Federation; former head of directorate in the Aviation Ministry

Location: Moscow

Interviewer: John G. Hines

Date: May 6, 1991

Prepared by: John G. Hines, based on notes

The military-industrial complex (VPK)[81] had three parts:

1. Defense industry and design bureaus

2. Military-academic complex (e.g., Institute of Main Designers) that integrated civilians fully into the military system

3. Military-ideological complex made up of political workers who drove the analyses, scenarios, and assessments

If any testing demonstrated military potential then it fell under the military sphere, was stamped secret, and any resulting products would be controlled by the military. Intellectual property tended to get classified if it had any military application. There was no sense of intellectual property that did not belong to the state. Information was trading material. Military industries used secrecy to control all possible technologies. GosPlan planned force development from what the design bureaus came up with. The Finance Ministry set up payments, and the MoD took delivery. The Defense Council was a purely military organization with no support structure. It was an instrument of the VPK, not of the President. The MoD had no real money or influence.

Though political reforms in 1985-90 were deep, actual force building processes did not change much. The VPK could protect itself from the President, Shevardnadze, and others who wanted to cut force building.

The ideal organization for center-republic relations would consist of: (1) a Federal Security Council; (2) a College of MoDs of the republics; and (3) each republic has its own concept of security. All spheres (military-technological, military-economic, and military-political) should be controlled by political leaders. The military should only control troops. Decisions should be based on consensus among all of the republics. Basing and housing should be responsibilities of the republics. The Ukraine should be a nuclear-free zone. The center needs a single security system and economy. Military power should not exceed but should reflect economic power.

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[81] VPK — *Voennaia Promyshlenaia Kommissiia* — (Military Industrial Commission).

RECORD OF INTERVIEW

Subject: James R. Schlesinger

Position: Former CIA Director (1973); Secretary of Defense (1973-1975)

Location: Shearson Lehman Hutton, 1627 Eye Street, NW, Washington, D.C.

Interviewer: John G. Hines

Date/Time: October 29, 1991, 11:30 a.m.

Duration: 1.5 hours

Prepared by: Daniel Calingaert, based on notes

Schlesinger had formed his ideas about the Soviet Union while at RAND and especially in connection with his work when he was running the NU-OPTS[82] project at RAND in the 1960s. He criticized the analysts at Langley for working from documents and believing Soviet pronouncements. In their relatively uncritical overreliance on Soviet writings and statements, they failed to consider adequately the motivation driving much of what was written and said about warfare in the USSR.

Soviet leaders did believe in deterrence. They believed that the U.S. would not attack without provocation, and they hoped to deter any use of U.S. nuclear arms. In Schlesinger's view, Soviet talk of winning a nuclear war was pep talk that Soviet leaders may or may not have believed. There was a need to communicate to Brezhnev that a nuclear war would hurt both his country's and his personal interests.

Schlesinger did not expect the Soviet Union to escalate from a small-scale American use of tactical nuclear weapons (TNW) along the flanks (for instance, in Iran) to a global nuclear war, but he thought that the USSR might expand a total theater war (in Europe) into a global nuclear war. He hoped that if the U.S. reacted to a conventional Soviet attack with selective nuclear strikes, then the USSR would have refrained from escalating to global use.

Under a certain set of circumstances, the Soviet Union might strike preemptively, according to Schlesinger. The Soviets would not start a conventional war if they were convinced that we would go nuclear. However, if the Soviets miscalculated and thought that we would not respond with nuclear weapons to a "Soviet conventional probe," and if they subsequently learned that we were about to go nuclear, they probably would preempt against our nuclear stockpile in Europe but probably not against the continental U.S. The USSR would have used chemical weapons in a total war and would have employed CW (chemical weapons) before resorting to nuclear arms.

Schlesinger became convinced, in the course of his work of several years at RAND, that the Soviets' strategic objective with respect to the West was to weaken and, ultimately, to separate U.S. strategic nuclear systems from the defense of Europe. The objective was delinkage of U.S. central systems from Europe-based nuclear weapons and,

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[82] Nuclear Options.

from Europe altogether. He devoted a great deal of time to thinking about how to counter and defeat the achievement of that objective and settled on the approach that the U.S. should adopt an explicit and credible declaratory policy of limited nuclear options (LNO). The essence of LNO lay in U.S. declaratory commitment to the employment of selected nuclear strikes against a Soviet/Warsaw Pact conventional attack on Western Europe. It was at the time, above all, a deterrence strategy whose success depended primarily on the degree to which Soviet leaders believed the U.S. was willing and able to respond with selective nuclear strikes to conventional attack. There was a need to communicate to Brezhnev that nuclear war was possible and that such a war would hurt both his country's and his personal interests.

In the 1960s, Secretary of Defense McNamara's "body language" told the Soviets that our tactical nuclear forces in Europe were separate from our strategic arsenal, that TNW would be used to defend Western Europe but U.S. strategic systems would not. The Soviets reacted to LNO with horror and shock. LNO was designed to blow away the idea of MAD (Mutually Assured Destruction *and* mutually assured deterrence) and to reestablish the linkage of the U.S. deterrent in Europe to the strategic arsenal.

The Soviets began to think, after the Berlin crisis, that a conventional phase was possible. They later had come to hope that in practice we would not initiate a nuclear war. LNO diminished Soviet confidence in the possibility of avoiding U.S. first use.

The Soviets had great doubts about the possibility of limiting a nuclear war. Schlesinger did not care whether the Soviets believed in LNO, so long as they believed that the U.S. was convinced of the feasibility of LNO. Even if the Soviets refused to believe that a nuclear war could be limited, they would still be deterred because in their view, a limited U.S. strike would lead to an all-out nuclear war, a very self-deterring prospect. In this connection, Schlesinger volunteered that he never passed up an opportunity to announce and clarify the LNO doctrine—before Congress, to the press, in official and informal speeches. He explained that the *way* in which the concept was presented—that is the body language, tone of voice, general seriousness of manner—was almost more important than what was said. He observed that [President Carter's Secretary of Defense] Harold Brown refined the LNO idea with PD-59 but was less convincing in his public presentations and discussions of the concept and thereby may have given the Soviets reason to doubt that the U.S. was serious about LNO.

He explained that war plans, hardware, and declaratory policy—the three components of nuclear strategy—are not always consistent. McNamara announced the countervalue doctrine of MAD but had a counterforce plan (without counterforce weapons). Since Schlesinger could not immediately change the forces, he presented a new declaratory policy that was designed to create desired psychological reactions in the USSR *and* Europe, and he then worried about pushing SAC [Strategic Air Command] war plans in the appropriate direction. He also began to modernize hardware to develop a credible counterforce capability, a process that would require at least a decade to complete.

If the need arose, Schlesinger would have been willing to consider launching a small strike against real targets, such as Henhouse radars in the Soviet Arctic, avoiding cities and other targets that would produce large casualties (such as Soviet army divisions), and keeping the number of weapons low (well under 200) in hopes that the Soviet military would not mistake a limited strike for an all-out American attack.

Counterforce was one of the options but was not the entire doctrine of LNO. The essence of LNO was selectivity. LNO was absolutely not targeted at the Soviet political

leadership because, in the event of nuclear exchanges, the U.S. would need someone in the USSR with whom to negotiate the termination of hostilities. Schlesinger commented that he didn't understand [Secretary of Defense Harold] Brown's targeting priorities under PD-59. Specifically, PD-59 seemed to call for targeting of Soviet political and military leaders early in any exchange because early elimination of the leadership would interfere with any negotiated war termination.

The USSR, in Schlesinger's view, had more than parity because it was acquiring counterforce capabilities through deployment of SS-18s and SS-19s.

The Soviets did not imitate American weapons modernization. They did not tailor their forces to meet ours, and they probably would not have cut back if we had. However, we did stimulate their arms programs. We gave a shove to their buildup through the Cuban Missile Crisis.

When asked about forecasting, Schlesinger replied that both sides lacked imagination. Changes in the nature of warfare may have been acknowledged but did not fully register. We had separate offensive and defensive commands. SAC did not think about what Soviet strikes would do to us. The stimulus for change had to come from the civilian leadership.

In U.S. assessments into the policy process, evidence was selected to support prevalent interpretations. Presentations of "empirical analysis" could be totally wrong but totally sincere. For instance, the CIA was grossly underestimating Soviet military spending until Schlesinger insisted on a correction.

In 1973, we put our forces in Europe on alert to signal to the Soviet Union that we were not paralyzed by the Watergate scandal.

SUMMARY OF INTERVIEW

Subject: Vitalii V. Shlykov

Position: Deputy Chairman, Russian Soviet Federated Socialist Republic State Committee on Defense

Location: Moscow

Interviewer: John G. Hines

Date: April 29, 1991

Language: Russian

Prepared by: John G. Hines, based on notes

- The republics control revenue flows to the center.

- The 1991 defense budget was originally R65 billion but was increased in December to R96 billion to offset inflation (estimated at 54%).

- The RSFSR (Russian Soviet Federated Socialist Republic) seeks to separate military from civilian production.

- The RSFSR State Committee on Defense and Security had 250 military officers (working for Kobets) plus 50 civilians (handling KGB matters).

- Kobets is still serving in the Armed Forces.

The VPK [military-industrial complex in this case] gets special treatment: subsidies for heat and raw materials; and guaranteed deliveries (the biggest form of subsidy). The guaranteed deliveries and subsidies will be cut off.

The RSFSR will not pay for a single additional weapon. Minister of Defense Iazov himself said "no more tanks, no more weapons of the current generation, but we can't destroy the ones we have."

Iazov is ready to cancel the Buran and Energia space programs because they do not help the military. Subsidies to both military and civilian space programs will end.

The republics gave only R200 billion of the R600 billion they owe the center. They are holding out until the Union Treaty is settled and control over military production is transferred to the MoD. Ideally the MoD should act as a consumer by ordering weapons, and design bureaus should compete for orders.

Currently there is a major fight over the budget to develop an industrial mobilization base. [Soviet Deputy Minister of Defense General-Colonel Krivosheev] claims that the U.S. has long had a huge industrial mobilization capacity and can produce 50,000 tanks and 50 SSBNs per year within a few months of starting mobilization. The Federal Emergency Management Agency (FEMA) is supposedly in charge of U.S. industrial mobilization plans. Most Soviets really believe this.

SUMMARY OF NARRATIVE

Subject:	Boris Aleksandrovich Strogonov
Position:	1955-1987 in Defense Industrial Department of Central Committee apparatus; 20 years experience in production facilities and research institutes in production and development of missile and space technology
Location:	Institute for Defense Studies (INOBIS), Moscow
Interviewer:	INOBIS
Date:	March 1993[83]
Duration:	Approx. 1 hour total
Language:	Russian
Prepared by:	Ellis Mishulovich, based on audio cassette tape

Ustinov was a proponent of a survivable missile arsenal, while most of the Ministry of Defense, including Grechko personally, were opposed to missile protection.

At first silos began to be protected from 2 to 50 kg/cm^2 [28 to 711 psi], and protection increased as U.S. missile accuracy increased, until very high protection became economically unfeasible. At that point mobile missiles were proposed, and were championed by Ustinov. Here, as with silo protection, Grechko and the Ministry of Defense were opposed. For example, the mobile missile designs produced by the Iangel' KB [design bureau] were chronically underfunded and development stages took a very long time. However, eventually the military understood the value of mobility and development was substantially speeded up. More funding was made available and the Nadiradze KB and the KB in Dnepropetrovsk headed by V. F. Utkin began their own development of mobiles.

Brezhnev was personally involved in the development of military and civilian missile technology. He headed a commission on the development of missile technology, known as the Politburo Commission [*Kommissiia pri Politburo*], even though Brezhnev was the only Politburo member on it [sic]. This commission, of which Ustinov was a deputy, included Grechko, Riabikov (the deputy head of GosPlan for defense), all of the ministers of defense-related industries, General Designers, and academicians involved in defense work. Strogonov served as a secretary of this commission. The commission discussed technological, political, military, economic, and other issues related to defense production. Decisions were passed on to approval *pro forma* by the Defense Council, but were never amended by it. Issues were always debated in the commission and decisions made by a few individuals.

