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January 1969

**EVALUATIONS OF SOVIET  
SURFACE-TO-SURFACE  
MISSILE DEPLOYMENT  
29TH REVISION**

**A Report of the Deployment Working Group  
of the**

**Guided Missile and Astronautics Intelligence Committee**



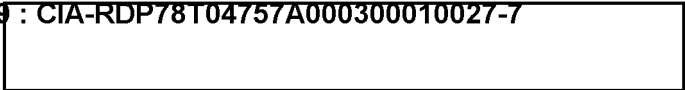
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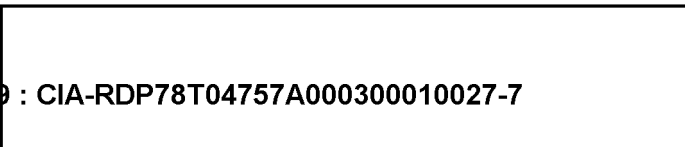
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The Guided Missile and Astronautics Intelligence Committee (GMAIC) wishes to express its appreciation to the National Photographic Interpretation Center for its assistance in the editing, illustrating, and publishing of this report.

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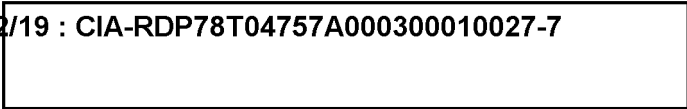


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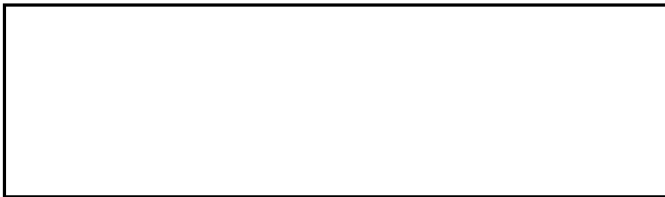
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DEPLOYMENT WORKING GROUP

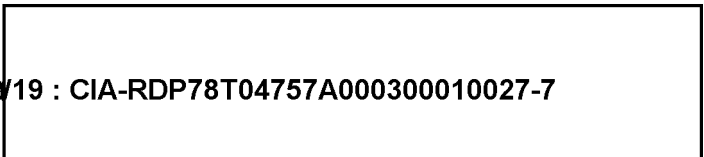
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Addendum for 29th Revision

This addendum is intended to highlight the changes that have taken place in Soviet Surface-to-Surface missile deployment between the [redacted] cutoff date and the year-end publication of the 29th revision. The changes will be discussed more fully in the next issue.

[redacted] newly identified sites and groups and the new totals are as follows:

	<u>New Sites</u>	<u>Total Sites</u>	<u>New Groups</u>	<u>Total Groups</u>
SS-9	3	227	0	38
SS-11	27	671	3	71
SS-13	9	31	*	*

We estimate the number of launchers operational as of [redacted]

[redacted]

SS-9	168
SS-11	570 - 590
SS-13	0 - 10

Six new silos in very early stages of construction were identified at the Tyuratam Missile Test Range. The excavations and the orientations of these new silos, which have been designated the P group, appear similar to Type IIIC sites. They are, however, too early in the construction stages to permit positive identification of the type silo or any meaningful missile system association.

Additional control buildings like those referred to as "second control buildings" at Uzhur and Drovyanaya have been identified at all SS-9 complexes and four SS-11 complexes. The orientations of antennas associated with these new control buildings suggests that the facilities may be alternate command and control centers for the complex. The antennas are oriented in the same direction as those associated with the original complex hardened command and control facilities.

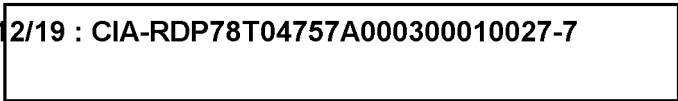
\*We believe the SS-13 will be deployed in groups of 10. Three launch control facilities (LCF) have been identified and a fourth may be under construction. No firm association of launchers with the isolated LCFs can be made.

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### PREFACE

This report is published periodically by the GMAIC Deployment Working Group (DWG) to provide a current evaluation of all Soviet ICBM, IRBM, and MRBM deployment, including numbers, types of site configurations, estimated construction and operational status, and other evaluations by the DWG. These data constitute the majority view of the DWG membership, and may not correspond precisely to individual assessments by each member. Detailed tables with individual site data are included in this publication. In accordance with the wishes of a majority of recipients, future revisions will be published as new information warrants.

Dissemination of the report was previously limited to holders of the DWG report, Soviet Surface-to-Surface Missile Deployment. Because the information contained herein is both supplemental and self-sustaining, distribution will no longer be limited to holders of the above report.

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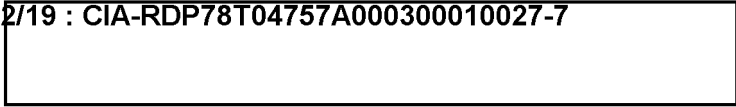
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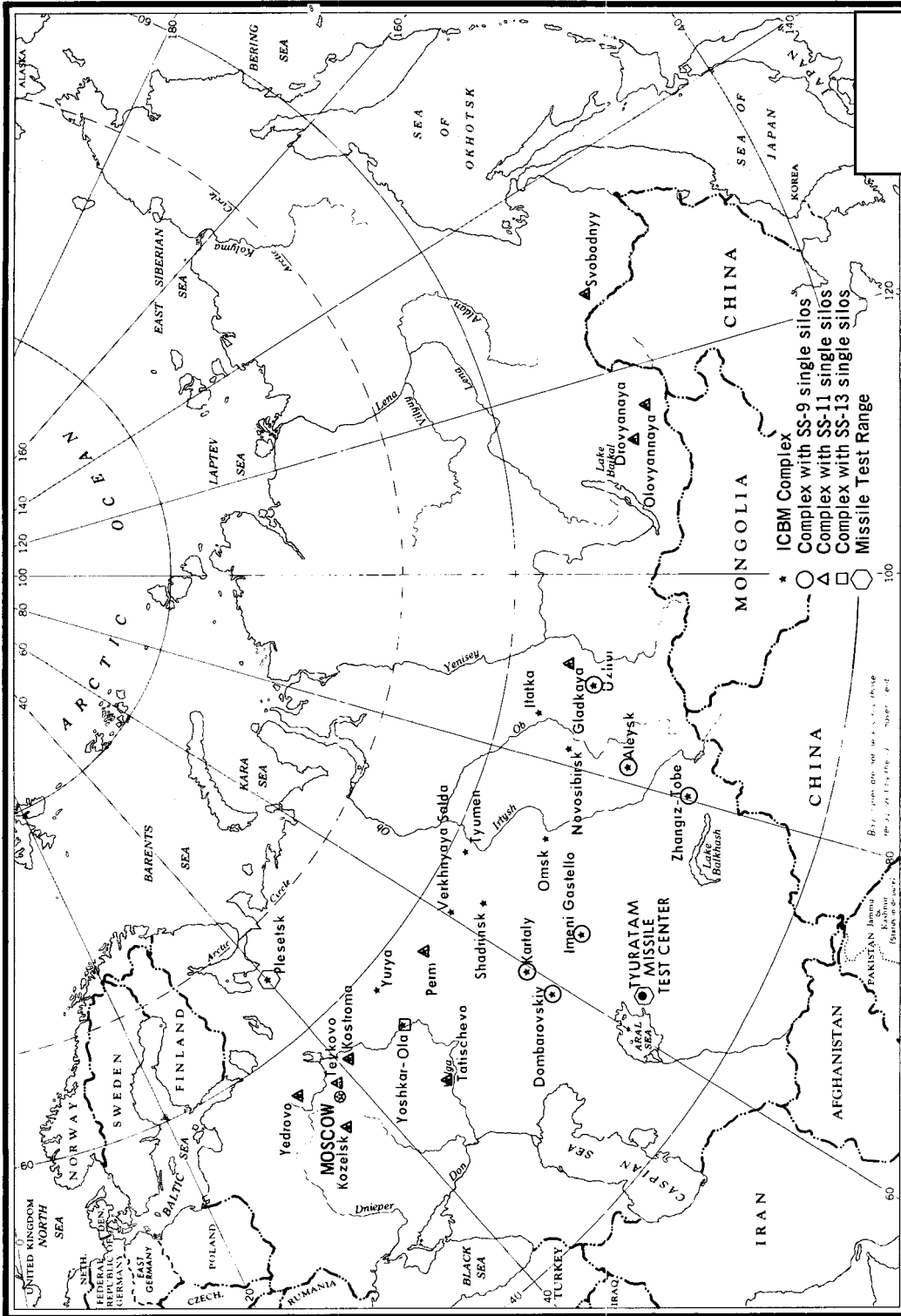


