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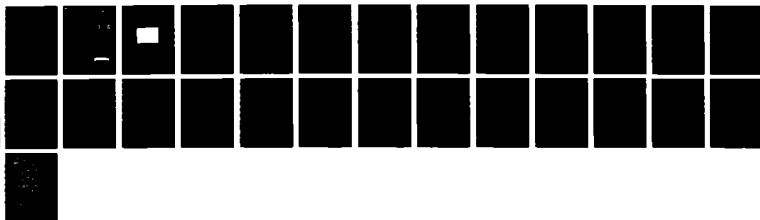
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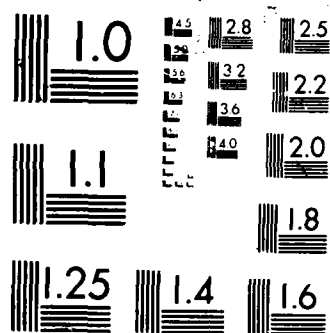
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SOVIET STRATEGIC NUCLEAR TARGETING (U)

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(U) PREFACE

The Center for Planning and Research, Inc. and Science Applications, Inc. are performing a joint study of Soviet nuclear targeting strategy against NATO under contracts to DNA. This paper represents a draft final report on the first phase of that research. The report is presented in expanded outline form, generally following the briefing that has been prepared to present the findings of the project thus far.

This interim report draws upon prior research and on three papers on Soviet concepts of deterrence and patterns of force development prepared for DNA in support of the review of U.S. strategic targeting strategy and requirements being conducted by Mr. Leon Sloss, *Director Targeting Policy Review*. It is restricted to materials classified no higher than SECRET. The final report will include special intelligence information and will be classified accordingly.

Table 1 summarizes the principal elements in the joint program.

TABLE 1 (U)

APPROACH AND METHOD

SOURCES

- CLASSIFIED AND UNCLASSIFIED LITERATURE
- EXERCISES
- MISSILE TARGET ASSIGNMENTS

TASKS

- HISTORICAL ANALYSIS OF EVALUATION OF TARGETING STRATEGY AND OBJECTIVES
- COLLECT ALL AVAILABLE EVIDENCE ON SPECIFIC TARGETS, YIELDS, DAMAGE OBJECTIVES, ASSETS AT RISK AT TARGETS
- COLLECT AND COLLATE SOVIET DATA ON WEAPONS EFFECTS AND DAMAGE CRITERIA
- INVESTIGATE SOVIET RATIONALE FOR HOB AND DGZ
- ESTIMATE SOVIET DAMAGE EXPECTANCY
- VALIDATE EXERCISES BY SOVIET CRITERIA AND ESTIMATED DAMAGE EXPECTANCY
- DETERMINE SOVIET VIEW OF NATO AS TARGET ARRAY AND RECONSTRUCT SIZE AND CHARACTERISTICS OF SOVIET STRATEGIC MISSILE FORCES TARGETED ON NATO AREA
- PLAN ATTACK ON NATO TARGET ARRAY BY SOVIET STRATEGIC MISSILE FORCES ACCORDING TO SOVIET CRITERIA AND DAMAGE EXPECTANCY
- INTEGRATE ANALYSIS AND PRESENT FINDINGS

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(U) While a comprehensive but discriminate attack with selected minimum yields clearly is the preferred Soviet option there are some indications of a higher yield, less discriminate option. If the latter exists, the choice would be up to the top Soviet political leaders, presumably depending upon the scenario.