Ustinov was very close to Andropov. The two supported each other in the Defense Council. Both kept a careful watch over technological developments in the West,

[83] INOBIS carried out the interviews resulting in this narrative at various times during the month of March 1993.

especially the U.S. Ustinov was personally devoted to scrupulously monitoring American technological developments, and continued to do so until his death.

The Central Committee relied very heavily on the VPK.[84] The VPK consisted of technical specialists and scientists, and conducted preliminary studies on weapons systems and coordinated systems production and development. The greatest flaw in the VPK was that it had too much power and influence and meddled in policy questions instead of focusing strictly on technical questions. As a result of its undue influence too many obsolete weapons systems were kept in production and the development of advanced systems was retarded. Many obsolete missiles, for example, were not taken out of production or deployment. Questions regarding the reduction of such systems were never discussed in the VPK. The short-sightedness of the Soviet leadership and the decision-making structure of the Soviet Union ensured that the military industrial complex constantly grew in size.

[84] VPK — *Voennaia Promyshlenaia Kommissiia* — (Military Industrial Commission).

SUMMARY OF INTERVIEW

Subject: Viktor M. Surikov

Position: President of the Institute for Defense Studies (INOBIS); former Deputy Director of the Central Scientific Research Institute for General Machine Building (TsNIIMash) 1976-1992. Over 30 years experience in building, testing and analyzing military and civilian missiles and related systems (C^3I, satellites, space flight control, etc.)

Location: INOBIS, Moscow

Interviewer: John G. Hines

Language: Russian

Date: September 11, 1993

Prepared by: John G. Hines, based on notes

I raised with Dr. Surikov the issue of first strike versus retaliatory meeting strikes [*otvetno-vstrechnye udary*] and pure retaliation (ride out). He responded with a challenge that the U.S. strategy and posture was to strike first in a crisis in order to minimize damage to the U.S. He added that U.S. analysts had concluded that there were tremendous differences in levels of damage to the U.S. under conditions where the U.S. succeeded in successfully preemptively striking Soviet missiles and control systems before they launched versus under conditions of a simultaneous exchange or U.S. retaliation. He said, "John, if you deny that, then either you're ignorant about your own posture or you're lying to me." I acknowledged that the U.S. certainly had done such analysis.

Dr. Surikov continued with the assertion that the basic Soviet position and posture also was preemption—primarily because truly knowledgeable military and civilian leaders simply did not believe Soviet systems had the reliability [*ustoichivost'*] to ride out an attack and respond effectively, if at all. He made it clear that he was referring to the *whole* system—communications and control, launch systems, and the missiles themselves. Retaliatory-meeting strikes [essentially what U.S. strategists would call "launch-under-attack—LUA"] represented a far less attractive fall-back given the consequences to the USSR of allowing the U.S. to launch its arsenal.

I asked Dr. Surikov if submarine-launched ballistic missiles (SLBMs) were relegated to the role of strategic reserve or could they be included, in whole or in part, in any preemptive first strike. He stated that SLBMs were sufficiently accurate by the late 1980s to have been included in a preemptive strike. SSBNs[85] tied to the pier and not under repair would be more likely to be involved.

I then asked Dr. Surikov about the "Dead Hand" [*Mertvaia Ruka*] automatic launch system. Dr. Surikov responded that he and his subordinates had designed the system—to

[85] SSBN — Submarine, Ballistic Missile equipped, Nuclear powered — a submarine designed to launch strategic nuclear ballistic missiles (SLBMs).

include the various sensors—seismic, light, and radiation—to launch the command missiles in the event the leadership were dead or unable to communicate. He continued that he briefed the concept and design to his chief, then Institute Director Mozzhorin, and to Baklanov, then the Central Committee Secretary responsible for military industry [Ustinov's former party position]. Both accepted and approved the concept. The design finally was rejected by Marshal of the Soviet Union Akhromeev [evidently when he was Chief of the General Staff, i.e., after September 6, 1984] on the recommendation of a trusted advisor and general officer, General-Colonel Korobushin [the officer who "revealed" the existence of the system to me months earlier]. As a result of this rejection, the "Dead Hand" trigger mechanism "was never realized."

SUMMARY OF INTERVIEW

Subject:	Dr. Vitalii Nikolaevich Tsygichko
Position:	Senior Analyst, All-Union Scientific-Technical Institute For Systems Studies (VNIISI), Academy of Sciences, USSR; Director, Center for National Security and Strategic Stability Studies
Location:	Room 716, VNIISI Building, 9 Prospekt 60-let Oktiabria, Moscow
Interviewer:	John G. Hines
Date/Time:	December 13, 1990, 11:00 a.m.
Duration:	1.5 hours
Language:	Russian
Prepared by:	John G. Hines, based on notes

"Purpose of Interview"

- To review with Dr. Tsygichko his views on the product and process of Soviet military assessments in the 1970s and 1980s. Of special interest was the Soviets' thinking about military competition, assessments of Western capabilities and intentions relative to their own, and expectations of the nature of war should it occur. The role and expected efforts of strategic and theater weapons of mass destruction was of central concern as was conventional war.

"General"

Vitalii Tsygichko is a former artillery colonel who joined the Soviet General Staff in 1964 where he was involved in some of the early efforts to subject force structure and operations to systematic analysis using mathematically based methodologies and models. Between 1967 and 1977 he was head of the Theater Force Modeling Department within the Scientific Research Institute [*Nauchno-Issledovatel'skii Institut*] Number 6 (NII-6) of the Main Intelligence Directorate (GRU) that provided quantitative analytical support to the Ministry of Defense. (There are five such purely military institutes that support the Ministry of Defense in various areas). He left the institute and the Army in 1977 because he felt that the best work of his division was being suppressed or ignored. He became a senior analyst at VNIISI of the Soviet Academy of Sciences at that time.

His reputation as an analyst and an officer is very positive among both former and serving General Staff generals and officers who seem eager to associate themselves with him and his work. One senior General Staff colonel, Kabysh, who continues to work as a General Staff analyst knew of Tsygichko by reputation, identifying him as one of the principal architects of the General Staff's approach to quantitative analysis of force operations. General-Major Luzianin, a department head within the Center for Operational Strategic Studies (TsOSI) of the General Staff (and a colleague of Tsygichko's on the General Staff in the 1970s), called Dr. Tsygichko to the General Staff

on December 10, 1990, to offer him a contract to support the center's analysis. Dr. Tsygichko accepted and will be providing support over the next several months. (I learned indirectly from Andrei Kokoshin, who is fairly well connected to parts of the General Staff, that much of the work done in TsOSI is designed to meet the needs of General Ladygin's General Staff Directorate for Legal and Treaty Affairs.)

Some of Dr. Tsygichko's colleagues who had been present at an interview given by Minister of Defense Iazov to deputies of the RSFSR on November 5, 1990, reported that Tsygichko's name was brought up by Iazov during the discussion. Specifically, Marshal Iazov was complaining that self-described civilian defense analysts were demonstrating their incompetence whenever they attempted to deal with military analytical or operation questions. He specifically cited the work of Vitalii Tsygichko and his center as an exception to this general rule, stating that the center was doing very good work.

This is one of a series of interviews that I have conducted with Dr. Tsygichko. There is some duplication among interviews because I have revisited some themes to clarify points from previous discussions and I have tried to provide enough information to establish the context for his answers. This particular interview brings out the differences in understanding and attitudes about theater nuclear use among three groups of officers: the General Staff analysts and general officers routinely exposed to serious analysis of the operational and collateral effects of nuclear use; the "army" generals, those field generals who commanded armies, Fronts, military districts, and High Commands of Forces in TVDs;[86] and the top military leadership, the Ministry of Defense, the Chief of the General Staff and his deputies all of whom were exposed to the product of the analysis being done within the General Staff but whose attitudes were shaped by other than purely military analytical considerations.

"Three Views on Nuclear Warfare"

General Staff officers in the 1970s were very knowledgeable about the tremendous difficulties and uncertainties that would be involved in use of nuclear weapons at the strategic, operational, and tactical levels. In the 1960s and 1970s many of the best and brightest minds in the Soviet scientific community were working in uniform within the General Staff in the areas of analysis and planning. Several models had been developed and applied to test the operational and general collateral effects of nuclear use at various levels and on various scales of employment (some of these models are discussed below as well as in other interviews). The conclusions of the General Staff analysts and other officers involved was essentially that nuclear use was operationally counter-productive and generally self-destructive. Even these officers, to include Tsygichko, carried out their work without any systematic consideration of the social or economic implications of their findings. As a result, they were unable to gauge the importance of their research in any but a purely military context.

Senior General Staff generals were routinely exposed to this analytical work and *understood* the consequences of nuclear use. Thus, Marshals Grechko and Kulikov (Minister of Defense and Chief of the General Staff respectively in the early to mid-1970s) knew, understood, and believed that nuclear use at any level by either side would be catastrophic for the Soviet Armed Forces and the Soviet state they were required to protect. These senior Minister of Defense and General Staff generals nevertheless formally rejected the analysis to which they were exposed and typically suppressed it by

[86] TVD — *Teatr voennykh deistvii* — Theater of (Strategic) Military Action, for example, Central Europe from Ukraine to the western shore of Ireland.

assigning to the analytical products extremely high classifications and by denying further dissemination and discussion. The reasons for such denial and willful adherence to nuclear thinking [*iadernoe myshlenie*] were ideological, bureaucratic, and economic.

Dr. Tsygichko asserted that the Brezhnev Politburo delegated all military matters to the Ministry of Defense to include all force procurement decisions. Threat definition was also a military function carried out within the General Staff by the Main Political Directorate. There was essentially no political oversight over the force building process and no serious challenge from the Politburo to what was clearly a decision situation in which there were serious conflicts of interest. This "hands-off" attitude of the Brezhnev Politburo and the mindless nuclear force-building that resulted was strongly confirmed by General-Colonel Danilevich.

To officially acknowledge that nuclear use was senseless and basically catastrophic would require several changes in the entire Soviet political-military-economic system that were completely unacceptable to the senior officers who were the products and beneficiaries of that system. These changes would include:

- Acknowledgment that victory would be impossible in nuclear war—a violation of basic Marxist-Leninist dogma.

- Deep reductions in military spending.

- The nuclear weapons and weapons delivery [missiles, aircraft, submarines] industry was massive and important to the [already very distorted] economy. The logic of the General Staff analysis would undermine directly the program of quantitative competition with the U.S. that was being pushed by the senior military leadership and military industrialists at that time.

- Conventional armaments production was expanding as was the size of the Armed Forces based on expectations of high [but somehow acceptable] losses of conventional forces in the event of nuclear war.

The implications of deep reductions in nuclear and perhaps conventional forces and formal acknowledgment by the Soviet leadership that they were deterred by the prospect of an unwinnable nuclear war would have affected profoundly Soviet society in general and the military role in that system in particular:

- The Soviet economy would be forced to undergo radical adjustments which few were able or willing to contemplate.

- Forty percent of the Soviet GDP was being spent on the military. The MoD was spending 20 billion rubles per year on personnel costs alone. [An impressive number considering that the Soviet Armed Forces were comprised of very-low-paid conscripts.]

- The role of the military in general probably would be diminished.

- The dominant position of the military as an institution would be threatened.

- Reduction in the size of nuclear and conventional forces would eliminate 1,000s of officer and general officer positions.

The third group, to which Dr. Tsygichko frequently refers as the army generals [*armeiskie generaly*], could not, according to Tsygichko, imagine war without nuclear

weapons. Unlike the General Staff generals, however, who understood the consequences of nuclear use, the Ground Forces operational commanders and CINCs were basically uninformed and generally did not know or understand what would happen in the event of nuclear use. They routinely used expressions such as the need to be prepared "to attack to the thunder of nuclear strikes." [While it was clear that Tsygichko held them in low regard because of their ignorance and misplaced macho enthusiasm for self-destructive behavior, it is clear that these officers were kept in ignorance by the senior General Staff generals for the reasons cited above. As will be clear when some of the models are discussed, the real findings on nuclear effects and contamination never made it to the field in the 1970s, leaving the "army generals" with exercise scenarios that reinforced their impression that nuclear use in theater would be somehow manageable.]