FIGURE 1. DEPLOYMENT OF SOVIET ICBM COMPLEXES.

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## INTRODUCTION

This report is the 29th Revision of Evaluations of Soviet Surface-to-Surface Missile Deployment, prepared by the Deployment Working Group (DWG) of the Guided Missile and Astronautics Intelligence Committee (GMAIC). The information contained in this and previous revisions is self-sustaining and supplements the basic DWG report Soviet Surface-to-Surface Missile Deployment, which provides detailed information on launch facilities of the Soviet Strategic Rocket Forces. The basic report, dated 1 January 1962 (Control Number [redacted]) has been revised and updated on a periodic basis. Further updating is accomplished in reports prepared and published for GMAIC by the National Photographic Interpretation Center (NPIC).

This 29th Revision summarizes and updates all the data received since [redacted] missions during this period, continuing analysis of previous missions, and other sources have provided additional information on the Soviet strategic missile deployment program. A summary of the estimated status of identified ICBM, IRBM, and MRBM launchers at deployed complexes is given in Table 1. Cutoff date for information in this report is [redacted]

## SOVIET MISSILE DEPLOYMENT

Significant developments in the Soviet ICBM deployment program since publication of the 28th Revision include the identification of additional single silos under construction at deployed complexes and continuing construction activity probably related to development at the Tyuratam Missile Test Center (TTMTC), the Plesetsk Missile and Space Center (PMSC), and at the Kapustin Yar Missile Test Center (KYMTC). Although construction of new sites

for the SS-9 and SS-11 systems has continued into the third quarter of 1968 and while some additional construction probably will take place, we believe that both systems may be approaching planned levels.

Additional developments include: 1) continued, though limited, deployment of the Type IIIE silos at the Yoshkar-Ola Complex; 2) the discovery of an isolated SS-11 silo at an installation of unknown purpose at Borovsk; 3) some continuation of ineffective attempts to camouflage missile sites; 4) further indications that at least some MRBM sites are being modified; and 5) some new developments associated with the Scaleboard mobile missile system.

## CURRENT ICBM DEPLOYMENT

No new ICBM complexes have been discovered since the 28th Revision; the number remains 25. See Figure 1 for location of deployed ICBM complexes. These complexes now contain a total of 1110 confirmed and probable launchers, of which 142 are soft and 968 are hard. Included in the hard launcher count are 890 single silos.

Of the 1110 confirmed and probable launchers, 896 are estimated to have been operational as of [redacted]. In addition to the launchers cited above, the Soviets have some 96 launchers which we believe are primarily for research and development and training. These launchers, which probably could be used in an operational role under certain circumstances, are deployed as follows: 1) 23 at Plesetsk, where 9 are complete and 14 are under construction; 2) 58 at Tyuratam, where 34 are complete, 12 are under construction, and 12 probably are space associated; 3) 15 at rail-to-road transfer points of SS-9 and SS-11 complexes where there is one site that is not associated with any group (at each of the six SS-9 complexes and at nine of the ten SS-11

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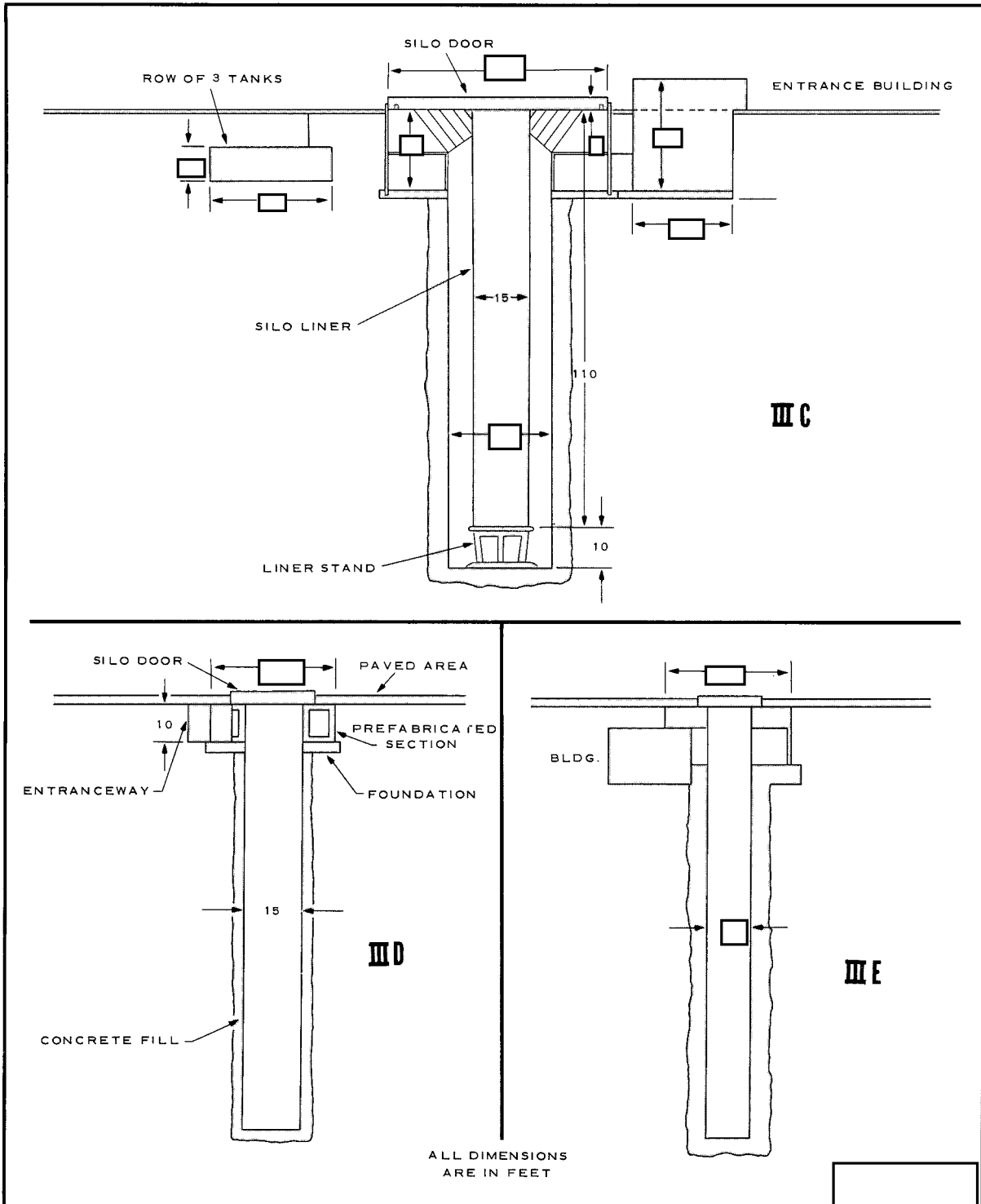