1.2 (U) Summary

This is part of a joint study by the Center for Planning and Research, (CPR) and Science Applications, Inc. (SAI). The findings presented above pertain to these areas of the study performed by CPR. Results of the SAI investigation are published separately and a joint report is being prepared. The scope of the joint study is summarized in the following tasks:

- Analyze evolution of Soviet targeting strategy and objectives
- Collect all available evidence on specific targets, yields, damage objectives, assets at risk at targets
- Collect and collate Soviet data on weapons effects and damage criteria
- Investigate Soviet rationale for selection of height-of-burst and aim point
- Estimate Soviet damage expectancy
- Validate exercises by Soviet criteria and estimated damage expectancy
- Determine Soviet view of NATO as target array and reconstruct size and characteristics of Soviet strategic missile forces targeted on NATO area
- Determine responsiveness of Soviet strategic NATO target array
- Plan laydown on NATO target array by Soviet strategic missile forces according to Soviet criteria and damage expectancy
- Compare the laydown required to meet Soviet criteria and objectives with the laydown implied by intelligence community estimates of Soviet strategic missile yields
- Evaluate the compatibility of the alternative laydowns with Soviet objectives in a nuclear war with NATO

2.1 Origin of Soviet Nuclear Weapon and Missile Programs (U)

(U) When President Truman informed Stalin of the atomic bomb at Postdam, Stalin feigned disinterest but expressed the hope that the U.S. would use the new weapon to good effect on the Japanese.^{1/} In fact, Stalin had been quite familiar with nuclear weapons for some time. The following milestones in the early Soviet nuclear weapons program are taken from one article* describing how the Central Committee (CC) of the Communist Party makes policy on weapons system acquisition:^{2/}

- Nuclear physics "work" began on a "wide front" in the 1930s.
- By the beginning of WW II Academicians A.F. Ioffe, I.V. Kurchatov and L.D. Landau, their students and "other outstanding Soviet scientists and engineers had outlined the main directions in the resolution of the nuclear problem".
- The German attack stopped the program. Major laboratories in Kharkov and Leningrad were lost or evacuated. Kurchatov and a great number of his co-workers were put to work on "anti-mine defense of ships".
- Kurchatov was put back in charge at the end of 1942. "At his command, scientists were recalled from the Army and other military assignments, from blockaded Leningrad and places of occupation."

(U) * Much additional material is available on this subject -- see 2/

- At the beginning of 1943 a CC decision directed Kurchatov to organize "a new scientific establishment designated for research on the uranium problem" in Moscow. "Scientists and engineers of the most varied specialities were attracted to research in the field of the creation of nuclear weapons."
- After Nagasaki and Hiroshima "the Party Central Committee outlined the primary state task -- to eliminate in the shortest period of time the monopoly of the United States in nuclear weapons..."
- To coordinate and direct the scientists, engineers and industrial plants the Soviets had "a specially created government organ" headed by B.L. Vannikov assisted by A.P. Zavenyagin, V.A. Malyshev, M.G. Pervukhin and Ye P. Slavsky.
- Development of nuclear propulsion systems for ships and submarines was carried on "simultaneously" with the development of nuclear weapons.

(U) The Party also claims to have foreseen the ballistic missile as the delivery vehicle of the future and taken the necessary decisions to transform foresight into fact:^{3/}

"At the same time with creation of nuclear weapons, the most effective means of their delivery to targets was being sought. The Party Central Committee opportunely defined the significance of rocket weapons and took measures for their development and improvement."

In addition to the development of nuclear weapons and ballistic missiles, the "Party Central Committee ensured the development of native radio electronics and automation, jet aviation, radio navigation, means of long range communication".^{4/}

2.2 Origin of Soviet Nuclear Targeting Strategy ()

(U) As the Soviets were developing the new weapons they also were thinking about how to use them. Soviet nuclear targeting strategy was formulated around 1950, quite possibly prior to the detonation of the first Soviet nuclear device in 1949, for Soviet Long Range Aviation which constituted the principal means of nuclear delivery until missiles began to be deployed in large numbers at the end of the 1950s. As far as can be determined, the Soviet choice of targets and targeting priorities has changed little, if at all, since the initial formulation of the strategy.