"General Staff Modeling of Nuclear War in Europe"

Between 1972 and 1979 a tremendous amount of work was done in Tsygichko's institute and elsewhere in the General Staff's analytical support apparatus to analyze possible war in Europe, including nuclear war. In the course of doing this analysis, the General Staff constructed several different models designed to test various outcomes and effects. The overall purpose of the analysis was to determine what war might be like and, in particular, to determine the effects of losses on the conduct of operations and on the continuity of the availability of reserves and rear services. Some of the modeling work accomplished in this period and the manner in which the findings were received by the General Staff leadership are discussed below:

Modeling of Atmospheric and Other Effects from a Nuclear Exchange in Europe and on a Global Scale

In 1971 and 1972 the General Staff studied the climatic and contamination effects from a global exchange and concluded that there would be serious negative consequences for the USSR and for the northern hemisphere in general.

Dr. Tsygichko wanted to point out that "nuclear winter" was not discovered by Aleksandrov or Sagan in 1987 [sic].[87] The General Staff did not use the expression "nuclear winter," but the analysts considered many of the effects that received so much public attention almost 20 years later. These findings were summarized in a memo to the MoD and the Central Committee and were ignored because of the implications discussed earlier.

In 1972 and 1973, Dr. Tsygichko's institute did a great deal of work modeling nuclear war in Europe. In this work, which included the development of a model, the institute studied the operational effects of the expected high loss levels and disruption of the rear (discussed in detail in an earlier interview) but also calculated nuclear contamination given prevailing (eastward) wind patterns in Europe. The study found that, in executing even the basic plan to place a nuclear strike on every NATO airfield, the Soviet side would create extremely high levels of contamination in Europe. The worst effects would be upon Warsaw Pact forces, and upon the Pact's strategic military rear in Eastern Europe and the European USSR. Within a relatively short period of time, contamination would have a severely negative effect on the Warsaw Pact's ability to

[87] American scientist Carl Sagan, together with his colleagues, popularized the notion during the early 1980s that a global nuclear war would induce an artificial winter across the northern hemisphere. Aleksandrov conducted similar work in the Soviet Union in the early 1980s. Authors were not able to identify Aleksandrov's first name and position.

continue the war and would have mid- to long-term health consequences for the civilian populations of all members of the Pact.

This study was of sufficient importance that the institute and the Main Operations Directorate of the General Staff devoted an additional 6 months to an independent validation of the model and its findings. The validation process resulted in the considered confirmation of the analytical results achieved by the institute.

Dr. Tsygichko briefed the findings of the model to Marshal Kulikov, the Chief of the General Staff, in 1973. Kulikov ordered Tsygichko (then a lieutenant colonel) to modify the conclusions or face forced retirement. Tsygichko said he felt sufficiently secure to refuse (since he already had his doctorate). The director of his institute met with Tsygichko later on the same day he had his confrontation with Kulikov and asked him to be more flexible. Tsygichko refused. The findings were suppressed by means of overclassification and severe restrictions on dissemination. Tsygichko was not forced to retire.

Tsygichko pointed out that one of the consequences of this suppression was that the findings were never incorporated into routine Soviet exercises. As a consequence, exercise maps typically depicted neat, manageable balloon-shaped contamination patterns that could be circumvented easily by army commanders. Hence the exercise nuclear effects did not seriously affect operations, much less impose severe disruptions on the strategic rear and populations of the Warsaw Pact.

Vitalii Tsygichko stressed that, in his confrontation with Kulikov and his generals, it was clear to him that they all understood the correctness of his findings but were unwilling to accept and disseminate them because of what those findings implied for the General Staff in the areas of force development, doctrine, military investment, etc.

"The Competence of General Staff Modelers and Quantitative Analysts"

Dr. Tsygichko had commented earlier on the unfavorable impression he had of serving General Staff modelers and analysts when he participated, by invitation, in a General-Staff hosted analytical seminar in June 1990. In earlier conversations, he made it clear that he was commenting specifically on the work of the analysts from the TsOSI when he said that the quality of the modeling work had reverted to what it had been 20 years ago, before major advances in sophistication had been made. In a conversation we had on December 12, 1990 he clarified and expanded on his earlier comment. The June 1990 seminar included participants from TsOSI but also analysts from the Main Directorate for Organization and Mobilization (headed by General-Colonel Krivosheev) and the Main Operations Directorate (headed by General Omelichev). Dr. Tsygichko made it clear that Krivosheev's people were equivalent in their low level of competence to the TsOSI analysts. He added that the only *real* analysts that appear to be left on the General Staff are working for General Omelichev in the Main Operations Directorate which is concerned with doing the assessments of the correlation of forces globally and by region and which support directly General Staff decisions on force deployments and changes in readiness status. This must be considered in the context of the steady "brain drain" of top analysts who have left the General Staff and supporting analytical institutes for the Soviet Academy of Sciences since the mid-1970s.

General-Major Medvedev, Deputy Director for Science of the TsOSI, confirmed to me in Germany in November 1990, that this trend is continuing. He volunteered that they have over 60 slots in the General Staff institutes for civilian analysts and that few, if any, were filled.

Tsygichko's comments suggest that the remaining qualified analysts are being pulled out of the more theoretical or arms-control support positions to keep alive the operational core of the General Staff, the Main Operations Directorate, which is much more concerned with applications and exploitation of mathematical models than with their development or improvement.

SUMMARY OF INTERVIEW

Subject: Dr. Vitalii Nikolaevich Tsygichko

Position: Senior Analyst, All-Union Scientific-Technical Institute For Systems Studies (VNIISI), Academy of Sciences, USSR; Director, Center for National Security and Strategic Stability Studies

Location: Moscow

Interviewer: John G. Hines

Date: December 17, 1990

Prepared by: John G. Hines, based on notes

Brezhnev and the Politburo left military doctrine to the professionals and gave the military great reign in determining resource allocation and threat definition.

General Staff officers understood that nuclear use would be operationally counterproductive, but Front and TVD commanders [*armeiskie generaly*] expected to fight with nuclear weapons.

Models showed that global nuclear war would have drastic effects on climate and that nuclear strikes against all NATO airfields would contaminate the atmosphere in Eastern Europe and the USSR. Memos about this were sent to MoD and the Central Committee but were ignored.

In the early 1970s, modeling predicted that use at the Front level of 15 - 20% of nuclear arsenals on both sides would cause enough destruction to end war at this level. Moreover, models were used to conduct sensitivity analysis on nuclear use at Front level to determine at what percentage of use the nuclear arsenal available to both sides would the operational impact be acceptable. That is, how much of the arsenal could each side absorb and have losses sufficiently low to allow the Soviet Front to continue military operations. The analysis was begun at 20% of the arsenals available to both sides and the exercise was halted when the modelers had exercised strikes comprised of 2% of the arsenal. The losses, even at an exchange of 2%, were so great that all operations and movement ceased for 2 days while surviving commanders and staff assessed the potential for regrouping and resuming operations. Even then, resumption of Front operations was problematical, depending upon assumption about losses of key command and control personnel and facilities.

- The main Operations Directorate spent 6 months to validate the model.

- Gareev challenged the findings (Gareev's work on the correlation of forces predicted losses [from nuclear strikes] that were small enough to permit the continuation of operations after each phase).

- Kulikov understood that the findings were true but suppressed them because their implications for defense spending were unacceptable.

• In exercises Soviet troops continued simply to move around areas contaminated by nuclear use.

Iazov in *Red Star* [*Krasnaia zvezda*] praised the work of Tsygichko's institute. In the 1960s and 1970s excellent analysts worked in General Staff planning and analysis but they had no serious reality reference (they did not know how to measure the social or economic value of their work).

SUMMARY OF INTERVIEW

Subject:	Dr. Vitalii Nikolaevich Tsygichko
Position:	Senior Analyst, All-Union Scientific-Technical Institute For Systems Studies (VNIISI), Academy of Sciences, USSR; Director, Center for National Security and Strategic Stability Studies
Location:	Room 716, VNIISI Building, 9 Prospekt 60-let Oktiabria, Moscow
Interviewer:	John G. Hines
Date/Time:	December 20, 1990, 11:00 a.m.
Duration:	1 hour
Language:	Russian
Prepared by:	John G. Hines, based on notes

"Purpose of Interview"

- To review with Dr. Tsygichko his views on the product and process of Soviet military assessments in the 1970s and 1980s. Of special interest was the Soviets' thinking about military competition, assessments of Western capabilities and intentions relative to their own, and expectations of the nature of war should it occur. The role and expected efforts of strategic and theater weapons of mass destruction was of central concern as was the Soviet perceptions of the effect of qualitative improvements on the nature of conventional war.

This is one of a series of interviews that I have conducted with Dr. Tsygichko. There is some duplication among interviews because I have revisited some themes to clarify points from previous discussions and I have tried to provide enough information to establish the context for his answers. This interview expands on issues raised in the interview of December 13, 1990.

"Thinking About Nuclear War - Issues of Policy, Theory and Practice"

Until 1980, Soviet policy on nuclear retaliation as expressed in the General Staff Academy lectures called for a full nuclear response against the homeland of any state launching even tactical (battlefield) nuclear strikes on the territory of the Warsaw Pact (of any member, not only the USSR). This Dr. Tsygichko identified as the political approach to military doctrine in this area. In practice, no real planning was done for a massive nuclear response to the use of tactical nuclear weapons on a less than massive scale on the territory of a member of the Warsaw Pact. Tsygichko volunteered that he believed personally that the USSR would definitely lose the war if Soviet forces did not respond quickly to initial NATO nuclear use with all available nuclear capabilities. This is a statement from someone who personally believed that victory in such a war would be meaningless.

We revisited the question of who in the General Staff fully understood the consequences of a nuclear exchange. He responded that the effects were really well understood "at the Danilevich level." When asked he added that, in the mid- to late 1970s, General Danilevich served as Deputy Director of the Main Operations Directorate. The Chief of the General Staff had some idea of the consequences but Ustinov, the Minister of Defense, did not really comprehend the level of destruction involved.

According to Marxist-Leninist theory, victory was possible, even in nuclear war. In practice, the General Staff did not have any real working definition of victory in a nuclear war and the operation simply was not discussed in those terms. It was well understood on the General Staff that the Soviet Union would not come out of such a war in anywhere near the same state in which it began the war. The general hope was that some undestroyed pocket of civilization would survive, perhaps in Siberia that might form the basis for rebuilding the state. Dr. Tsygichko explained that General Staff thinking did not focus on the consequences of a nuclear exchange for the Soviet Union but concentrated instead on the amount of destruction the USSR could impose on the enemy.

Soviet published military doctrine called for continuous operations in a theater of strategic military action (TVD) regardless of whether or not nuclear weapons were used, as if such use would do little to change the battlefield environment. In practice, the General Staff did no actual planning beyond the initial exchange of nuclear weapons on a tactical or operational scale.

Soviet declaratory policy, at the Politburo level, rejected deterrence as a fallacious and even immoral concept. In fact, according to Dr. Tsygichko, the Politburo accepted deterrence in 1965 when the USSR first acquired ICBMs. This acceptance was evident in some speeches and in the lectures at the General Staff Academy. I raised with Tsygichko the distinction made in Soviet political discussions between *sderzhivanie* (restraint, or morally correct, Soviet deterrence) and *ustrashenie* (terrorizing, or immoral, Western deterrence). He replied that even on a theoretical level the distinction was meaningless. The *concept* adopted by the Politburo and hence by the General Staff was that war would not be initiated by either side because both sides were held at risk of highly destructive retaliation even after initial surprise use of nuclear weapons. Deterrence was based on mutual fear or terror. Rejection of *ustrashenie* in the press was propaganda.

Tsygichko offered the opinion that, even in the 1960s and 1970s, the Soviet political leadership would have supported negotiations to prevent the initiation of nuclear war. The General Staff, he believes, would have supported this approach. This is consistent with General Danilevich's assessment of Brezhnev's visceral fear of nuclear use.

Finally, Dr. Tsygichko explained that he and several others in the General Staff viewed the "U.S. policy of arms racing" as an indirect attempt to undermine and bleed white the Soviet economy. He acknowledged that the strategy worked because the Soviet leadership did not know how to deal with it effectively. He indicated that the effects of such economic warfare are evident today.