FIGURE 3. PROFILES OF SOVIET SINGLE-SILO ICBM SILOS.

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complexes). The ICBM sites have been designated by type, as shown and explained in Figures 2 and 3.

**TYPE IIIC**

Deployment of Type IIIC silos has continued at the six complexes--Aleysk, Dombarovskiy, Imeni Gastello, Kartaly, Uzhur, and Zhangiz-Tobe--that were identified in 1964. The start of a new group at each of the six complexes, since [redacted] indicates that the deployment program has remained active. The rate of group starts for the first half of 1968 is about the program average. See the following table for a list of estimated starts by quarter for each year.

Estimated Starts by Quarter of Identified Type IIIC Groups and Sites for Each Year.

Year		Quarter Year				Total
		1	2	3	4	
1964	Groups	5	1	0	3	9
	Sites	12	15	6	6	39
1965	Groups	2	2	1	3	8
	Sites	9	24	4	9	46
1966	Groups	2	2	3	4	11
	Sites	27	9	18	22	76
1967	Groups	1	0	1	2	4
	Sites	10	1	6	10	27
1968	Groups	2	4	0	--	6
	Sites	16	14	6	--	36
Total	Groups					38
	Sites					224

Currently, we have observed 224 of the 228 IIIC sites needed to fill out the 38 identified groups. We estimate that 156 IIICs are now operational and that all 228 will be completed by mid-1970. We believe that the IIIC program may be approaching its planned goal, but as yet we cannot determine the precise number of launchers that ultimately will be deployed. The fact that two complexes now have eight groups,

while three have six and one has four, suggests that the Soviets do not plan to have the same number of launch groups at each complex. The following table reflects the numbers of identified Type IIIC sites and groups by complex.

Identified Type IIIC Groups and Sites by Complex

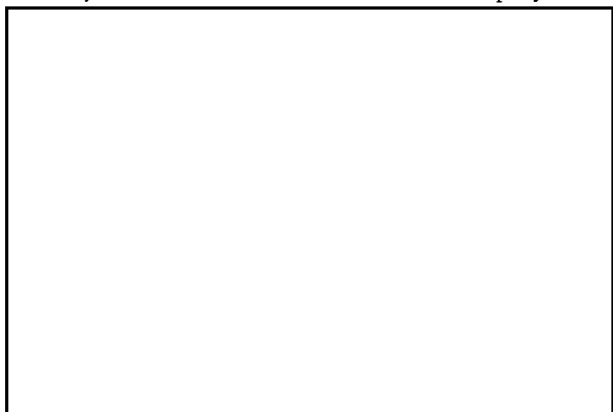
Complex	No of Sites	No of Groups
Aleysk	24	4
Dombarovskiy	48	8
Imeni Gastello	35	6
Kartaly	33	6
Uzhur	48	8
Zhangiz-Tobe	36	6
Total	224*	38

\*In addition there is one site at the rail-to-road transfer point of each of the six complexes, which we believe to be primarily for training, but which could have an operational capability under certain conditions.

The following is a summary of significant findings at each IIIC complex since the previous update of this publication in [redacted]

**Aleysk**

The latest group was detected in [redacted]. The pace of construction of this group, which was started during the first quarter of 1968, appears to be somewhat faster than normal for IIIC sites. Three of the four groups at this complex are now complete. The activity level noted at the main support base, including the stockpiling of materials, indicates that some additional deployment



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[Redacted]

[Redacted]

**Kartaly**

The latest group, which probably was started in [Redacted]

[Redacted] Only three sites have been detected in this group.) Four of the six groups are complete, and the fifth group probably will reach completion by the end of the fourth quarter 1968. The sixth group probably will be completed during the fourth quarter of 1969. Levels of activity within the main support area, including the large stockpile of materials, suggest additional deployment may be planned for this complex.

**Dombarovskiy**

The latest group probably was started in [Redacted]

[Redacted] Five of the eight groups are now complete and the sixth probably is complete. The seventh group probably will be completed in early 1969, and the eighth group in late 1969.

**Imeni Gastello**

The latest group at this complex was detected in [Redacted]

construction probably began in [Redacted]

Four of the six groups are complete. The fifth group will be completed by the fourth quarter of 1968 and the sixth group by the end of the fourth quarter 1969.

**Uzhur**

Construction of the latest group, which was found in [Redacted]

probably began in [Redacted] Five groups are complete and the sixth probably has just been completed. The seventh group should

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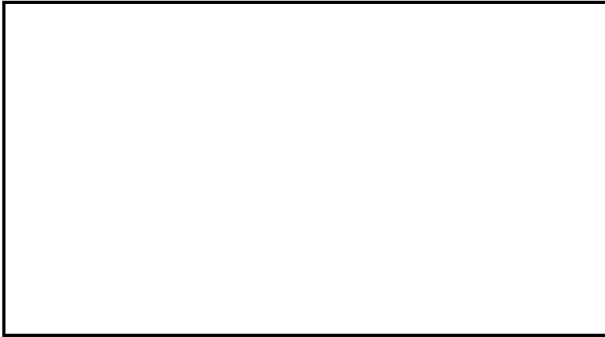
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reach completion in [redacted] while the eighth group probably will be completed by the end of the third quarter 1969. In



**Estimated Operational IIC Groups**

The following table identifies the groups at each complex that are estimated to be operational as of [redacted]

