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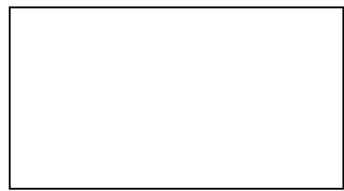
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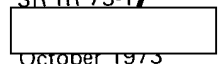
# Intelligence Report

*The Soviet SS-11 Force: Role and Strategic Implications*



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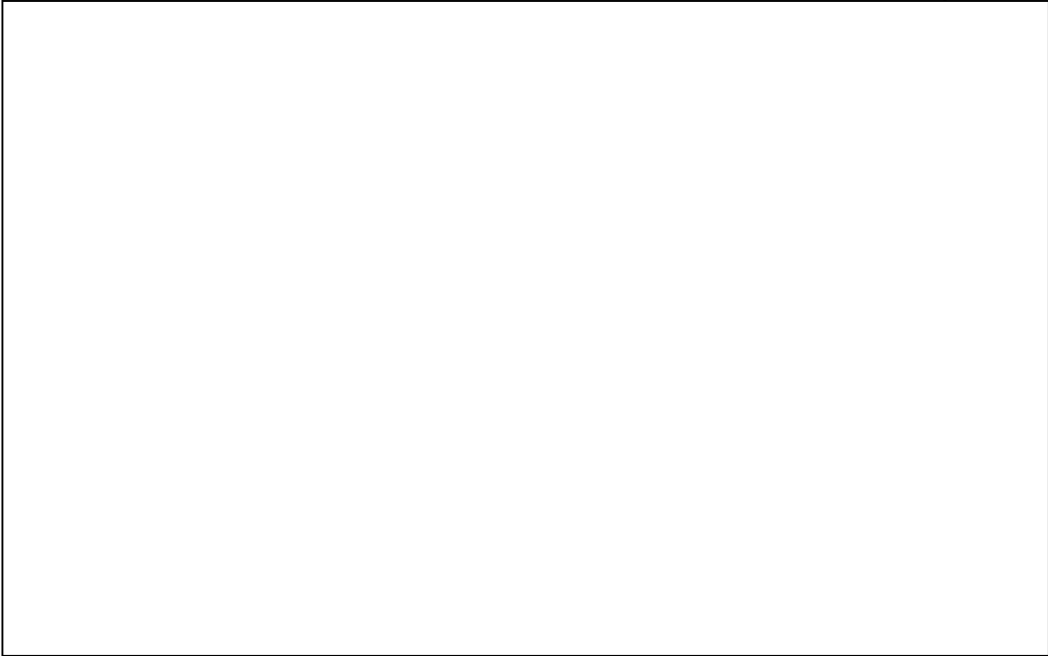
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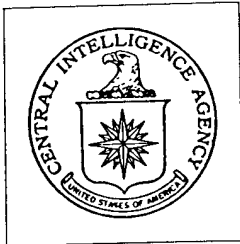
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exemption category 5B(1), (2), (3)  
Date of declassification  
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September 1973

### The Soviet SS-11 Force: Role and Strategic Implications

In 1967, after three years of building SS-11 sites oriented for attack against the US, the Soviets began ICBM sites whose orientation permitted the option of attacking either the US or targets on the Soviet periphery. Some were oriented to add coverage of targets in Europe and the Middle East and others to add targets in the Far East.

- The Soviets now have in operation or under construction 370 SS-11 launchers—over 35 percent of their total SS-11 force of 1,030 launchers—positioned to allow either US or peripheral targeting options.
- This deployment reflects growing Soviet concern with the nuclear threat from China and France, as well as the nuclear strike capability of US forces based in Europe and the Far East.
- The Soviets probably also are concerned over the readiness and survivability of their earlier peripheral strike force, largely comprised of missiles deployed at vulnerable soft sites and aging bombers. Some of the older missiles have been deactivated and their role apparently has been assumed by silo-launched SS-11s.

The use of ICBMs for peripheral attack raises serious questions at SALT, where limits on strategic missiles have been imposed by system and not by mission. The Soviets have argued consistently that "equal security does not mean numerical equality."

- They have maintained that the overall strategic situation requires them to deploy greater numbers of ICBMs than the US, both because of targeting requirements and the need to field a deterrent force against third countries.
- Although this concept has been rejected by the US, the Soviets probably will press for differential ICBM ceilings at SALT in an effort to make agreed limitations more closely accord with the Soviet view of the primary mission of elements of their missile force.