SUMMARY OF INTERVIEW

Subject: Dr. Vitalii Nikolaevich Tsygichko

Position: Senior Analyst, All-Union Scientific-Technical Institute For Systems Studies (VNIISI), Academy of Sciences, USSR; Director, Center for National Security and Strategic Stability Studies

Location: Washington, D.C.

Interviewer: John G. Hines

Date/Time: March 21, 1991, 1:00 p.m.

Language: Russian

Prepared by: John G. Hines, based on notes

In 1974, Gen. Shabanov asked Tsygichko's Institute (NII-6)[88] at the General Staff to use modeling to analyze the benefits of various kinds of technologies and weapons. Shabanov wanted an analytical basis for placing orders for different types of weapons in various quantities. The models included weapons with various theoretical sets of technical characteristics (precision, range, destructiveness, and possibly control). Tsygichko reprogrammed existing models (which were designed primarily to test operational concepts) in order to build fictional forces that were changed in different runs of the model and thus to establish criteria for selecting and investing in weapons systems. The cost of weapons was also a serious consideration. The objective was to get the most combat effectiveness for the smallest investment.

Tsygichko and his colleagues made the models, prepared a set of recommendations, and briefed Shabanov. Shabanov found the recommendations sound and scientifically based but could not use them because they would seriously run afoul of the prerogatives of the Services and the VPK [military-industrial complex in this case] leaders responsible for production of armaments, missiles, and air defense systems.

Based upon his positive impression of Tsygichko's work, in 1976 Shabanov formed his own institute [*Institut Shabanova*] out of some of Tsygichko's best people for the specific purpose of doing force-development analysis. Dr. Tsygichko continued to work with his former subordinates in Shabanov's institute.

Although the Directorate for Armaments was not created until the late 1970s, Shabanov was responsible for armaments in MoD since the late 1960s. Shabanov had the authority to work on general criteria for weapons development.

The Union of VPK [military-industrial complex] Directors of Heavy Industry, [*Soiuz Direktorov VPKa Krupnykh Predpriiatii*], was organized to lobby the USSR Supreme Soviet to liberalize export constraints on products from the heavy industry sector. As of March 1991, trade in finished (technical) products was still constrained by concerns about military secrecy, but firms were already carrying out a fairly large

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[88] NII — *Nauchno-issledovatel'skii institut* — Scientific Research Institute.

business in exchanging half-finished products and raw materials for hard currency. Much of the hard currency earnings were stored overseas.

SUMMARY OF INTERVIEW

Subject: Dr. Vitalii Nikolaevich Tsygichko

Position: Senior Analyst, All-Union Scientific-Technical Institute For Systems Studies (VNIISI), Academy of Sciences, USSR; Director, Center for National Security and Strategic Stability Studies

Location: Washington, D.C.

Interviewer: John G. Hines

Date: March 30, 1991

Language: Russian

Prepared by: John G. Hines, based on notes

After he formally retired from the General Staff in 1977, and moved to the All-Union Scientific-Technical Institute For Systems Studies (VNIISI), Tsygichko continued to work part-time until 1982 for the General Staff Institute of Operations Research and kept his high-level clearances because people at the Institute did not know enough about the models Tsygichko had developed to keep them working.

The General Staff prepared a report on Russian and British imperial experiences in Afghanistan. The report concluded that an invasion was a very bad idea in terms of fulfilling possible strategic objectives, getting bogged down, and being compromised by involvement in the region. Ogarkov strongly endorsed the findings and forwarded them through the MoD to the Central Committee.

After Ustinov became Defense Minister, the influence of the General Staff's analysis on future forces development weakened appreciably over time relative to the Services working with the VPK.[89]

The main consumer of the General Staff's Institute for Operations Research (NII-6)[90] was the General Staff's Main Operations Directorate, and within it, the Subdirectorate for Operational Planning [*Napravlenie Strategicheskogo Planirovaniia*].

- Col. Oleg Ponomarev, [later General-Colonel, who retired in 1987] Director for Operational Planning until 1987, supported modeling as an approach to decision making.

- Capt. Volosatov, who was assigned to Ponomarev by Tsygichko, really wrote the two articles (published in 1976 and 1977, respectively) that were signed by Ponomarev.

- Gen.-Col. Kozlov and others also supported the modeling effort.

- Col. Terekhov, an analyst at the Frunze Academy, took part in the 1987-89 debate on a new role for modeling. His models were designed to run in real time in order to

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[89] VPK — *Voennaia Promyshlenaia Kommissiia* — (Military Industrial Commission).

[90] NII — *Nauchno-issledovatel'skii institut* — Scientific Research Institute.

validate or invalidate tactical-level decisions (by captains through colonels, platoon to regiment levels) as those decisions were being made during training and exercises. Terekhov's work addressed a different level of problem solving from that which was the subject of the work of Tsygichko and the General Staff Institute of Operations Research. Terekhov created tactical models, Tsygichko theater strategic and Front-level models.

- Marshal Nikolai Ogarkov - When asked about the issues that might have led to the removal of Marshal Ogarkov as Chief of the General Staff in September 1984, Tsygichko volunteered that Marshal Ogarkov authorized a study on the structure of the Armed Forces that was highly critical of their organization as well as manning practices. The study, circulated in the summer of 1984 among senior MoD military leaders as well as senior analysts advocated, among other changes, the following measures:

  - Deep reductions in the size of the Armed Forces, as much as 50%.

  - Professionalization of the Armed Forces. The paper cited among other justifications, the high maintenance costs associated with abuse of sophisticated weapons and equipment by inexperienced conscripts. The central control radar for an SA-2 surface-to-air missile system, for example, historically required capital repair after only 2 years of operations by a conscript crew. The same system would operate for 6 years before capital repair when crewed by professional soldiers.

  - Reassignment of Air Defense Forces Command assets to other commands—PVO air assets to the Air Forces, SAMs and AAA to the Ground Forces.

In general, the paper took the position that the Armed Forces required more rapid modernization to be competitive and that modern forces required relatively fewer personnel with much better skills.

SUMMARY OF INTERVIEW

Subject:	Dr. Vitalii Nikolaevich Tsygichko
Position:	Senior Analyst, All-Union Scientific-Technical Institute For Systems Studies (VNIISI), Academy of Sciences, USSR; Director, Center for National Security and Strategic Stability Studies
Location:	Washington, D.C.
Interviewer:	John G. Hines
Date/Time:	December 21, 1991, 8:00 p.m. and December 23, 1991, 11:00 a.m.
Duration:	3 hours
Language:	Russian
Subjects discussed:	ICBM Silo Vulnerability, Vulnerability of Personnel to Blast Overpressure, Modeling Comparisons of Soviet with Western Economies, the Role and Power of the Military Department of the Central Committee vis-à-vis the General Staff, Central Committee Independent Assessment of the Chinese Threat, Mobilization Modeling, Effect of Medical Support on Rate of Advance in Theater Operations, Stopping the War for 2 Weeks to Resupply, Persian Gulf Mobilization Modeling Applications for U.S., Review of Weapons Programs by the General Staff, Remarks on Previous Interviews
Prepared by:	John G. Hines, based on notes

ICBM Silo Vulnerability

In the context of a discussion about modeling strategic nuclear warfare Dr. Vitalii Tsygichko explained that he was personally involved in a series of tests, carried out by the General Staff on an annual basis between 1964 and 1966, to test the vulnerability of silo-based ICBMs to ground-burst attack. The tests were conducted at Semipalatinsk. Each test in the series required months of preparation, including engineer preparation of an overhead screen (perhaps as large as one square kilometer) to conceal the test activities from U.S. satellite observation. Missiles identical to those in operation were put in silos designed to actual operational specifications. Charges were placed in the ground at various distances from 20 meters to over 1 kilometer) from the silos, and the effects of the blasts were measured. The charges used did not exceed the blast energy effect of a 500 kiloton 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.

The measure of effectiveness (MOE) for a missile kill was the post-strike ability of the entire missile system to be reliably launched in the prescribed time (measured in hours at that time) and to effectively destroy its target. A jammed silo door, a ruptured fuel system, a disoriented missile guidance system, or disruption of the launch control system would constitute a missile kill. (The damage was normally much more extensive

and required days, weeks, and even months to repair.) In general, the test data showed that ground bursts were extremely effective in destroying silo-based ICBM systems. (As a minimum, even with distant strikes, silo doors often jammed.) 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 m out of the ground, rendering *completely* inoperable the missile system inside. Any ground burst closer than 1 km away was highly likely to "kill" a silo-based missile system. If two silos were less than 2 km apart, typically both would be disabled by one incoming strike.

Dr. Tsygichko was given the task of creating models to compare the effects of ground bursts and air bursts. He used the masses of data collected in 1963 and earlier (before implementation of the nuclear test ban treaty) from tests at Semipalatinsk on the impact of nuclear explosions on structures and silos. According to analysis performed with the help of his models, an air burst (80 plus meters above ground) was 15 - 25% as effective in killing an ICBM as a ground burst of the same yield going off at an equal distance from the target.[91]

In 1966, Dr. Tsygichko took part in briefing the General Staff on the tests and modeling of silo vulnerability. Because Soviet silo-based systems were shown to be extremely vulnerable to ground-burst strikes in empirical testing, the Soviet military leadership took a series of decisions to deal with the direct and indirect implications of the findings. First, they initiated a major program to rebuild silos, when feasible, at distances of greater than 2 km from each other. Second, they initiated a program for the development and deployment of mobile ICBMs. Third, scientists assumed that U.S. analysts "were not stupid" and had conducted similar experiments and reached similar conclusions regarding the relative effectiveness of ground bursts and air bursts. On the basis of satellite photography, Soviet planners observed that U.S. missiles were not very well protected by overhead cover and were grouped relatively close to each other as well as to the launch control center. These observations convinced the General Staff that U.S. land-based ICBMs were not intended to ride out an attack but instead were first-strike weapons [*vooruzheniia pervogo udara*] and were routinely referred to as such by Soviet military planners in all subsequent discussions and internal writings. Based on these conclusions, the Soviets took two initiatives, one operational and the other programmatic. First, they adopted a launch-under-attack doctrine, that is, to launch when it was clear that U.S. missiles had been launched. The doctrine could not be effectively executed, however, because Soviet missiles required a considerable time to launch. The Soviet Union's programmatic response was the initiation of a large-scale program in Ministry of General Machine Building to develop both solid- and liquid-fueled missile systems that could be launched within 5 minutes of a launch order. To describe the expected scenario, the USSR defined a new kind of strike, a retaliatory-meeting strike [*otvetno-vstrechnyi udar*] whereby Soviet missiles were expected to pass American missiles in mid-air on the way to targets on U.S. territory. Dr. Tsygichko explained that, to his knowledge, Soviet missiles were to strike at military targets other than silos and at U.S. infrastructure because of the assumption that U.S. silos would be empty under all launch scenarios.[92]

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[91] This was the first comprehensive application of mathematical modeling to a major area of Soviet military planning. The success of the modeling of silo-vulnerability and of strategic exchanges in general created considerable enthusiasm in the General Staff for application of modeling to other problems, such as analysis of outcomes of theater war. According to Dr. Tsygichko, experience with modeling of strategic warfare and silo-vulnerability were of little or no help in modeling theater warfare but it did build considerable credibility for modeling as an analytical tool.

[92] Some U.S. analysts regard the SS-18 as too powerful for employment against infrastructure and soft military targets. Likewise suspected Soviet missile-reload capability would be of little use in launching a retaliatory strike if all Soviet silos were expected to be destroyed under all considered scenarios. The strategic forces directorate within the Main Operations Directorate of the General Staff, at a decision level perhaps not accessible to Dr. Tsygichko, might have targeted U.S. silos with the most capable (highest yield) part of the arsenal and might have planned for the possibility of

Vulnerability of Personnel to Blast Overpressure

Dr. Tsygichko was aware of tests, conducted in the late 1950s and early 1960s, on the effects on animals of overpressure from both conventional and nuclear weapons. Based upon exploitation of pre-1946 German data and other testing, Soviet scientists concluded that a dog's response to overpressure was closest to that of humans. Based on this finding, the tests showed that 7 psi overpressure was sufficient to kill a person. (In contrast, U.S. experts calculated that 36 - 38 psi would be needed to kill personnel. As a result, U.S. analysts predicted much lower rates of attrition on the battlefield in response to nuclear and conventional bombardment than did their USSR counterparts. This directly affected rate-of-advance expectations and assessments of the operational impact of battlefield nuclear use.)