IIC Groups Estimated Operational

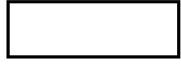
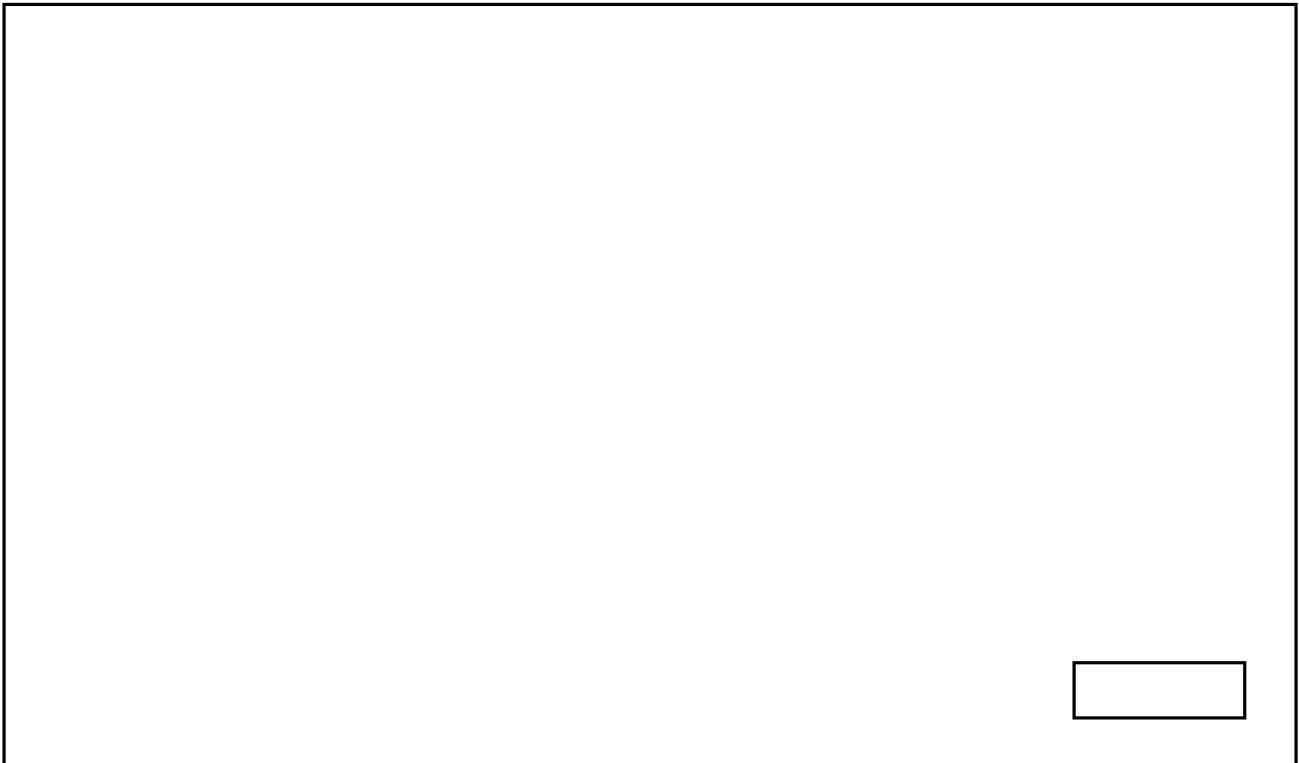
Complex	Group Designator	Number of Groups
Aleysk	A,B,C	3
Dombarovskiy	A,B,C,D,E,F	6
Imeni Gastello	A,B,C,D	4
Kartaly	A,B,C,D	4
Uzhur	A,B,C,D,E	5
Zhangiz-Tobe	A,B,C,D	<u>4</u>
		26

**Zhangiz-Tobe**

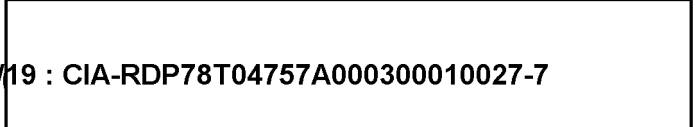
The latest group was identified in [redacted] and probably was started in [redacted]. Three groups are complete, a fourth probably is complete, and the fifth group should be completed during the second quarter of 1969. The sixth group probably will be completed during the fourth quarter of 1969.

**TYPE IIID**

Deployment of Type IIID silos has been continued into the third quarter of 1968, but the rate of starts this year has been reduced significantly. See the following table for a list of estimated starts by quarter for each year.



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Estimated Starts by Quarter of Identified Type IIID Groups and Sites for Each Year

Year		Quarter Year				Total
		1	2	3	4	
1964	Groups	1	5	3	2	11
	Sites	3	40	17	25	85
1965	Groups	1	5	1	5	12
	Sites	18	38	19	28	103
1966	Groups	14	8	2	0	24
	Sites	102	88	45	24	259
1967	Groups	9	4	2	1	16
	Sites	52	35	25	24	136
1968	Groups	3	1	1	--	5
	Sites	41	15	5	--	61
Total	Groups					68
	Sites					644

that all 68 identified groups (680 launchers) will be operational by mid-1970. We believe that the IIID program has nearly reached its planned level; however, a few additional groups may appear.

**Drovyanaya**

The only significant activity at Drovyanaya was the start of a probable second hardened command and control facility on the south-eastern edge of the complex (Figure 5). The principal features are an underground control bunker and four above-ground antenna fields. It is not certain why a second facility has been started, but it does appear identical to the second control facility at Uzhur Site 34. All five groups at Drovyanaya have been observed complete.

**Gladkaya**

No significant new activity was noted at this complex during the period; all six groups are complete.

**Olovyannaya**

The L group was observed complete; the first sites were seen complete in [ ] and the remainder later in the period. [ ] the transfer point site was observed complete. All nine groups at this complex are now complete.

**Perm**

Eleven new sites were discovered, including six in the new L group. The first site in this group was in the mid-stage of construction when first seen in [ ] the group probably started in [ ] During [ ] the transfer point site was observed complete. Four of the six groups at this complex are complete.

**Tatishchevo**

Five sites in the last group--the L group --were observed complete in [ ] Assum-

During the period [ ] a total of 79 new IIID single silos were detected under construction; most are in eight newly identified groups. We have now identified 644 IIID silos under construction or operational in 68 groups. The following table shows identified Type IIID groups and sites, by complex.

Identified Type IIID Groups and Sites by Complex

Complex	No of Sites	No of Groups
Drovyanaya	50	5
Gladkaya	60	6
Kostroma	45	5
Kozelsk	73	8
Olovyannaya	90	9
Perm	56	6
Svobodnyy	60	6
Tatishchevo	120	12
Teykovo	28	4
Yedrovo	62	7
	644*	68

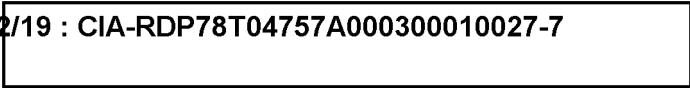
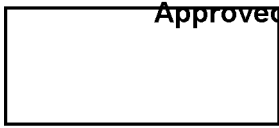
\*In addition there is one site at each of nine SS-11 complex rail-to-road transfer points and one expected at the tenth complex -- Teykovo -- which we believe to have a primary training role, but which could have an operational capability under certain conditions.

We estimate that 52 groups (520 launchers) were operational as of [ ] and

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ing a similar status for the other sites in the group, all 12 groups at the complex are now complete.

**Kostroma**

A total of 14 new site starts were discovered at Kostroma. One site was in the K group; eight sites were in the L group, and four sites were in a new M group. This latest group, the fifth to be started at this complex, probably began in [redacted] the transfer point site was confirmed. It is now in mid-stage but was first seen in an early stage of construction in [redacted]

Sites in two groups at Kostroma were observed complete. All sites in the I group were seen finished, the earliest in [redacted] Additionally, four sites in the J group, including the control site, were seen complete [redacted]

**Kozelsk**

Twelve new sites were found in four groups at Kozelsk during the past six months, including three in a new N group. All three sites in this new group were discovered in [redacted] the group probably started in [redacted] The remainder of the newly discovered sites were in the K group (two sites), the L group (three sites), and the M group (four sites).