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CENTRAL INTELLIGENCE AGENCY  
Directorate of Intelligence  
September 1973

INTELLIGENCE REPORT

The Soviet SS-11 Force:  
Role and Strategic Implications

The Report in Brief

Recent analysis [redacted] of the Soviet SS-11 ICBM shows that the missile can be targeted over a wide firing sector--230 degrees for the Mod 1 variant and 330 degrees for the Mod 3. This information, [redacted] the SS-11 and older medium- and intermediate-range missiles, has provided the basis for reevaluation of the intended role of the SS-11 force.

In 1967, after three years of building SS-11 sites oriented for attack against the US, the Soviets began the first new sites whose orientation provided the option of attacking either the US or targets on the Soviet periphery. Some of these sites added coverage of Europe and the Middle East, and others, targets in the Far East. The Soviets now have in operation or under construction 370 SS-11 launchers--

*Comments and queries regarding this publication are welcomed. They may be directed to [redacted]*

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over 35 percent of their total SS-11 force of 1,030 launchers--positioned to allow either US or peripheral targeting options.

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The introduction of theater targeting capabilities into the ICBM force during the late Sixties stems from several factors: a growing Soviet concern with the nuclear threat from China and France; a continuing concern with the US nuclear strike capability in Europe and the Far East; an awareness that the MRBM and IRBM force built since the Fifties for the peripheral strike role was becoming obsolescent; and a desire to increase the readiness and survivability of the earlier peripheral strike force which relied largely on missiles deployed at vulnerable soft sites and aging bombers.

Evidence of this concern is reflected in the Soviets' decision to deactivate some of their more vulnerable SS-4 and SS-5 sites and in their attempts to develop and deploy mobile missile systems for a peripheral role. To date, the Soviets have deactivated 51 SS-4 and SS-5 launchers in the western USSR and 43 launchers in the eastern USSR. In the late Sixties the Soviets tested two mobile missile systems--the SS-14 and the SS-X-15--presumably for a peripheral role. Both programs, however, were canceled and neither system was deployed.

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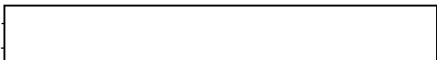
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Replacing SS-4 and SS-5 missiles with the silo-launched SS-11 improves the overall capabilities-- flexibility, accuracy, readiness, and survivability-- of the Soviet missile forces available for peripheral attack. Use of an ICBM in this role, however, raises questions at SALT, where limits have been imposed by system and not by mission.

The Soviets have argued consistently that "equal security does not mean numerical equality." They have maintained that the overall strategic situation requires them to deploy greater numbers of ICBMs than the US, both because of targeting requirements and the need to field a deterrent force against third countries. Although this concept has been rejected by the US, the Soviets probably will press for differential ICBM ceilings at SALT in an effort to make agreed limitations more closely accord with the Soviet view of the primary mission of elements of their missile force.

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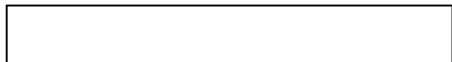
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Peripheral Attack Mission of the  
Strategic Rocket Forces

The Soviet buildup of a force of land-based ballistic missiles for peripheral attack began in 1958 with the deployment of about 60 SS-3 medium-range ballistic missiles. The force grew substantially through the early Sixties as deployment of the SS-4 medium-range and SS-5 intermediate-range ballistic missiles progressed. When new deployment of these two systems ended in 1965, the force contained 576 SS-4 launchers and 101 SS-5 launchers. Only 84 SS-4s and 51 SS-5s were housed in silos; the remainder were deployed at soft, aboveground launch sites.

The primary mission of the peripheral strategic missile force is to destroy nuclear delivery systems and other strategic targets in Europe and Asia. Although the SS-4s and SS-5s could still be used effectively against airfields and other soft targets, their ability to carry out this mission has diminished since [REDACTED] China began deployment of their own missile forces. [REDACTED] Construction of only three deployed missile silos has been confirmed in China, [REDACTED] [REDACTED] The SS-4s and SS-5s lack the accuracy required to assure the destruction of these targets.

The vulnerability of the SS-4 and SS-5 force also appears to be of increasing concern to the Soviets. Currently, two-thirds of the launchers are at soft sites and all launchers, including silos, are deployed in clusters and are susceptible to multiple kill by a single warhead. The Soviets began development in the late Sixties of two mobile missile systems--the SS-14 Scamp and the SS-X-15 Scrooge--which probably were designed to assume a peripheral attack role. Both programs, however, were canceled by 1970, and neither system was deployed.