Modeling Comparisons of Soviet with Western Economies

Around 1978, an American economist published a book[93] assessing the intersector-balance [*mezhduotrasloi balans*] within the Soviet economy and comparing the U.S. and Soviet economies. The book forecast a bleak future for the Soviet economy because of significant distortions, maldistribution of investment, and excessive nonproductive expenditures such as those devoted to defense. A Soviet policy or economics expert, Dr. Tsygichko believes, must have brought the book to the Politburo's attention. In 1979, General Chervov, then head of the Information Directorate [*upravlenie*] with the Main Intelligence Directorate (GRU), asked Dr. Tsygichko to determine whether the book's analysis was based upon open sources or on intelligence. Dr. Tsygichko examined the documentation over several weeks and concluded that the book was based upon openly-available sources.

The Central Committee then commissioned a study in 1979 to test the book's conclusions. Dr. Tsygichko is absolutely convinced the work was inspired by at least one influential member of the Politburo itself. The study went on at least until 1984. It was run by the Director of the Institute of Economics of the Soviet Academy of Sciences and carried out by several experts from several institutes to include the Institute of Economics, the Institute of Mathematics and Physics, and the VNIISI (the all-Union Institute for Systems Research) to which Dr. Tsygichko was assigned. The project commanded support from the Main Intelligence Directorate (GRU) of the General Staff, to include large amounts of data on Soviet military production, despite the fact that the military was suspicious of and even hostile, to the effort. Dr. Tsygichko played the role of *systemnik* in the effort, which means that he helped to structure the analysis and models to conduct the analysis. The study began with an assessment of the intersector balance within the Soviet economy and then compared the Soviet economy to the advanced industrial economies of the U.S., Japan, and Western Europe. The findings essentially confirmed the conclusions of the American economist. The Soviet GNP was estimated to be at around 40% the size of U.S. GNP, and the gap between U.S. and Soviet

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Politburo authorization to launch early enough to limit damage to the USSR. Other interviews with Marshal of the Soviet Union Akhromeev and Marshal Ogarkov's special assistant, General Colonel Danilevich, strongly suggest, however, that General Staff planners assumed that they would *not* get authorization to launch in time to limit damage. Other interview subjects, such as Vitalii Kataev of the Soviet Central Committee, and General Illarionov, seemed to believe that Minister of Defense Grechko and others in the senior military leadership showed little interest in reducing the vulnerability of Soviet missiles because they expected to strike preemptively against U.S. launch preparation.

[93] Subsequent research did not serve to further identify the book in question.

output was widening at a nonlinear rate. Dr. Tsygichko was unaware of exactly what impact, if any, the study might have had on Soviet policy.[94]

The Role and Power of the Military Department of the Central Committee vis-à-vis the General Staff

Dr. Tsygichko believes that U.S. analysts generally overestimated the General Staff's influence on military planning and force development and grossly underestimated the importance of the Central Committee (CC) and its Military Department [*voennyi otdel*]. At least 60% of the membership of the Central Committee's Military Department were defense industrialists, both ministers responsible for arms production and chief designers [*glavnye konstruktory*], and the remaining 40% were political officers [*politicheskie ofitsery*] who were very much the *party's* officers within the military. The officers within the Military Department of the CC wielded influence that far transcended their military rank. The Defense Minister and all chief designers (who virtually controlled military production) were members of the Central Committee and its Military Department. The Chief of the General Staff and the service chiefs were not members and, therefore, held a fraction of the authority and influence enjoyed by the Military Department of the CC, especially in the areas of military policy [*voennaia politika*] and force development [*voennoe stroitel'stvo*]. As Dr. Tsygichko explained it, the Military Department of the CC functioned as the *de facto* sitting Defense Council, setting military policy [*voennaia politika*] which governed military doctrine and force development, and supported the formal Defense Council comprised of the General Secretary and MoD, the chiefs of the KGB and MVD [internal troops], the Minister of Foreign Affairs, and several major military industrialists.

Central Committee Independent Assessment of the Chinese Threat

In late 1979, the Central Committee initiated an independent evaluation of the General Staff's assessment of the Chinese threat. Colonel Malashenko, then a member of the Central Committee's Military Department,[95] placed Dr. Tsygichko in charge of a major reevaluation and forecast of China's military potential and even tried unsuccessfully to convince Dr. Tsygichko to return to active duty to run the study. Dr. Tsygichko, then a senior analyst at VNIISI, ran the study out of the Institute of the Main Intelligence Directorate (GRU) [or NII-6, a GRU Operations Research Institute that primarily supported the Main Operations Directorate—GOU]. Backed by the authority of the Central Committee's Military Department, Dr. Tsygichko was able to collect all the information he needed from the military and to enlist analysts from the entire Academy of Sciences. At the GRU Institute, 20 analysts—mostly from VNIISI, the GRU, and the General Staff—worked on the project directly under Tsygichko's supervision. (Dr. Tsygichko said that the General Staff and GRU supported the work at Central Committee direction despite the essentially "hostile" purpose of the study.) Another 39 analysts from various institutes of the Academy of Sciences participated in the study and contributed data and analytical support at Dr. Tsygichko's direction. Dr. Tsygichko and his colleagues were excited by their power to command resources for the study and his enthusiasm was evident even as he discussed the effort in the interview. Work began in early 1980 and went on for 5 years. There was substantial high-level interest in the study.

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[94] The nature and results of this work were probably known to Gorbachev and his supporters in the mid-1980s and could have provided "scientifically developed" analytical support to bolster Gorbachev's push against Party conservatives for radical change.

[95] Later a special assistant to President Gorbachev until the end of the latter's presidency.

Dr. Tsygichko conducted yearly briefings to senior officials of the Defense Ministry and the Military Department of the Central Committee. [He recalled that 1983 was the first year in which the work was sufficiently well-developed to provide a coherent story to the leadership.]

The study resulted in the development of four separate models that analyzed China's economic, mobilization and deployment, transportation, and TVD-scale warfare capabilities. Nuclear weapons were excluded from the study and might have been considered separately by other analysts. The models indicated that China did not pose a serious threat. Over the 15-year period projected by the analysis, China was found to lack the military-industrial capacity and the infrastructure to threaten the USSR. For example, China would need weeks to move its forces because of a lack of transportation networks. Moreover, Dr. Tsygichko and his colleagues did not detect any Chinese intention to attack the Soviet Far East. The General Staff and the GRU, whose assessments of China tended to be alarmist, did not support the findings of Dr. Tsygichko's study. Despite these disagreements, the Chief of the GRU and the General Staff signed off with approval on the study's findings without written reservations because of the authority of the Central Committee.

Mobilization Modeling

In analytical work they did in the 1970s at the General Staff's NII-6. Dr. Tsygichko and his colleagues made a distinction between logistics support (including resupply and attrition fills) during the course of combat operations, on the one hand, and strategic nationwide mobilization and deployment on the other. The model for war in the TVD encompassed a module to assess the second echelon and reserve commitments and logistics support. A separate model analyzed strategic mobilization and deployment [*strategicheskoe razvertyvanie*] in the USSR preceding, and more often following, the outbreak of war.

The strategic mobilization and deployment model estimated the time needed to make divisions combat-ready and to move them to the front lines. A number of factors were considered: the level of a given division's readiness at the moment that the mobilization order is issued; the time required to assign people to divisions, to get divisions up to strength, to prepare the equipment and to train troops and make them combat-ready (this consisted of individual and small-unit training as well as combined training [*slozhnaia ucheba*] at the division level); and the time spent transporting (through points of embarkation and disembarkation) and deploying troops. The model accounted for the delays expected in moving supplies through transshipment points (such as those at the Soviet-Polish border), and it assumed destruction of transshipment and disembarkation points as well as damage or destruction to downloading facilities on a wide scale, that varied in detail in modeled scenarios depending upon when and where the war began.

In the model, a division was not deployed until it was fully trained up to the division level and rated combat-ready [*boesposobnaia*]. Dr. Tsygichko expressed the conviction that deployment of noncombat-ready units (as defined) was not considered to make sense and was not seriously considered in the planning he was aware of.

Effect of Medical Support on Rate of Advance in Theater Operations

The TVD model showed that high levels of losses would quickly decrease combat readiness. Medical studies from the 1970s predicted substantial numbers of casualties in a war in Central Europe, which would require extensive mobile medical support. The TVD model, using the medical data, exposed a serious deficiency in Soviet mobile-hospital capabilities (including grossly inadequate numbers of doctors and medical technicians), and thus anticipated very high serious injury and fatality rates. Units whose losses exceeded 50% in a matter of hours were rated noncombat-ready and withdrawn. Their replacement by new units put a severe strain on a transport network already under attack. The declining combat readiness of first-echelon divisions due to unreplaced losses, combined with the time spent replacing first-echelon divisions with operational reserves and the shrinking availability of large-scale replacements in a war of high attrition, was expected to slow the Soviet advance dramatically. Dr. Tsygichko said that the work of medical services analysts and even the modeling applications of their findings did not influence the General Staff to correct deficiencies in field medical support because, ultimately, it was not as "interesting" as investment in military hardware. He sensed a reluctance on the part of senior General Staff generals to really deal with the reality of warfare and its consequences, and the inattention of the generals to the critical shortcoming in medical support was indicative of their indifference.

Stopping the War for 2 Weeks To Resupply

According to Dr. Tsygichko's modeling, an initial operation would last 9 to 12 days (this might put them at the French border in some locations and at the Rhine River in others) and *then come to a complete halt for 10-14* days to permit resupply and troop replacement. The pause would be an unavoidable constraint on the offensive because the resupply would be too slow to maintain the momentum of the first echelon beyond the advance expected in the initial TVD operation.

When asked about the concept that second-echelon Fronts would simply pick up the offensive from exhausted first-echelon Fronts at the end of the initial operation, Tsygichko explained that there were basic real-world physical constraints and, to a lesser extent, organizational constraints that would make the "second-echelon Front" solution impossible to execute. The "commitment of second-echelon Fronts" was actually an assumption of command by second-echelon Fronts of first-echelon armies and divisions already in place, supplemented by some fresh divisions and perhaps armies. The functioning of the logistics support system in the TVD was, in most respects, insensitive to the identity of the Front or Fronts to which the logistics command structure was subordinated. In other words, fuel, ammunition, and food supplies were or were not available and transportable regardless of the identity of the command superstructure. Moreover, General Staff modeling and analysis conducted by Dr. Tsygichko's department indicated that basic supplies would *not* be available to sustain operations beyond approximately 2 weeks because of expected high losses and protracted transport times exacerbated by extensive destruction of the transportation infrastructure. Under these conditions, the number of Fronts did not matter.

Persian Gulf Mobilization Modeling Applications

In 1984, the General Staff asked Dr. Tsygichko to estimate how rapidly the United States could deploy 500,000 troops to the Persian Gulf (!). The General Staff had assumed that a half-million U.S. troops could reach the Gulf and be prepared to fight in 1 month. In contrast, Dr. Tsygichko's modeling indicated that the U.S. would need at least 4-1/2 months to carry out such a deployment. The U.S. would be constrained primarily by the transportation networks inside the U.S. and by the number of bottoms and aircraft available to carry the forces forward and to bring in the requisite logistics support. Combat readiness of U.S. units was rated fairly high at the unit and division levels when mobilization began.

Review of Weapons Programs by the General Staff

In the late 1960s and early 1970s, Dr. Tsygichko participated in an analytical support role in two separate weapons system program review board meetings. The purpose of such meetings was to develop a final recommendation on production, non-production or modification on a weapons system that was presented by its sponsoring design bureau as ready for series production. All participants were expected to have reviewed and evaluated all relevant materials and to have developed organizational positions before attending the decision meeting. Such meetings usually were chaired by a three-star general from the General Staff, often from the prestigious Main Operations Directorate (GOU) and attended by representatives of the "buying" service, the General Staff, and the military industrial commission.