(U) The principal targets in approximate order of priority are as follows:^{8/}

- Nuclear delivery systems, weapons stocks, and associated C₃
- Other military targets
- Politico-Administrative centers
- Industry, transport and communications

(U) This listing of targets appears to be common to all Soviet sources: classified and unclassified literature, other intelligence sources. General agreement appears to exist on first priority for the enemy's nuclear delivery systems, weapons stocks, associated C₃ and nuclear weapons fabrication facilities. Various sources may appear to differ on the relative priority of the other target categories, but most sources indicate that all categories will be struck simultaneously. Targeting strategy and priorities are essentially the same for strategic and operational - tactical units except that the latter include more troop units and other military targets in the forward area.

(U) How far the list of politico-administrative centers may extend is not at all clear; it may be narrow or extensive and may vary according to decisions of the Soviet political leadership. Specification of transport, communications and industrial facilities to be hit is a most equally vague. Coverage of these target classes also may vary depending upon political and other considerations. Such variations are discussed in subsequent sections of this report.

(U) This classification preceeded the deployment of missiles in silos. Presumably fields of missile silos would be classified as:

- Grouped homogeneous -- large number of elements, randomly dispersed, uniformly low vulnerability.

(U) In 1969, Military Strategy was nominated for the Frunze prize, but may not have gotten it. No announcement was made of the Frunze prize winner that year, so one cannot be sure that it was not awarded to Military Strategy.^{59/} If the latter was not awarded the prize in 1969, other factors may have contributed or even dominated the decision. However, even a pale reflection of the 1960-61 debate, with all the "gut" issues involved, might have been enough to deny the prize to Sokolovskiy and his collaborators. It is perhaps noteworthy that references to Military Strategy in articles in Military Thought during the 1960s were notably cool and non-committal. Since the book appears to a model of orthodoxy in other respects (after the Red Navy was restored in the second edition) and since it has few peers anywhere in scope and sophistication, the commentators in Military Thought must have had some reason to be put off.

III SOVIET STRATEGIC NUCLEAR MISSILE TARGETING OF NATO (U)

3.1 Objective and Approach (U)

(U) Having examined Soviet strategic nuclear targeting strategy and objectives, the question of how Soviet planners might plan an attack on NATO can be addressed. Because of time constraints, the following analysis is confined to Soviet strategic missile forces, primarily the SRF. To the Soviet strategic nuclear planner NATO constitutes three of the five or six theaters of military operations (TVDs)* in which Soviet strategic forces -- IR/MRBMs and ICBMs of the Strategic Rocket Forces (SRF), SLBMs of the Red Navy and medium and heavy bombers of Long Range Aviation -- (LRA) will attack fixed targets with nuclear weapons. The other TVDs are one or two in Central Asia and the Far East and, finally, what the Soviets refer to as "transoceanic TVD", the United States -- including U.S. bases in the American hemisphere and in oceanic areas.

(U) To Soviet planners, strategic nuclear operations apply to all these theaters, hence MRBMs are as "strategic" as ICBMs and medium bombers are as "strategic" as heavy bombers. In the past, when faced with a choice, the Soviets have given first priority to development, production and deployment of strategic delivery systems for operations in the Eurasian TVDs, first with medium bombers in the mid 1950s and then with IR/MRBMs in the late 1950s and early 1960s. During about the first nine years of its existence (1960-1968) the Commander in Chief of Strategic Rocket forces had more IR/MRBMs than ICBM under his command. Similarly, the LRA always has consisted mostly of medium bombers.

(U) * This acronym is a transliteration of the cyrillic letters rather than the English translation (TMO).

(U) Three politico-military objectives and fall out considerations determine Soviet strategic target in the NATO TVDs. The three objectives are:

- To destroy NATO nuclear delivery systems and weapons stocks, air defense, other fixed military installations, and some portion of industry, transport and communications facilities in the initial nuclear preemptive strike or exchange.
- To defeat and disarm remaining NATO forces and to occupy Europe after the initial exchanges.
- To draw upon NATO resources to assist Soviet recovery from U.S. nuclear attacks.