Since the mid-Sixties, the Soviets have deactivated all 32 remaining SS-3 launchers and 94 SS-4 and SS-5 launchers. Of these, 83 launchers were opposite western

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Europe and 43 launchers were in the eastern USSR. Over the next few years most, if not all, of the present force probably will be deactivated. The evidence suggests that the Soviets have assigned other systems now in their strategic arsenal to fill the gap caused by the deactivation of obsolescent systems and the cancellation of the mobile missile programs.

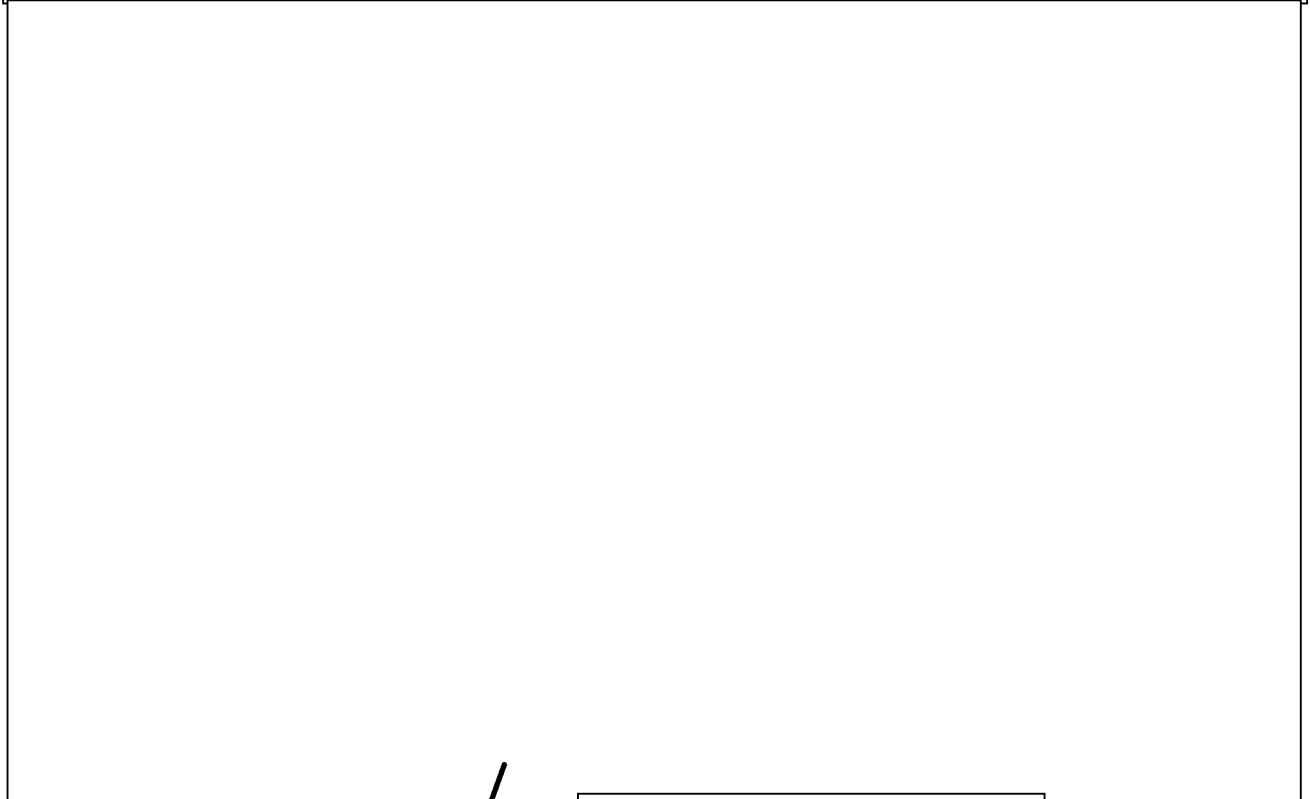
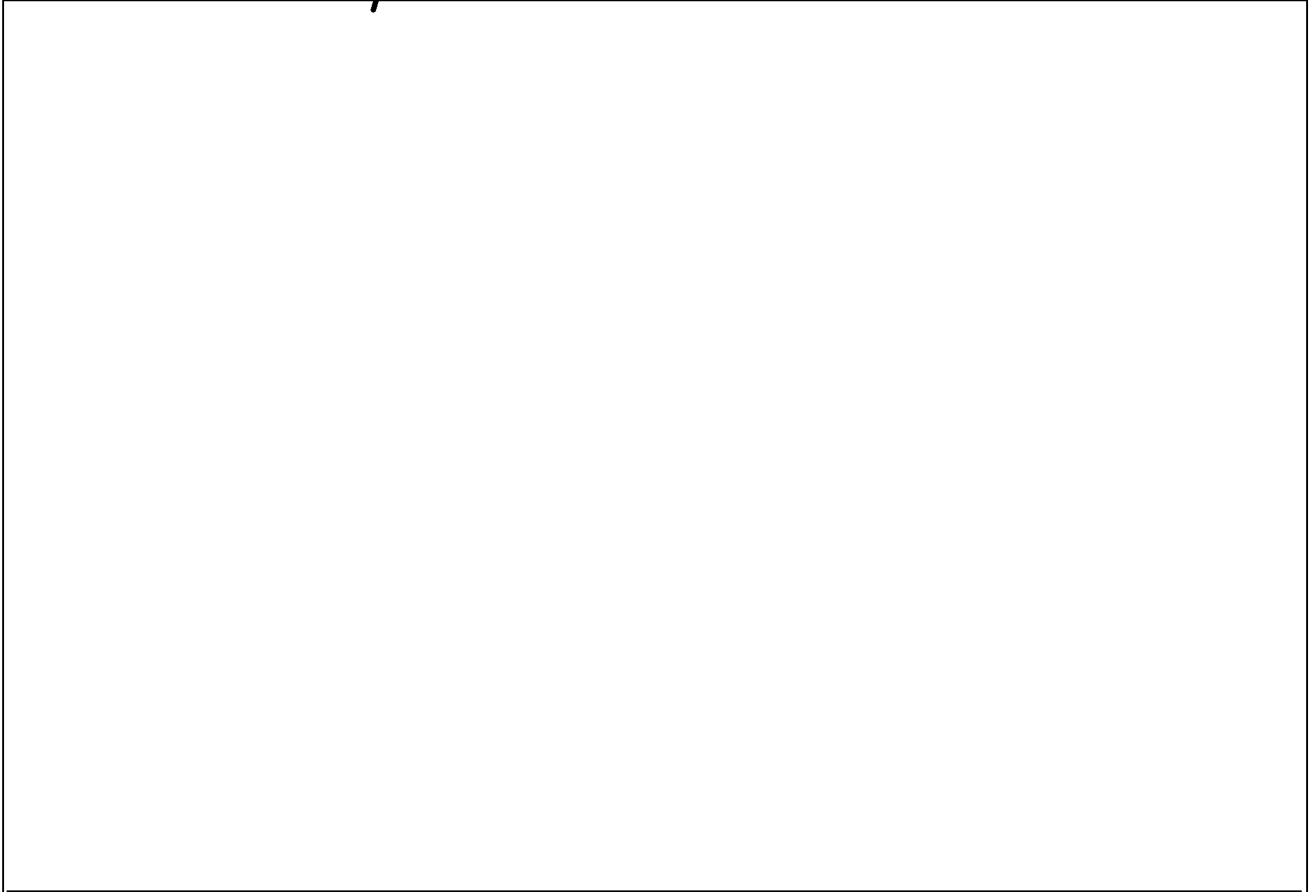
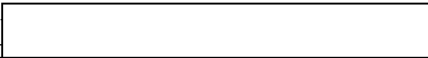
The SS-11 and Peripheral Attack