The meetings Tsygichko attended were chaired by the Deputy Director of the General Staff's Main Operations Directorate. One system review meeting easily developed a consensus to support series production of the weapons system under review. The other just as clearly disapproved series production. In the second instance, the meeting chairman himself presented volumes of documentary evidence to establish the inability of the weapons system to meet operational requirements. His view reflected the consensus which recommended against production.

On the basis of his experience at the meetings, Dr. Tsygichko expected the supported system to be produced and the negatively evaluated system to be canceled. In fact, both systems went into production on schedule, leading Tsygichko to conclude that the review board meetings were an empty formality designed to mollify the General Staff and other players outside the military industrial commission (VPK)[96] but which had no real effect on program development.

Remarks on Previous Interviews

Dr. Tsygichko commented further on a paper he had prepared earlier, *Kommentarii k interv'iu V. N. Tsygichko v 1990-1991* godu:[97] In the 1960s and 1970s, Vitalii Tsygichko explained, the Soviet Union had a comprehensive plan for retaliation against nuclear attack. The plan, which was updated every 6 months, called for a Soviet launch-

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[96] VPK — *Voennaia Promyshlenaia Kommissiia* — (Military Industrial Commission).

[97] Remarks, in Russian, on the *Interviews of V.N. Tygichko given in 1990-1991* are in Appendix E: of this volume.

under-attack[98] [*otvetno-vstrechnyi udar*] using *all* Soviet silo-based systems. This annihilating retaliatory nuclear strike [*unichtozhaiushchii otvetno-iadernyi udar*] would be directed not against U.S. silos, which Soviet planners assumed would be empty, but rather against military targets (such as airfields, ports, and C^3 facilities) and against the U.S. political and economic infrastructure (including transportation grids and fuel supply lines). Soviet doctrine relied on the threat of a massive response as the best way to prevent nuclear use.

Soviet analysis and modeling demonstrated that escalation to nuclear exchanges at the theater level was extremely disruptive to conventional defensive and certainly offensive operations (the war stopped for 2 days and strategic operations had to be replanned) and further escalation to global use was highly probable and counterproductive. Soviet planning assumed NATO initiation of nuclear use, so to control escalation the General Staff began to examine limited options. Nevertheless, the General Staff never planned in any detail actual extended combat on a nuclear battlefield. The Soviet buildup of theater nuclear forces in Europe was intended, in large part, to reduce the probability of NATO's first use and thereby to keep the war conventional where outcomes were relatively more predictable and where the USSR might enjoy a relative advantage.

Dr. Tsygichko was not aware of any Soviet notional employment of chemical weapons in military exercises after 1964. He attributes the existence of Soviet CW stockpiles to the VPK's interest in keeping the chemical industry healthy.

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[98] An analogous U.S. usage of the term in discussions is "launch on tactical warning." Launch under attack refers to when missiles have been fired by the enemy.

SUMMARY OF INTERVIEW

Subject: Gen.-Col. Dmitrii Volkogonov

Position: Director, Institute of Military History

Location: Moscow, USSR

Interviewer: John G. Hines

Date: March 5, 1990

Language: Russian

Prepared by: John G. Hines, based on notes

The present situation is unprecedented. The 1920s and 1930s are not really analogous to the present situation, because today numbers of weapons are far less indicative of real military power. Today, political approaches are more important than military ones. The 1917-19 period was analogous because the Soviet state was simply trying to survive and at Brest-Litovsk huge concessions were made to achieve peace.

New thinking began with the 1941 U.S.-Soviet coalition. Stalin in 1951 decided that China and North Korea should not win because this would lead to U.S. nuclear use. In the Cuban Missiles Crisis, partnership was stronger than confrontation. U.S.-Soviet relations were destined to be cooperative.

The U.S. is emerging much stronger than the USSR because of its military capabilities and scientific-technological potential. If the U.S. tries to exploit its advantage, then both sides will lose (the USSR will have an electorate that would respond with rearmament). Shrinking strategic forces and possible BMD (ballistic missile defense) deployments might make the U.S. completely invulnerable, but the USSR can never achieve complete invulnerability because of the small, potentially nuclear states along the Soviet periphery. The USSR will have less influence than the U.S. in the development of a new European security system because the USSR is preoccupied with its economy, nationalism, shrinking army, and the dissolution of its alliance in Eastern Europe.

As advisor to the Supreme Soviet Defense Committee, Volkogonov has recommended the establishment of a purely professional army and advocated a 33 - 40% reduction in the size of the Armed Forces. Professional armies tend not to fight major wars (in part because of the mobilization needed for reserves).

APPENDIX A: PARTIAL LIST OF DECISION MAKERS AND ANALYSTS CITED OR REFERRED TO IN THE TESTIMONIAL EVIDENCE

Alekseev, Nikolai N. — Marshal of Communications Troops, then Chairman of the Scientific Technical Committee (NTK) of the General Staff in the late 1960s and early 1970s.

Bakatin — A member of Gorbachev's Security Council and a deputy of the Supreme Soviet.

Chelomei, Vladimir Nikolaevich — One of the chief designers responsible for development of missile and space systems, to include the SS-19 ICBM and the Proton and Polet space satellite systems.

Epishev, General of the Army Aleksei A. — The Chief of the Main Political Directorate of the Soviet Army and Fleet throughout the Brezhnev era.

Glushko, Valentin Petrovich — Missile pioneer, designer of first Soviet liquid-fueled rocket motors and basic technology for most Soviet liquid-fueled missiles, and chief of his own design bureau.

Grechko, Andrei Antonovich — Minister of Defense of the USSR from 1967 until his death in 1976.

Gromyko, Andrei Andreevich — Minister of Foreign Affairs of the USSR from 1957 to the Gorbachev era, and full Politburo member from 1973 until that same period.

Iangel', Mikhail Kuz'mich — Chief of a missile design bureau from 1954 until his death in 1971.

Keldysh, Mstislav V. — President of the Soviet Academy of Sciences, 1961-1975; director of various Soviet space programs and special advisor to the Soviet General Secretary. He became ill in the mid-1970s and died in 1978.

Kobets, General — Boris El'tsin's RSFSR "shadow" defense minister in the last year before disintegration of the Soviet Union.

Kosygin, Aleksei Nikolaevich — Chairman of the Council of Ministers from 1960 to 1980.

Kozlov, General of the Army Mikhail M. — Deputy Chief of the Main Operations Directorate of the General Staff during the first half of the Brezhnev era.

Kulikov, Victor G. — Marshal of the Soviet Union, Chief of the Soviet General Staff from 1971 to 1977, and Commander of the Joint Armed Forces of the Warsaw Pact from 1977 to 1989.

Malinovskii, Rodion Ya. — Marshal of the Soviet Union and Minister of Defense of the USSR from 1957 until his death in 1967.

Nazerbaev, Nursultan —Influential Kazakh deputy to the USSR Supreme Soviet, Politburo member, and later first president of Kazakhstan after the disintegration of the USSR.

Piliugin, N. A. — A chief designer in the strategic missile sector, who under Korolev, was a major contributor to the development of solid-fuel intercontinental ballistic missiles, beginning with the SS-13 (Soviet designation—RS-12).

Podgornyi, Nikolai V. — Chairman of the Presidium of the Supreme Soviet of the USSR and a key member of the ruling Politburo during the first half of the Brezhnev era.

Riabikov, Gen.-Col. Vasilii M. — Engineer and First Deputy Chairman of the GosPlan (State Planning Committee) for Military-Industrial Production from 1965 until his death in 1974.

Serbin, Ivan — Chairman of the Defense Industry Department of the Central Committee of the Communist Party of the Soviet Union in the 1960s and early 1970s.

Shevardnadze, Eduard A. — Minister of Foreign Affairs under Soviet President Mikhail Gorbachev and later President of the Independent Republic of Georgia.

Suslov, Mikhail A. — Senior Member of the Politburo, CPSU, responsible for ideology.

Tolubko, Vladimir F. — Chief Marshal of Artillery. Marshal Tolubko commanded the Soviet Strategic Rocket Forces from 1972 to 1985 serving simultaneously as a Deputy Minister of Defense.

Ustinov, Dmitrii Fedorovich — Minister of Defense of the USSR from 1976 to 1984.

Volskii, Arkadii — A deputy in the last Soviet Supreme Soviet. He enjoyed considerable influence at the time among military industrialists.

Yakovlev, Aleksandr Nikolaevich — Ambassador to Canada from 1973 to 1982 and Director of IMEMO from 1983 to 1985. Yakovlev became a Politburo member of the Communist Part of the Soviet Union (CPSU) in 1987.

APPENDIX B: RESEARCH QUESTIONS FOR SOVIET INTERVIEW RESPONDENTS

The following questions were prepared as a guide for the conduct of research. Largely because of residual distrust and security constraints, not all interview subjects were willing to answer all questions. In addition, on occasion, there arose informal interview opportunities with key subjects where the interviewer could not reasonably refer to a set of questions even if he were to have such questions on his person. Nor could the interviewer, in all instances, presume to impose on every interview subject an exhaustive review of the questions because of limitations imposed by time, or the patience or health of the interview subject. Some interview subjects reacted very strongly to certain questions and launched into "stream-of-consciousness" responses of almost free association which the interviewer was reluctant to interrupt lest he lose the opportunity to acquire important information and insights for which he had not formulated questions.

In summary, the attached questions provide the reader with a sense of the approach taken in the research phase and a more detailed understanding of the information and insights that the project was designed to reveal.

RESEARCH QUESTIONS FOR SERVING AND FORMER SOVIET OFFICIALS AND ANALYSTS

Research Project: "Soviet Strategic Intentions 1965-1985: An Analytical Comparison of U.S. Cold-War Interpretations and Soviet Post-Cold-War Testimonial Evidence."

February 8, 1990

Please keep in mind two aspects of all of the questions that follow:

First, almost all questions might be answered differently depending upon the period of the Cold War to which they refer. The U.S. or NATO threat looked different in 1968 from how it looked in 1981. Each answer, therefore, may actually be a series of answers depending upon the time period in question.

Second, the questions often refer to "the Soviet view" or "the Soviets." Clearly, the General Staff's view would not always be the same as that of the Ministry of Foreign Affairs or the International Department of the Central Committee of the CPSU. Respondents, therefore, should try to specify what organization or individuals held which particular views, who held major opposing views and which approach prevailed. Such answers would help to strengthen the scientific and analytical value of the overall analytical history of the Cold War.

Research Questions

I. Research and conceptual development underlying Soviet thinking on deterrence, strategies for war, the use of nuclear weapons, approaches to nuclear targeting, escalation, etc.

1. In the Soviet view, could the USSR increase its chances for survival by gaining an advantage in nuclear capabilities?

2. Did the Politburo and Defense Ministry ever conclude that nuclear weapons were not militarily useful?

3. Did the Soviet Union come to accept the concept of mutually assured destruction? Was the strategic balance considered stable?

4. In your opinion, was nuclear war best prevented through mutual deterrence or by developing Soviet nuclear warfighting capabilities?

5. If nuclear deterrence had failed, were the Soviet Armed Forces prepared to fight:

   - With conventional weapons?
   - With nuclear weapons?

6. Did the Politburo and MoD ever explore the possibility of launching a first strike?

7. In 1971 and 1972, the Ministry of Defense conducted high-level exercises that considered the effects of a strategic nuclear strike by the U.S. against the USSR. What led to the organization of the exercises? What happened at the exercises and what major conclusions were made as a result?

8. When and how did the Soviet Union adopt a launch-under-attack doctrine leading to the expectation of meeting-retaliatory strikes [*otvetno-vstrechnye udary*] by Soviet missile forces?

9. Were Soviet retaliatory strikes aimed at U.S. missile silos or only at soft military targets, cities, and economic infrastructure?

10. Did targeting vary depending on assumptions about first or second strike?

11. How would Soviet forces have responded to a small-scale U.S. strike using tactical nuclear weapons based in Europe? Based on submarines?

12. What would have been the response to a limited (in terms of numbers of warheads) strategic strike launched from the territory of the U.S. on the Soviet Union?

13. Did the USSR have plans to escalate from theater to global nuclear use?

14. Why did the USSR build up its SS-20 and other theater nuclear forces in the late 1970s and early 1980s?

15. Was the Soviet Union striving to achieve strategic nuclear superiority or merely strategic parity?

16. What was the aim of the Soviet arms buildup? Was the USSR trying to acquire a first-strike potential (for political reasons) or the capability to destroy the United States in a retaliatory strike?