(U) Fallout considerations affect not only occupying troops but also, given the prevailing Westerlies, Eastern Europe and the USSR as well.

(U) Soviet strategic nuclear forces, primarily SRF missiles with some portion of the SLBM force backed up by the LRA and most of the SLBMs as secure reserves, are considered by the Soviets to be the decisive component of their forces for achieving their war plan goals in the NATO TVDs. As was previously noted, in addition to paving the way for the combined arms -- Ground Forces, Frontal and Transport Aviation, Navy elements -- offensive into Europe by destroying essential fixed targets, Soviet strategic nuclear forces are required to continue to support combined arms operations with nuclear strikes during the two to three week war the Soviets expect to follow the initial exchange.

(U) While preemption on warning is the preferred Soviet option, Soviet planning places equal emphasis on being able to accomplish their objectives after absorbing a large U.S. nuclear attack.^{65/} Hence Soviet strategic forces must be able to destroy the NATO fixed strategic target array in either a preemptive or second strike scenario. To minimize their losses in the latter scenario, the SRF adopted launch-or-warning in the mid-1960s.^{66/}

(U) The Soviets not only plan to march their armies into Europe as they defeat NATO forces, but also plan to use European resources to aid the USSR in recovering from the U.S. attack on the USSR. The Soviets also expect Europe to recover with a Soviet type politico-economic order. It behooves Soviet nuclear strike planners, therefore, to consider carefully the total megatonage to be laid down in attacking the NATO target array in order to reduce hazards to the occupying forces, preserve European economic assets, and reduce fallout in Eastern Europe and the USSR.

(U) In view of these considerations, the approach taken to planning Soviet strategic nuclear missile attacks on NATO was as follows:

- Determine the Soviet view of the size, composition and characteristics of the NATO target array.
- Determine the size and characteristics of the Soviet strategic missile force assigned to NATO targets.
- Select the yields required to achieve Soviet damage criteria and damage expectancy, avoid "overkill" in accordance with Soviet objectives and practices established in the prior analysis.
- Use Soviet planning factors to calculate the number of strikes required on various target classes and for the NATO target array as a whole.
- Investigate the correlation, if any, between the size of the Soviet strategic missile forces assigned to the NATO TVDs and the size and characteristics of the NATO target array, given Soviet strike requirements.
- Utilize changes in Soviet strategic missile forces and force modernization to achieve Soviet damage criteria and expectancy with a minimum total laydown (in megatons).
- Evaluate the implications of the simulated Soviet strategic missile attack on the NATO target array in the context of Soviet politico-military objectives in a war with NATO.

(U) The next step is to examine the trend in the size, characteristics and capabilities of the Soviet strategic missile forces assigned to targets in the NATO TVDs.

3.4 SOVIET STRATEGIC MISSILE FORCES ASSIGNED TO NATO TARGETS (U)

(U) To destroy NATO fixed targets and support Front operations the Soviets have fielded a mix of IR/MRBMs, SLBMs and ICBMs. These missile forces appear to have been highly responsive to the NATO target array in the context of the basic Soviet plan to fight and win a nuclear war with NATO, and to preserve European assets to assist Soviet recovery. Essentially, Soviet strategic missile forces deployed to strike NATO targets have been sized according to the number of NATO targets, restructured in response to changes in the vulnerability of the target array, and modernized to improve effectiveness while reducing collateral damage. The later aspect reduces hazards to Soviet occupation forces and increases the economic benefits to be derived from occupation. Soviet strategic missile forces also appear to have been designed to be relatively insensitive to the scenario -- either preemptive (on warning) or second strike (with or without launch-on-warning).

(U) Conversely, most of the SS-11, SS-17 and SS-19 ICBMs deployed in ICBM fields have the capability to attack NATO targets. Some ICBMs probably are targeted on China, the Far East and Southeast Asia as well. The assumption here is that organizational affiliation indicates the general geographic location of the primary target assigned to the missiles.