Five of the eight groups at Kozelsk probably are complete. All ten sites in the J group were observed complete in [redacted] and one site in the L group was finished in [redacted] The L group, although it began shortly after the K group, apparently was completed earlier.

**Svobodnyy**

While no new starts were detected at Svobodnyy during the period, the complex has not been totally negated in [redacted] More-

over, in [redacted] several survey towers were observed southeast of the N group. Because these towers have been reliable indicators of new site construction on other occasions, it is expected that a new group has been, or shortly will be, started in this location.

All sites in the M and N groups and the transfer point site were observed complete in [redacted] All identified sites at this complex are now complete.

**Yedrovo**

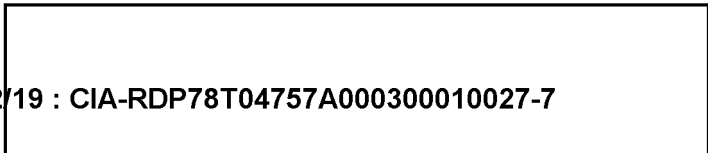
Activity continues at a high level, with the detection of 21 new sites and two new groups bringing the total groups at this complex to seven. Ten sites in a new N group were found, all ten probably starting in [redacted] Only two sites in the new O group have been detected, with both starting [redacted] In addition, eight sites in the M group and one site in the K group were picked up. The M group sites started in [redacted] and [redacted] while the K group site dates back to [redacted]

Site completions were observed in the I, J, K, and L groups at Yedrovo. Five more I group sites were seen finished. All ten sites in both the J and L groups were observed complete; the first completions in both groups were seen in [redacted] Three K group sites were seen finished, the first in [redacted]

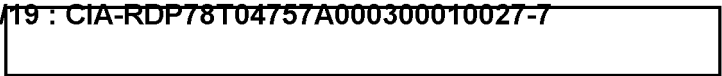
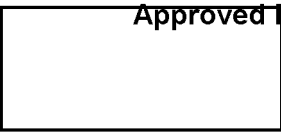
**Teykovo**

This complex also continued active, with 21 sites and three group discoveries being made during the period. The new groups are the B group, with ten starts, the C group, with six sites discovered so far, and the D group, with two sites identified. The B group probably began in [redacted] and the C group [redacted] The two D group sites appear to have started in [redacted] probably the group dates from this month as well. Three

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more A group discoveries complete the total; two date back to 1967 but one was not started



six sites were observed finished in the A group, indicating that the group as a whole is very nearly complete. This will be the first group to be completed at Teykovo. Although construction of the propellant handling facility at the rail-to-road transfer point was continuing in [redacted] it presumably will be complete in time to service missiles installed in the A group silos.

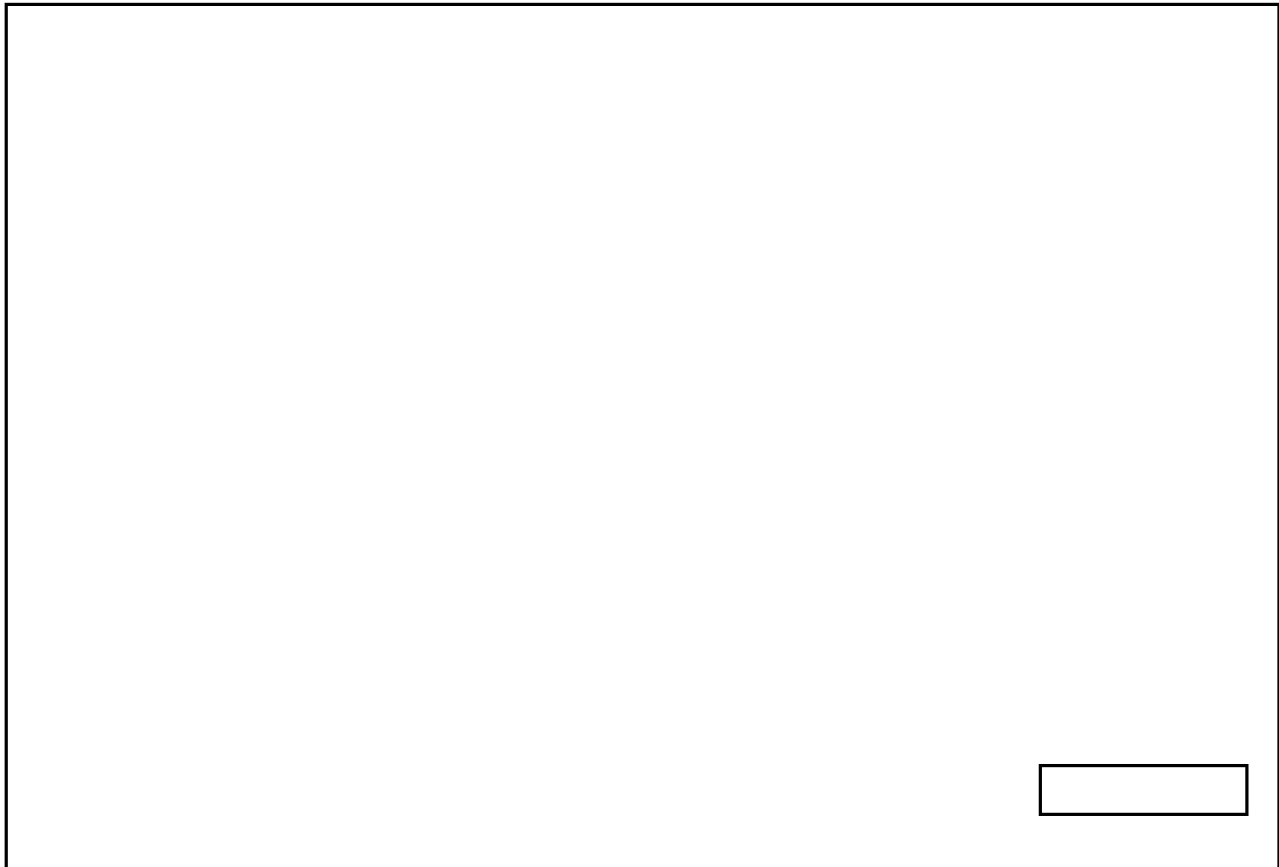
**Slowdown in Start Rate**

In our 28th Revision, we noted that there had been a slowdown in the overall rate of Type IIID construction starts in early [redacted] as compared with the same quarter in pre-

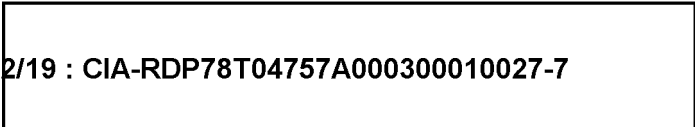
vious years. It appears that this slowdown has continued and that the average start rate has reverted to that observed during the first seven quarters of construction (see Table 4). This return to the earlier rate reflects the possible termination of site construction at several of the complexes.