Development and Deployment

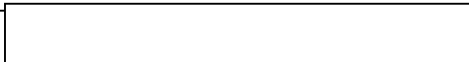
The SS-11 was apparently designed in the early Sixties to meet what the Soviets considered a prime requirement: to field a large ICBM force in a short period of time. In retrospect, the Soviet goal appears to have been to develop a small, reliable, and flexible system which could be deployed extensively at a relatively low cost. [redacted] flight [redacted] and during the last [redacted] when construction of standard SS-11 silos was completed and the last group became operational in the spring of 1971, 850 silos had been deployed at 10 ICBM complexes and 120 additional silos had been constructed at two peripheral missile complexes. All were equipped with the SS-11 Mod 1 which carries a single warhead.

In 1970 the Soviets began construction of 60 new silos at the two peripheral missile complexes--Derazhnya and Pervomaysk. These silos incorporate new design features and are significantly harder than earlier SS-11 silos. Twenty of these launchers are now complete and probably are intended for the latest variant of the SS-11, the Mod 3, which carries three reentry vehicles.

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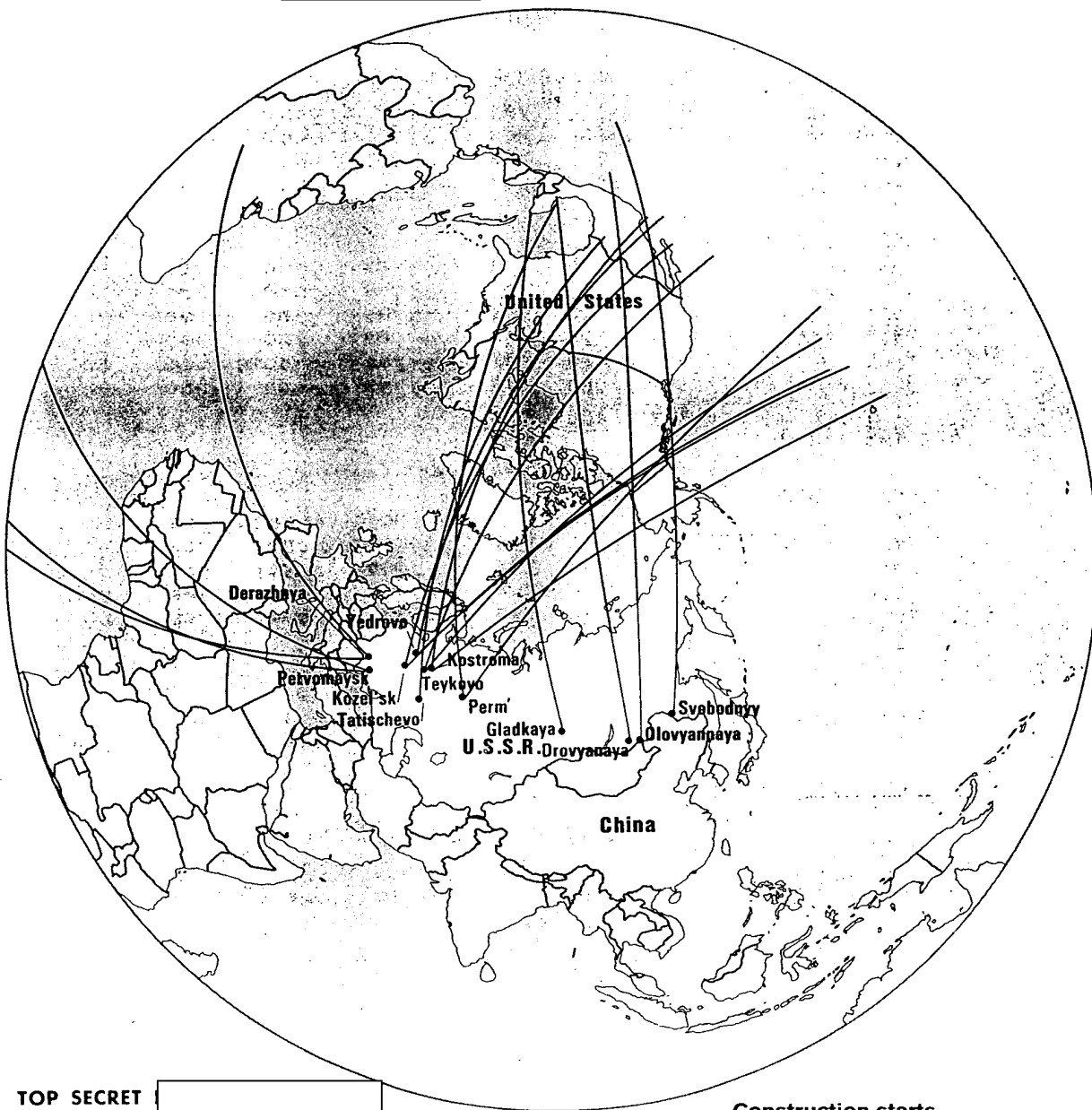
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Variations in SS-11 Site [redacted]



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561 946 9-73 CIA  
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**Construction starts**