17. In your view, did Pershing II and cruise missiles give U.S. forces the capability to launch a surprise attack on Soviet territory? How did these deployments affect Soviet strategic planning and doctrine?

18. Did special preparations in the early 1980s by the Soviet-VRIaN government against a surprise missile nuclear attack [*Vnezapnoe Raketno-Iadernoe Napadenie*] from the U.S. and NATO represent a real concern or did other, internal factors affect the government's actions?

II. Bureaucratic politics within Soviet political-military circles

1. Which organizations exerted the greatest influence over the process of force development [*stroitel'stvo vooruzhenii*] and major weapons procurement programs [*programmi zakupok*]:

- Ministry of Defense?
- General Staff?
- Various departments of the Central Committee? If so, which departments?
- Chiefs of Design Bureaus?
- The Chiefs of the Services [*vidy vooruzhennykh sil*]?
- Others?

2. To whom if anyone did the Politburo inner circle of Brezhnev, Ustinov, Gromyko, Smirnov, and Andropov listen for advice on issues affecting state security? The General Staff? Industrialists? KGB? Specialists from the Central Committee?

III. Process of force structure planning and weapons systems development and production

1. Were particular nuclear weapons developed and deployed in order to fulfill specific military missions? Was there a rational strategy behind Soviet force structure development?

2. Which organizations or institutes did the most useful and influential analysis?

- General Staff Institutes?
- Military-Industrial Institutes?
- Academy of Sciences Institutes?

3. Were decisions on force development and deployment based on expert analysis, particularly on quantitative analysis?

4. Did Ustinov and the chief designers consider there to be a need for rapid technological improvement in Soviet weaponry and command and control? How did this assessment change in the 1970s and 1980s?

5. What was the Soviet attitude regarding arms control talks, such as SALT and SALT II? What advantages did the Soviet leadership see in these talks? What role did they play in Soviet calculations regarding the overall balance of forces?

6. What were the major organization differences over arms reduction issues?

IV. The course of a general war in Europe and the consequences of nuclear war

1. What consequences did Brezhnev, Ustinov, and other Politburo members expect from nuclear war? Did they think that they could survive a nuclear war?

2. Did key organizations or individuals believe that the Soviet Union was capable of winning a war in Europe with only conventional arms?

3. Under what circumstances was the Soviet Union likely to employ chemical weapons?

V. Soviet assessments of the U.S./NATO threat

1. How did the USSR gauge its vulnerability to U.S. nuclear forces? Strategic? Tactical?

2. Which, if any, weapons programs, technological developments, and doctrinal statements appear most threatening to Soviet security?

3. Which developments, if any, led you to believe the U.S. might attack the USSR or the Warsaw Pact?

4. What were the perceptions of the U.S. threat and intentions based on force structure and technological developments?

   - Specifically, were there periods in the history of the Cold War when U.S. or NATO behavior were much more threatening than others?

APPENDIX C: RESEARCH QUESTIONS FOR U.S. INTERVIEW RESPONDENTS

The following questions served as a guide for the interviewer in gathering the views of senior U.S. national security officials and of analysts who were regularly exposed to senior decision makers. The interviewer asked the respondents to attempt to recall beliefs and attitudes they held at the time they occupied their official positions and to try not to contaminate their views with information and changed attitudes that may have come with exposure to more or different information after they had left office.

Research Questions for Former U.S. National Security Officials

Research Project: "Soviet Strategic Intentions 1965-1985; An Analytical Comparison of U.S. Cold-War Interpretations and Soviet Post-Cold-War Testimonial Evidence."

September 9, 1991

1. Did the Soviet leadership believe they could fight and win: a conventional war? A nuclear war? Were they prepared or interested in initiating warfare? Conventional? Nuclear?

2. Did the Soviet leadership accept or support the concept of deterrence?

3. Were the Soviets prepared to initiate the use of nuclear weapons or to preempt nuclear use by the U.S. or NATO?

4. What was the Soviet attitude toward nuclear use in theater warfare? Were they prepared or very willing to use nuclear weapons? First? In retaliation?

5. Were the Soviets prepared (willing, eager) to expand a theater nuclear war to a global nuclear war? What was the Soviet policy or doctrine with respect to escalation from conventional to nuclear war and toward escalation once nuclear weapons had been used?

6. Did the Soviet leadership accept or plan for use of selected or limited nuclear strikes? In theater? Intercontinentally?

7. Did the Soviets accept strategic parity or were they striving for strategic superiority? If striving for strategic superiority, then to what purpose? Political coercion? A preemptive, unanswerable first strike against the U.S. and NATO in the event of war?

8. What do you believe explains the massive Soviet arms buildup over several decades? U.S. and NATO competition? Other factors?

9. Were the Soviets prepared to make use of offensive chemical weapons? Under what conditions?

10. Did the U.S. engage in economic warfare with the Soviet Union by forcing accelerated Soviet investment in armaments through continuous, technology-based competition?

11. What sources did you rely on for information and analysis about Soviet military capabilities and intentions? Your own experience? Non-government sources? The intelligence community? Did you rely on the intelligence community primarily for data or for both data and interpretive analysis?

APPENDIX D: LIST OF ACRONYMS AND ABBREVIATIONS

CW — Chemical Weapons.

DOSAAF — *Dobrovol'noe obshchestvo sodeistviia armiia, aviatsii i flotu SSSR* — The Voluntary Society for Cooperation with the Army, Aviation, and Navy of the USSR. DOSAAF was a quasi-military organization embedded in the Soviet educational system for the purpose of preparing Soviet youth for military service or for support of those who did serve in the military. It was not generally regarded as voluntary by Soviet youth.

EMP — *Elektronomagnitnii impul's* (EMI) — Electro-magnetic pulse — An effect of a nuclear explosion that tends to disable electronic and electrical devices and systems—normally beyond the range of the heat and blast effects of a given weapon. Solid state electronics are more susceptible to neutralization than are older, tube-type technologies.

EWS — Early warning systems (Russian acronym, SPRN probable expansion — *sistemy preduprezhdeniia raketnoro napadeniia*) — Missile attack warning systems.

GosPlan — The State Planning Agency — GosPlan under the supervision of the Council of Ministers set "binding" production targets for all ministries and enterprises throughout the former USSR.

GossNab — State Agency in the former USSR that oversaw supply in order to meet production targets set by GosPlan.

GS — General Staff (of the Ministry of Defense).

KB — *Konstruktorskoe buro* — Design Bureau. The complete designation is *opytno-konstruktorskoe buro* (experimental design bureau). See OKB below.

LNO — Limited Nuclear Option(s).

MGB — *Ministerstvo Gosudarstvennogo Bezopasnosti* — Ministry of State Security, a predecessor to the KGB.

MoD — Ministry of Defense.

MOM — Ministry of General Machine Building.

MR-100 — The MR-100 is probably the manufacturer's number for the SS-17, the Iangel' four-warhead missile proposed in July 1969. The Strategic Rocket Forces (SRF) designation for the same missile was the RS-16 (missiles often were known under two or three designations; the manufacturer's number, the SRF number and, for some systems, a number for general space applications).

MRVs — Multiple reentry vehicles as distinct from Multiple Independently Targetable Reentry Vehicles (MIRVs) which were developed later. MRVs fall in a "footprint" determined by ballistic momentum once released over the target area by the last stage of a missile. Each warhead on a MIRV, on the other hand, is guided independently to a specific target once released by its missile "bus."

MVD — *Ministerstvo Vnutrennykh Del* — Ministry of Internal Affairs.

NII — *Nauchno-issledovatel'nii institut* — Scientific Research Institute. Mozzhorin's institute, TsNIIMash, employed over 40,000 scientists and engineers.

NPO — *Nauchno-proizvodstvennoe ob'edinenie* — Scientific-production conglomerate.

OKB — *Opytno-konstruktorskoe buro* — [Experimental] Design Bureaus. These were R&D facilities in the military-industrial sector that originated major weapons designs (aircraft, missiles, etc.) and followed their development through to mass production and deployment.

OMG — *Operativnaia manevrenaia gruppa* — Operational Maneuver Group. OMGs were highly mobile division-to-army-sized formations subordinated to first-echelon Warsaw Pact armies and Fronts and were designed to disrupt and destroy preemptively the enemy's rear-area control, lines of communications, and nuclear capabilities very early in any theater conflict.

PD-59 — Presidential Directive 59 — A key 1979 White House directive, on U.S. nuclear strategy. The contents of the directive were discussed openly and deliberately by knowledgeable U.S. government officials in the U.S. press. Published accounts reinforced the concept of selective use of nuclear strikes under various scenarios and suggested early targeting of Soviet leadership and command and control in the event of Soviet aggression.

PRO — *Protivoraketnaia oborona* — Anti-Missile Defense (Ballistic Missile Defense – BMD, in the West). Anti-missile defense was a responsibility of the commander-in-chief of the Air Defense Forces (Voiska PVO).

PSI — Pounds per square inch.

PVO — *Protivovozdushnaia oborona* — Air Defense.

RIaN — *Raketno-Iadernoe napadenie* — An acronym that the Soviets used to describe a special period of tension between 1980 and 1984 when they reported greatly heightened expectations of a nuclear attack from the U.S. See Christopher Andrew and Oleg Gordievsky, *KGB: The Inside Story*. (London: Hodder and Stoughton, 1990), pp. 501-507.

RN systems — Possible abbreviation of *razvedivatel'no-nabliudatel'nye* (reconnaissance-observation) systems.

SLBM — Submarine Launched Ballistic Missile.

SSBN — Submarine, Ballistic Missile equipped, Nuclear powered — A submarine designed to launch strategic nuclear ballistic missiles (SLBMs).

SRF — Strategic Rocket Forces.

TNW — Theater Nuclear Weapons.

TVD — *Teatr voennykh deistvii* — Theater of (Strategic) Military Action, for example, Central Europe from Ukraine to the western shore of Ireland.

Voennaia Politika KPSS — The most authoritative, high-level expression of the will of the Communist Party with respect to issues of defense and state security.

VPK — *Voenno-promyshlennaia Kommissiia* — Military-Industrial Commission. A Soviet state commission responsible for coordinating military-industrial procurement policy. Its authority was inferior to that of the Defense Industry Department of the Communist Party of the Soviet Union.

VPK — *Voenno-promyshlennyi Kompleks* — Military-Industrial Complex. The expression was used in Soviet propaganda to criticize Western military industry's relationship with the political leadership and with the operational military. The operational Soviet military also used the expression as a pejorative way of describing the powerful alliance between the military industrialists (considered to be civilians) and leadership of the Party and state of the Soviet Union.

APPENDIX E: REMARKS ON THE INTERVIEWS OF V. N. TSYGICHKO GIVEN IN 1990-91

Все интервью, данные мною в июне 1990 г. носили в основном ознакомительный характер. Вопросы были самые разнообразные и посвящены очень широкому кругу проблем, поэтому не было серьезного анализа и научной дискуссии по конкретным вопросам моделирования.

Мне кажется, что очень важно было для американской стороны получить новую информацию о ранее закрытой области. Поэтому понятен интерес к тому, какие модели разрабатывались, как они влияли на принятие решений, какие факторы учитывались и т.д. Из ответов на вопросы ясно, что математическим моделированием для обеспечения планирования операций и принятия решений в нашей стране занимались с начала 60-х годов очень серьезно. Для этого были привлечены лучшие молодые ученые. Были созданы специальные институты при Генштабе и Видах В.С. С середины 70-х годов модели внедрялись очень активно. Но эффект их применения для принятия решений был недостаточен, т.к. на содержание стратегических решений большое влияние оказывала политика тогдашнего советского руководства и идеологические догмы, во многом определявшие военную доктрину.

Мне кажется, что из этих интервью трудно было понять методологию построения и использования моделей, не говоря уже о методах моделирования. В основном интересовались тем, что делалось в этой области и практически отсутствовали профессиональные вопросы о том, как это делалось.

Я также думаю, что ситуация с использованием моделей в Генеральном Штабе и войсках также осталась не совсем понятной. Мне кажется, это стало яснее в результате моих последующих интервью в 1991 году. Об этом свидетельствует хорошая, по-моему мнению, работа Дона Мохони «Генеральный

Штаб и компьютерные модели».