**Borovsk SS-11 Silo**

An isolated SS-11 silo, not associated with an operational complex, was discovered in [redacted] near Borovsk, about 45 nautical miles southwest of Moscow. The installation with which it is located may have a function similar to that of the facility with an SS-9 silo at the Kharkov Aviation Institute. The Borovsk silo is similar to the transfer point silos at SS-11 complexes in having an above-ground control



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building and a walk-in entrance. Its construction pace also compares with typical transfer point silos, starting in early 1965 and reaching completion in [redacted] An SS-11 canister was seen in the open silo when photographed in [redacted] (Figure 6).

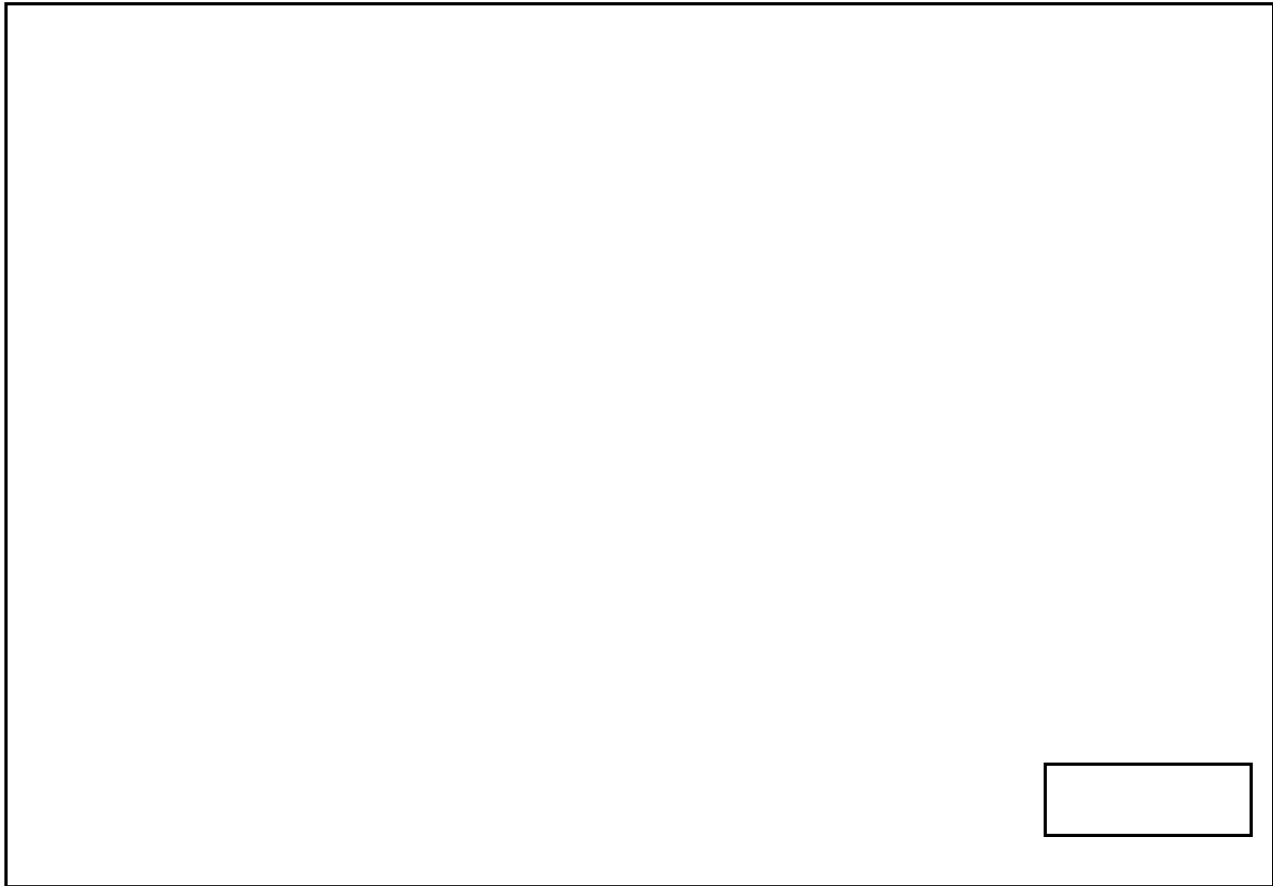
The Borovsk silo is located at a large installation of unknown purpose. The installation has a large, tall building and several drive-through maintenance-type buildings. There is an SRF higher command engineering school at Serpukhov, some 50 nautical miles from Borovsk, and it is possible that both the Borovsk installation and silo are associated with this school in some way. The tall building appears suitable for vertical testing of missiles; possibly some form of applied re-

search/training on the SS-11 is conducted at the facility.

**Estimated Operational IIID Groups**

The following table identifies the groups at each complex that are estimated to be operational as of [redacted]

IIID Groups Estimated to be Operational [redacted]		
Complex	Group Designator	Number of Groups
Drovyanaya	G,H,I,J,K	5
Gladkaya	F,G,H,I,J,K	6
Kostroma	I,J	2
Kozelsk	G,H,I,J	4
Olovyannaya	D,E,F,G,H,I,J,K,L	9
Perm	G,H,I,J	4
Svobodnyy	I,J,K,L,M,N	6
Tatishchevo	A,B,C,D,E,F,G,H,I,J,K,L	12
Teykovo	--	0
Yedrovo	I,J,K,L	4
Total Operational Groups		52



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**TYPE IIIE SITES**

The 22 new, hard, single-silo launch sites identified at the Yoshkar-Ola ICBM Complex during the second half of 1967 and the first half of this year have been designated Type IIIE. The launchers and three launch control centers are under construction. Construction techniques for the IIIE silos appear similar to those at US Minuteman launch sites (See Figure 3). Although the final launcher configuration is not certain, it probably will be similar if not identical to that of the single silos in the east portion of the Plesetsk Missile and Space Center. The observed pace of construction indicates these sites probably will be completed by mid-1969. The SS-13 (KY-6) solid propellant missile, which is being tested to ICBM ranges from Plesetsk, probably will be deployed in the IIIE sites.

The number of launchers in a IIIE group has not been established. However, at least three launch groups are indicated by the fact that three dispersed launch control facilities have been identified. None of the launch control facilities is nearer than 1.5 nm to a launch silo. The following table shows the estimated IIIE silo construction starts by quarter.

Estimated Starts by Quarter of Identified Type IIIE Sites for Each Year

Quarter	1st	2d	3rd	4th	Total
1967	-	-	7	8	15
1968	5	2	-	-	7
					22

**Type IIIE Deployment Trends**

The limited deployment of the IIIE sites identified to date provides little indication of the extent of future deployment. In the past, the Soviets have deployed new systems at more than one complex within a relatively short time span. The fact that the IIIE silos have been identified at only one complex more than a year after deployment began suggests that deployment of the system may be limited. On the other hand, the presence of ten Type IIIE silos at Plesetsk suggests a larger program which could appear at some or all of the seven ICBM complexes which do not have single silos. Perhaps additional fixed deployment will be deferred until the missile has been tested fully or the missile may be deployed in a mobile mode.