DEVIATION OF STRATEGIC WARHEAD INVENTORY

(U) After 1975 the number of warheads increases rapidly as the SS-20s are deployed. The lower limit provides four SS-20 missiles, three warheads each, per launcher and assumes that the fifth SS-20 round to be procured (per launcher) is for training purposes. The upper limit assumes that the fifth round is an operational one -- additional missiles will be procured for training purposes.

(U) Throughout the period the SLEMs are additive to the lower limit but the number assigned to operations against NATO cannot be estimated with precision and confidence. The rough estimate used here is to assign all SS-N-5 missiles to NATO throughout the time frame shown and to add 2 - 4 Y and D class boats in the late 1970s.

- (U) • In the mid-1970s, the Soviets began replacing the Mod 1 SS-11 missiles in the MRBM fields with the much more accurate MOD-2 (1,100 m at full range) SS-11 and the SS-19 ICBM (490 m at full range). Such rapid replacement of one weapons system with another is unprecedented for the Soviets who "never throw anything away", suggesting some important objective such as taking advantage of the greater accuracy of the later model missiles to increase effectiveness while reducing collateral damage. All such replacement of IR/MPBMs by ICBMs, of course, reduced the vulnerability of Soviet strategic missile forces.*

(U) Given the deployed Soviet forces and their characteristics, the next step is to examine the Soviet view of their strike requirements against the various types of targets to be attacked with strategic missiles in the NATO TVDs.

3.5 Soviet Strategic Missile Strike Requirements Against NATO (U)

(U) The preceding two sections presented the Soviet view of the NATO target array and the Soviet strategic missile forces deployed against NATO. It was noted that the changes in the composition of the Soviet strategic missile forces appeared to be responsive to changes in the NATO target array. Soviet requirements for the number of strategic missile strikes on the NATO target array can be derived from classified and unclassified literature and other sensitive intelligence sources. Inferences also can be drawn from the relationship between the force inventory and the number of targets.

- (U) * It is possible that the Soviets had planned to replace all, or most, of their IR/MPBMs with ICBMs but the SALT ceilings on ICBM launchers precluded this option. They then developed and deployed the SS-20 as the primary replacement system for the SS-4 and SS-5.

(U) Providing multiple strikes on targets apparently is one reason why the Soviets buy several refires per launcher -- up to four rounds for the SS-20. A second reason for this practice is to reduce the sensitivity of the force to the scenario. If some of the launchers are destroyed by enemy strikes the targets can be reassigned to surviving launchers with their re-fire rounds. As has been noted, preemption is the preferred Soviet option but they cannot be assured of it and have not optimized their forces for either the preemptive or retaliatory type scenario.

(U) In addition to strikes against fixed targets, a nominal 200 strikes are provided for SRF support of operations by four Fronts in the three NATO TVDs.

3.6 Rationale for "requirements" Laydown (U)

(U) There are several reasons for concluding that Soviet strategic missile strike on NATO would be restricted to the few hundred MT required to meet their damage objectives rather than the several thousand megatons which the force theoretically is capable of delivering. These reasons

were listed as factors affecting calculation of the required laydown but may be reviewed at this point. First, occupation of Europe will be hazardous enough with the required laydown by strategic missile forces, plus weapons delivered by the LRA, (Soviet) operational tactical missiles, nuclear artillery and Frontal Aviation, and those employed by NATO. Second, although analysis of collateral damage to NATO was beyond the scope of this study, there obviously is a vast difference between the collateral damage that would be inflicted by a laydown of a few hundred MT and one of several thousand MT on the same set of selected military and industrial targets. With the required laydown European economic assets would be available to assist Soviet recovery and to provide the economic basis for the new political order that the Soviets would impose. Third, much less fallout would reach Eastern Europe and the USSR from a laydown limited to what is required as compared to a gross overkill attack.

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