- Pre-1968
- 1968-1969
- 1970

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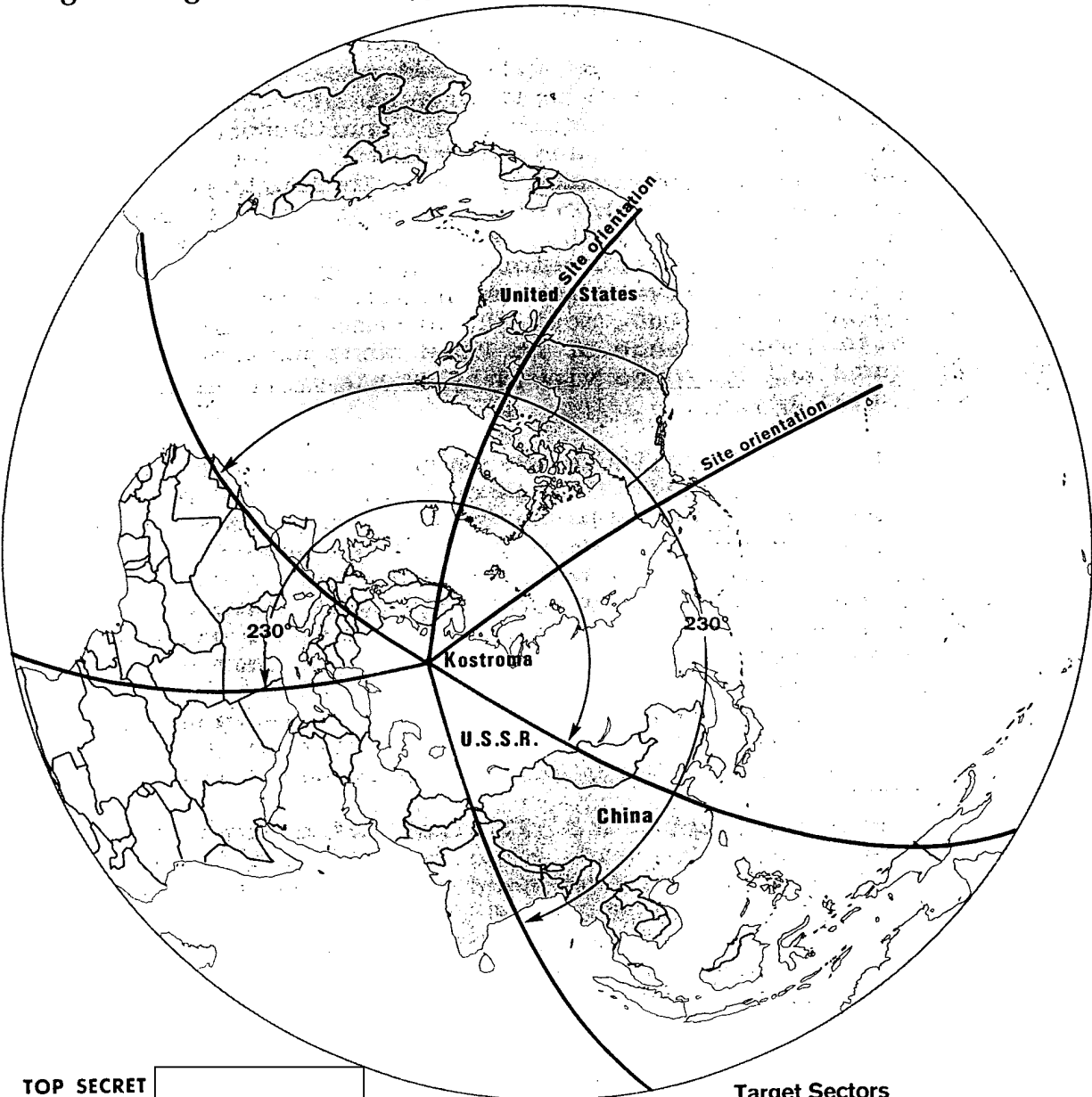
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### Change in Target Sectors of Typical SS-11 Mod 1 Launch Complex



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**Target Sectors**  
—— Pre-1968 deployment  
- - - - 1968-1969 deployment

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Missile Tests [redacted]