**CURRENT MRBM/IRBM DEPLOYMENT**

Several new developments have been observed in MRBM/IRBM deployment since publication of the 28th Revision. These include the appearance, at Balki, of fan-shaped pads similar to those seen at Gvardeysk, two new fixed-field sites at Kurgancha, and continuing activity at the Scaleboard sites along the Sino-Soviet border.

In addition, continuing construction and modification of sites at the Kapustin Yar Missile Test Range indicate that one or more new systems probably will be tested in the near future.

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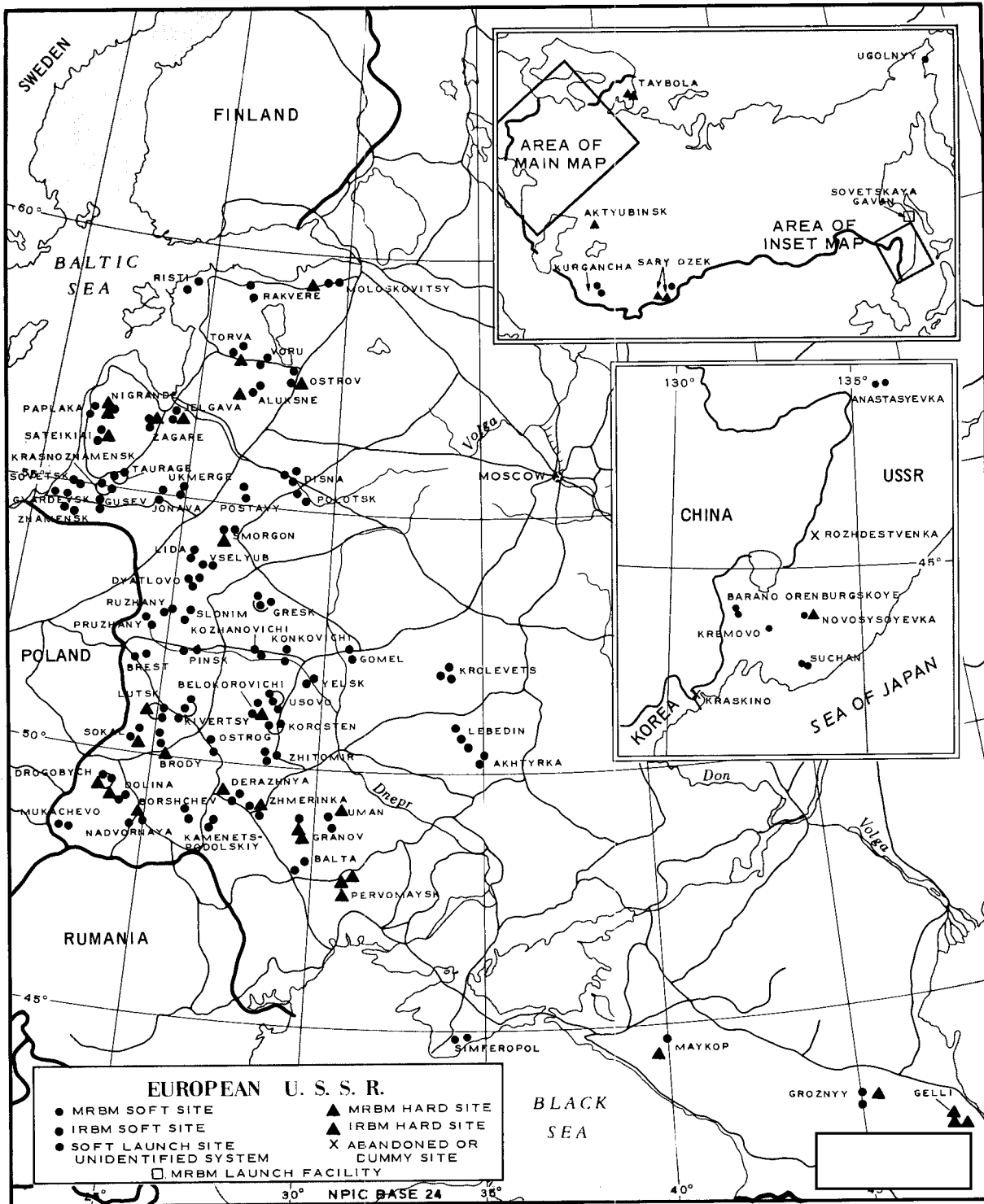


FIGURE 8. DEPLOYMENT OF SOVIET IRBM/MRBM COMPLEXES.

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The locations of MRBM/IRBM deployment are shown in Figure 8. Typical configurations of the launch sites and the weapon system associated with each are depicted in Figure 9.

### Fan-Shaped Pads

Fan-shaped pads which are similar to those at Gvardeysk were first seen at the Balki site in the Simferopol Complex on Mis-  
[redacted] and again on  
better quality photography on [redacted]  
[redacted] Thus far, seven pads have been identified at Balki; there are at least six at Gvardeysk. Near each pad at both places are three "positioning points" arranged in a triangular formation. See Figures 10 and 11.

The pads at Gvardeysk appear to be oriented toward the west, while the ones at Balki are oriented toward the south. The absence of equipment at both sites precludes identification of the system to be associated with these facilities; however, their locations, orientations, and the fact that the sites are associated with MRBMs

suggest deployment of a new MRBM system-- possibly in a mobile mode.

Similar modification activity is suspected but not confirmed at the one remaining site at each of the Gvardeysk and Balki locations and at the two sites at both Paplaka and Mukachevo.

### Kurgancha Fixed-Field Sites

Two new fixed-field sites have been constructed at the Kurgancha Complex. The new sites each have four launch pads arranged in a line much like the two older fixed-field sites which have been inactive at Kurgancha for some time. Near each launch position is a set of small rectangular positions arranged in a triangular pattern with the apex nearest the launch position as shown in Figure 12. The appearance of the small positions, which resemble the "positioning points" at the fan-shaped pads and Scaleboard sites, may indicate that a new system is to be deployed at Kurgancha.

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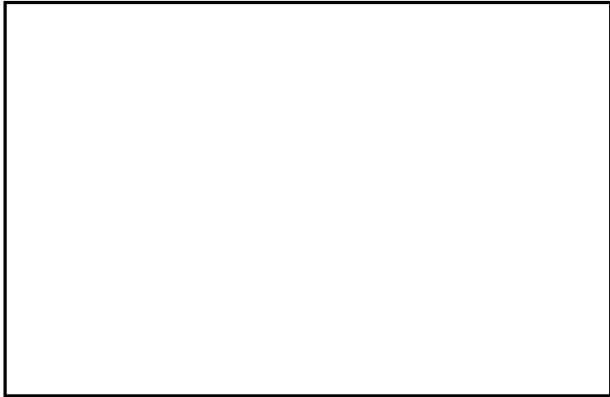
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sive, including the construction of two rail-served launch pads, designated G1A and G2A. Also the old G2 missile-ready building was lengthened and the propellant storage facilities were enlarged. The addition of a wish-bone pattern of rail lines forward of both pads indicates a loading axis of 170 degrees, as compared to [redacted] at the old SS-10 pads. This axis may represent a new handling concept or it may indicate a change in launch azimuth. Our assessment that the vehicle associated with these pads is on the order of 100-110 feet long has been further substantiated by the observance of two 95-foot missiles, without payload, in the G1A/G2A launch area. These missiles appear to be Scarp/SS-9 airframes without payloads (Figure 14).