Доклады и дискуссии в Санта-Монике носили более профессиональный характер. Мне кажется, что общие принципы построения математической модели операции на ТВД были поняты правильно. Однако для подобной дискуссии по методам моделирования времени было мало. Много времени в дискуссии было уделено боевым потенциалам, принципам их вычисления и применеия. Мне кажется, что суть метода осталась для большинства не совсем ясной, что я могу объяснить принципиальным различием в подходах к решению задач соотношения сил, а так же большой разницей в терминологии и понятийном аппарате.

В целом, я оцениваю проведенные интервью и дискуссии как очень полезные, поскольку эти встречи дали очень много информации обеим сторонам. И думаю, что американские коллеги по новому стали понимать суть принципов принятия решений в Генеральном Штабе и роль моделей в этих процессах. Кроме того, они познакомились с другой методологией моделирования, что очень полезно для специалистов.

Мои интервью в 1991 г. носили в основном информационный характер. Они уточняли многие детали разработки и использования моделей в Генеральном Штабе и ВПК.

Важным моментом является отношения Генерального Штаба и ВПК в отношении разработки и закупки вооружения. ВПК представлял военную промышленность, которая доминировала в советской экономике. Руководство ВПК имело гораздо большее влияние в Политбюро, чем Министерство Обороны и поэтому именно ВПК определяло военно-техническую политику в интересвах оборонной промышленности. Генеральный Штаб пытался строить рациональную техническую политику в области разработки и покупки вооружения, но решения принимались

в большинстве случаев без учета мнений военных. Противоборство ВПК и Генштаба носило постоянный характер, но всегда побеждал ВПК. Это было особенно очевидно, когда Министерством обороны был Устинов, сам в прошлом руководивший военной промышленностью. Именно при его руководстве милитаризация экономики достигла громадных размеров. Практически все предприятия гражданских отраслей имели военные заказы. Политика КПК оказывала через Политбюро сильное влияние на военную доктрину, которая была ориентирована на глобальное противостояние СССР и его союзников всему западному миру. Эта доктрина служила основанием для гонки вооружений и милитаризации экономики и других сторон общественной жизни в СССР.

Для того, чтобы иметь поддержку в армии ВПК добился относительной самостоятельностивидов Вооруженных Сил, которые имели тесную связь с промышленностью и вместе выступали против Генерального Штаба. Конфликты между видами ВС и Генеральным Штабом носили постоянный характер. Расстановка сил в высшем эшелоне власти в СССР всегда была не в пользу Генерального Штаба и протестовала осуществлению рациональной и экономной оборонной политики.

Несмотря на громадные перемены в СССР военная промышленность продолжает во многом сохранять свое влияние на внутреполитические и экономические решения. Ее позиции все еще очень сильны, что объясняется в первую очерень громадным потенциалом военной промышленности и поддержкой видов ВС.

Limited Nuclear Options and Escalation

Насколько мне известно, политическое руководство СССР никогда не отступало от установки на массированное применение ядерного оружия, особенно СЯС. В 1973-74 годах были проведены многочисленные расчеты по возможности ведения операций сухопутных войск в Европе с применением ядерного оружия. Оказалось, что уже после первого дня обмена ядерными ударами, когда были использовани только 25% находящихся на вооружении оперативно-тактических и тактических ядерных средств группировки войск сторон были полностью небоеспособны. В результате этих исследований в Генеральном Штабе начались дискуссии и просмотр вариантов ограниченного применения ядерного оружия в операциях на ТВД.

Однако официальная доктрина не изменилась. Политики считали, что это положение доктрины само по себе является инструментом сдерживания возможной агрессии и в случае войны в Европе ни одна сторона не применит ядерного оружия (как было с химическим оружием во Второй Мировой войне).

В целом, эти два раздела объективно описывают ситуацию, связанную с планами применения оперативно-тактического и тактического ядерного оружия в случае войны в Европе. Такие эскаляции до сих пор популярны в Генеральном Штабе. Там считают, что угроза эскалации ядерного конфликта является сильным сдерживающим фактором для применения ядерного оружия, поэтому планировались только операции без применения ядерного оружия.

December 10, 1991

Utility of Nuclear Weapons and Outcome of Nuclear War.

В этом разделе правильно говорится о том, что ядерная стратегия определялась прежде всего идеологическими установками. Уже с начала 70-х годов военные аналитики и руководство Генерального Штаба понимали полную бесперспективность ядерного оружия. В 1972 году вышла книга «Определение норм безвозвратных потерь в стратегической операции на ТВД». (Мы получили за нее премию МО СССР, как за лучшую работу года). В этой книге даны расчеты потерь войск, военной техники, а также гражданского населения и промышленности. Из приведенных данных совершенно очевидно, что уже после первого дня применения ядерного оружия наступает всеобщая катастрофа. Книга была хорошо воспринята военными, но это никак не сказалось на содержании ядерной доктрины, в которой по-прежнему делалась ставка на массированный ответный ядерный удар. Я думаю, что доктрина была только устрашением. но не отражала истинные намерения руководства СССР. Я знаю, что возможные последствия обмена ядерными ударами между США и СССР тщательно рассчитывались и я думаю были известны Брежнему и его команде. Вместе с тем, страна готовилась к ядерной войне. Были предусмотрены специальные запасы продовольствия, ядерные убежища и определенная инфраструктура, позволяющая начать новую жизнь тем, кто останется жив после обмена ударами и взаимного уничтожения. Специалисты доказывали, что это невозможно, т.к.

радиация и изменение климата уничтожат все живое, но Брежневская команда продолжала вкладывать громадные деньги и ресурсы в возможность выживания. Это говорит о том, что политическое руководство было готово пойти на ядерную войну при определенных условиях. Позиция о невозможности победы в ядерной войне и гибели цивилизации в случае ее начала была официально принята только после смерти Брежнева.

Referrence and Preemption

В общем я согласен с выводами этой части работы. Позиция политического руководства была двойственной. С одной стороны Стратегические Ядерные силы (СЯС) воспринимались как гарантия от ядерного нападения. Считалось, что СЯС должны быть такими, что в ответном ударе они могли бы нанести недопустимый ущерб США и европейским странам НАТО. С другой стороны, действовала идеологическая установка на победу в ядерной войне, что требовало таких СФС, которые были бы способны в ответном ударе уничтожить противника. Именно эта последняя установка была основанием для наращивания ядерного потенциала. ВПК и ядерная промышленность постоянно поддерживала идею достижения ядерного превосходства для продолжения гонки ядерных вооружений. Нужно отметить, что Генеральный Штаб в 70-х - 80-х годах реально оценивал последствия ядерной войны и считал, что СЯС это только орудие сдерживания, т.к. само понятие ядерного превосходства не реально при существующем количестве ядерных средств, а развертывание ядерной войны - глобальная катастрофа.

Настолько я знаю, вопрос о возможности упреждающего удара СЯС в Генеральном Штабе никогда не рассматривался. Все расчеты строились на ответный удар.

Parity

Вопрос о приоритете имеет сложную историю. В начале и середине 60-х годов СССР реально стремится к ядерному паритету, поскольку отставала от США в этой области. В то время достижение паритета являлось притерием развития СЯС. Однако когда к началу 70-х годов реальный паритет был достигнут, политическим руководством страны была поставлена задача достичь ядерного превосходства. Это отразилось на военных программах и нашло отражение в тогдашней военной доктрине. Однако по мере признания факта бесперспективности ядерной войны, идея сохранения паритета, как условия эффективного сдерживания начала завоевывать позиции в Генеральном Штабе. Однако при Брежневе концепция паритета не была официально принята. Это случилось только после 1985 года. При этом ВПК и военная промышленность выступали против паритета, ссылаясь на техническое превосходство США. Повился даже термин «технологическая внезапность», которую предлагали компенсировать количеством ядерных средств. Гонку ядерных вооружений в СССР особенно подтолкнула СОИ и она продолжалась до 1990 года.

Force Building

В этом разделе очень правильно расставлены акценты. Именно ВПК и военная промышленность определяли в основном направления военного строительства при поддержке командования видами ВС. Между последними всегда шла война за ассигнования по выделенному военному бюджету. Генеральный Штаб безуспешно пытался влиять на этот процесс. Этим объясняется иррациональная структура ВС и не рациональная техническая политика. Например, строительство авианосцев не может быть объяснено никакими объективными подробностями. И таких примеров масса. ВПК было государством в государстве

и действовала всегда только в своих интересах, подстегивая гонку вооружений и тратя все больше средств на разработку и производство оружия.

Chemical Weapons

За время своей работы в Генштабе и после нее я ни разу не слышал, чтобы обсуждалось или планировалось применение химического оружия (также как биологического и т.д.). В генеральном Штабе, насколько мне известно, этими вопросами в Оперативном Управлении не занимались. На учениях отрабатывалось только отражение химических атак вероятного противника.

Даже в секретных работах запрещалось что-либо говорить о химическом оружии. Это объяснялось тем, что нельзя провоцировать Запад на ведение широкомасштабной химической войны. Официально химическое оружие было признано антигуманным и его применения объяснялось преступлением против человечества.

Отвечая на вопрос о реакции руководства Генерального Штаба на результаты моделирования применения ядерного оружия отмечу, что эти результаты были приняты с интересом. Мне приказали написать подробный доклад по этим результатам, но через несколько дней начальник Генштаба запретил впредь заниматься исследованиями в этой области и я больше этим не занимался.

ОТВЕТЫ

НА ВОПРОСЫ ДЖОНА ХАЙНСА ОТ 10 ДЕКАбРЯ, 1991

Вопрос: Что планировало советское руководство, если ядерное сдерживание терпело неудачу? Когда стратегия ядерной войны была разработана?

Ответ:

С 60-х по 80-е годы взгляды советского руководства на возможность и формы ведения ядерной войны изменялись в зависимости от соотношения возможностей сторон и осознания последствий обмена ядерными ударами.

Первая ядерная стратегия была сформулирована в начале 60-х годов. В ее основе лежала идея нанесения противнику «недопустимого ущерба» в ответном ударе. Стратегия предусматривала также обстоятельства, при которых мог быть нанесен «упрежающий удар». Однако идея упрежающего удара отвергалась Генеральным Штабом, как очень опасная и к началу 70-х годовговорили только об «ответном ударе» или об «ответно встречном», когда пуск ракет начинался после поступления сигнала от системы раннего предупреждения о пуске ракет противника.

В 70-х и 80-х годах было введено понятие «уничтожающего ответного ядерного удара», поскольку количество ядерных средств позволяло даже после удара противника нанести массированный ответный удар. С появлением проблемы СОИ стратегия не изменилась, но для ее осуществления требовалось больше ядерных средств, что привело к резкому ускорению гонки ядерных вооружений в СССР.

Вопрос: **Что по мнению советских политиков предотвращало ядерную войну - взаимное сдерживание или возможности советских ядерных сил?**

Ответ:

Всегда считалось, что только советская ядерная мощь гарантирует безопасность от войны. Вопрос о взаимном сдерживании никогда не стоял, так как официально считалось, что СССР никому не угрожает, а только готовится к отражению возможной агрессии.

Вопрос: **Почему СССР наращивал ядерные средства на театре войны в конце 70-х и начале 80-х годов?**

Ответ:

Есть несколько причин такого наращивания. В начале 70-х годов СССР отставал от США в развитии ядерного оружия поля боя». Советское правительство разработали программу ликвидации этого отставания. Новое вооружение стало производиться в массовом порядке в конце 70-х - начале 80-х годов и им стали интенсивно заменять ядерные средства и создавать

новые подразделения, т.е. это был период смены поколений оперативно-тактических и тактических ядерных средств.

Другой причиной, которая способствовала интенсивному перевооружению в этой сфере явилось серьезное осложнение международной обстановки, начало войны в Афганистане, и как следствие ухудшение отношений с Западом. Я думаю, что ВПК и другие влиятельные силы провоцировали политбюро и Брежнева на жесткую политику и конфронтацию с Западом. Это провоцировало со стороны НАТО и особенно США жесткую ответную реакцию. Вспомним хотя бы позицию Рейгана и его заявления о возможности ядерной бомбежки СССР.

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