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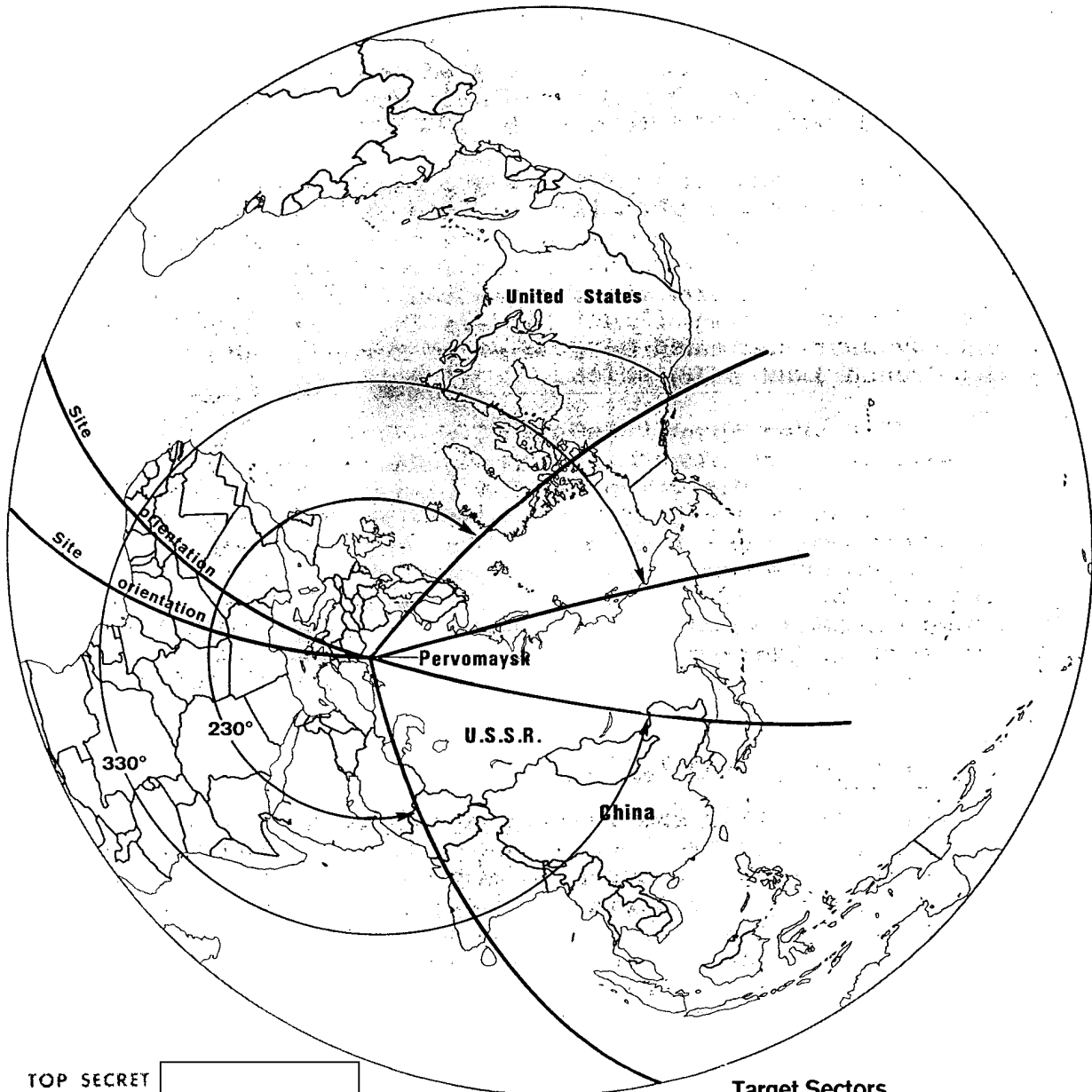
Soon after the firing of the SS-11 to reduced ranges, a change occurred in firings of the SS-4 and SS-5 missiles. [redacted]

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### Target Sectors of SS-11s at Pervomaysk



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#### Target Sectors

- SS-11 Mod 1 (1968-1969)
- SS-11 Mod 3 (1970)

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[redacted]

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Cost Incentives

Any decision to replace the SS-4 and SS-5 with the SS-11 would require a judgment taking overall system cost into consideration. Use of the SS-11 as a peripheral strike weapon offers savings in developmental expenditures which the Soviets would have to weigh against performance characteristics they might achieve through the development of a new missile for the peripheral role.

The SS-11 was already available and in production, a factor which would significantly reduce investment expenditures over those required to tool up for production of a new system. Because of its relatively

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small size and the already large-scale deployment in a strategic attack role, the SS-11 has the lowest average investment cost of any SRF missile system. Even so, at an estimated investment of over 5 million rubles (some \$11 million) for each unit deployed at Derazhnya and Pervomaysk, the 120 SS-11 Mod 1 launchers required an investment of about 650 million rubles (some \$1.4 billion).

Substitution of the SS-11 system for SS-4 and SS-5 systems would result in considerable savings in operation and maintenance costs--the costs per launcher for the SS-11 are estimated to be about one-third those of the SS-4 and SS-5. Estimates of the manpower requirement for the SS-11 are about 40 men per launcher, as opposed to about 200 men per launcher for the SS-4s and SS-5s deployed at soft sites. Moreover, its deployment pattern of 10 launchers for each control center instead of the four launchers per site for the soft SS-4s and SS-5s permits overhead costs to be shared by a greater number of launchers.

#### Strategic Implications of the SS-11 Force

#### Retargeting Capability of the SS-11

It is clear that the Soviets designed the SS-11 system to increase the strategic flexibility of their ICBM force. This flexibility is largely a function of the wide target sector of the SS-11, and is dependent on its ability to be retargeted within the sector. The guidance system of the SS-11 probably accepts only one target at a time. Although there is no direct evidence of the time required to change targets, analysis of the guidance system and deployment patterns provides some insight into the problem.

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The SS-11 guidance system, which employs a "fly the wire"\* concept, may be adaptable to rapid re-targeting. Changing the second-stage cutoff velocity alters the range of the missile, and rotating the guidance platform changes the launch azimuth. Assuming the new target data is precomputed and can be introduced directly into the missile guidance system from the launch control center, a single missile could be retargeted in 20 to 30 minutes.

Even if the Soviets have the capability to re-target a group of 10 SS-11s from the launch control center, it is questionable whether an SS-11 launch crew can re-target all 10 missiles simultaneously. The new data must be put into the system, verified, and monitored to determine the status of the missile. This probably requires at least two men to ensure that the data are correct and that the security of the system is not compromised. Retargeting of an SS-11 group probably would take a few hours if the operation must be done sequentially for each missile. If re-targeting cannot be done remotely from the launch control center, it probably would require several days to re-target an SS-11 complex of 60 or so launchers.

Retargeting may have been a factor in the apparent abandonment of the "fly the wire" concept for computer guidance on the SS-X-17, the follow-on to the SS-11 now under development. The on-board computers carried by US missile systems allow the insertion of data for more than a single target into the missile, thus improving targeting flexibility.

#### Soviet Targeting Doctrine

Technical considerations are only one aspect of targeting flexibility, providing limits on the op-

\* *In this concept, precomputed trajectory parameters are inserted into the guidance system prior to launch and the missile is kept near its programmed flight profile by varying the engine thrust during powered flight.*

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tions available to the Soviet planner. Soviet targeting doctrine--guidelines based on an evaluation of available options--would determine the use of those SS-11s with a primary role against peripheral targets. The 120 SS-11 Mod 1s at Derazhnya and Per-vomaysk which are assigned targets in western Europe might not be launched in the event of a nuclear exchange with the US if Europe were not immediately involved. In this instance, these missiles would provide a second-strike alternative against the US as well. Selection of these complexes for deployment of the new harder silos is consistent with this strategy.

Although Soviet planners may envision considerable flexibility in retargeting missiles from western Europe to the US, retargeting missiles from China to the US may be looked at differently. In most scenarios, Soviet planners probably regard the US and western Europe as a single entity for purposes of a strategic nuclear exchange. They may believe that China poses a distinct, largely unrelated threat which could be dealt with separately. However, in the event the SS-11 missile launchers capable of targeting China were used against the US, the Soviet strategic capability against China would be weakened severely.

In terms of the all-out initial strike against the US, the Soviet planners would have to determine the incremental value the SS-11 peripheral strike force would provide to the missile force of over 1,000 ICBMs and 600 SLBMs now slated for the intercontinental strategic attack role. This value would then be compared with the capability of the SS-11 to reach targets not within range of the SS-4s and SS-5s, and the SS-11's ability to attack time-urgent targets and hardened silos at less than ICBM ranges.

Peripheral Strike Role and  
Strategic Balance

Despite the advantages of deploying the SS-11 in a peripheral strike role, its use creates a dilemma

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at SALT, where limits have been imposed by system and not by mission. The Soviets have stated at SALT that asymmetries in targeting requirements justify the size of their large ICBM force.

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Views of parity in strategic missiles such as those expressed by Kishilov may continue to hinder future negotiations. Under the Interim Agreement, the Soviets may deactivate all older SS-7 and SS-8 missile launchers and replace them with submarine launched ballistic missiles. Once the SS-7s and SS-8s are deactivated, the Soviets might argue that they have only 1,028 ICBMs for use against the US-- a force equivalent to the 1,000 Minuteman launchers of the US. (See table on next page.) Such a rationale disregards the fact that all Soviet ICBMs

*\* This excludes 6 large silos under construction at Derazhnya and Pervomaysk and one silo at each of five SS-9 complexes which probably will have a launch control function.*

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have the capability of attacking the US, and there is no way to determine conclusively the target of any of them.

Alternative Views of Soviet ICBM Force

Type	Possible Soviet View		US View
	Modern* ICBMs (US targets)	Modern* ICBMs (Peripheral targets)	Modern* ICBMs (All targets)
SS-9	288	--	288
SS-11	660	370	1,030
SS-13	60	--	60
SS-X-18	20	--	20
Total	<u>1,028</u>	<u>370</u>	<u>1,398</u>

\* The term "modern" excludes 209 SS-7 and SS-8 launchers and 11 large silos deployed at Derazhnya, Pervomaysk, and five SS-9 complexes which probably will have a launch control function when complete. The total includes 80 silos not yet operational: 20 new large silos for the developmental SS-X-18 and 60 new small silos for the SS-11 Mod 3.

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