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**Manzovka**

The garage-type buildings seen at Kara Babau and Droyvanaya, which house the missile TELs, have not yet been observed at Manzovka. The MRBM support area near Manzovka Site 1 contains several large buildings which could house TELs for both Sites 1 and 2; it is expected that garage-type buildings will be constructed at Manzovka.

**ACTIVITIES AT TEST FACILITIES**

**TYURATAM MISSILE TEST CENTER**

Since the 28th Revision, several [redacted] missions have provided good-to-excellent coverage of certain sites at the TTMTC (Figure 13). Highlights of these coverages include continued inactivity at Launch Group M and at three single silos in the I group; observance of an SS-11 propellant loading operation at Site L9; and considerable construction progress at the single silos of Launch Group O. Other significant activity concerns identification of missiles similar to the Scarp at recently completed Launch Site G1A/G2A, and the imminent completion of the triple-silo Site I7.

Major modifications of Site G1/G2, originally used to launch the SS-10, were completed in early 1968. The modifications were exten-

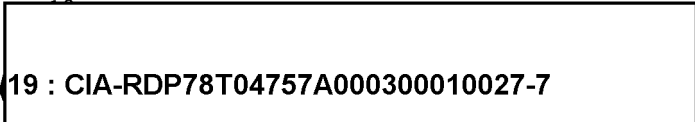
No construction progress has been observed at the three single silos of Launch Group M for nearly a year. Conversely, work has continued at a rapid pace on three single silos in Launch Group O. Originally it was thought that this group contained four single silos, but recent photography has shown that only three silos and one separate launch control facility are being constructed. All the O silos are in a mid-stage of construction and located in the western part of the test center. Each site, including the LCF, was constructed in a 200- by 100-foot excavation. [redacted] foot-diameter silo coring was sunk from the floor of three of these excavations.

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In the last few months construction of the O silos has progressed considerably, with headworks and silo liners [redacted] identified at O1, O2, and O4 (Figure 15). Liner and headwork characteristics are similar, if not identical, to Type IIIC single silos, suggesting the O silos are related to a vehicle of SS-9 size and class. Some tenuous evidence suggests this system may be other than

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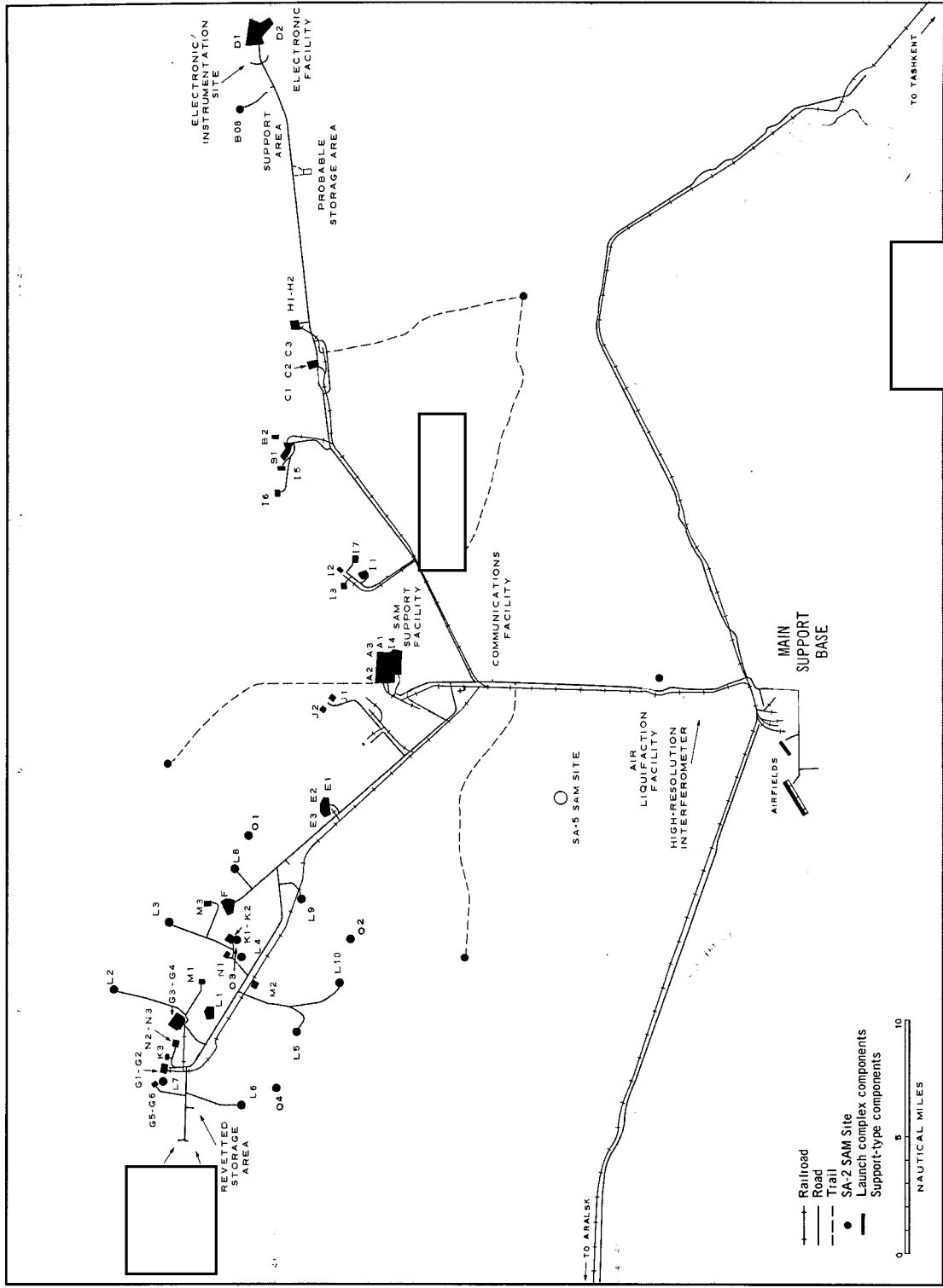


FIGURE 13. TYURATAM MISSILE TEST CENTER.

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a standard ICBM. Implied missile loading orientations of the O silos differ radically, suggesting that the intended azimuth of launch from each silo will also be different. While the significance of this unusual pattern is not clear, such variations in launch direction might be related to the testing of an orbital weapon system.

A probable SS-11 propellant loading operation was observed underway at Site 9 in the L Group. [redacted] (Figures 16 and 17) propellant transporters were parked adjacent to this IID silo. The door was open on both days but the silo opening was covered. Although the purpose of the

cover is not clear, it may have been used to prevent propellant from entering the launch tube. The activity on two successive days probably indicates that fuel and oxidizer loading operations were performed individually on separate days. This activity strengthens our previous assessment that the propellant is loaded into the SS-11 after the canister containing the missile is placed in the silo.

Little or no construction progress has been observed at the single silos at Sites I2, I3, and I6 since circular headworks were identified at [redacted]. Whether this indicates abandonment or a construction pause is unknown. Work has con-

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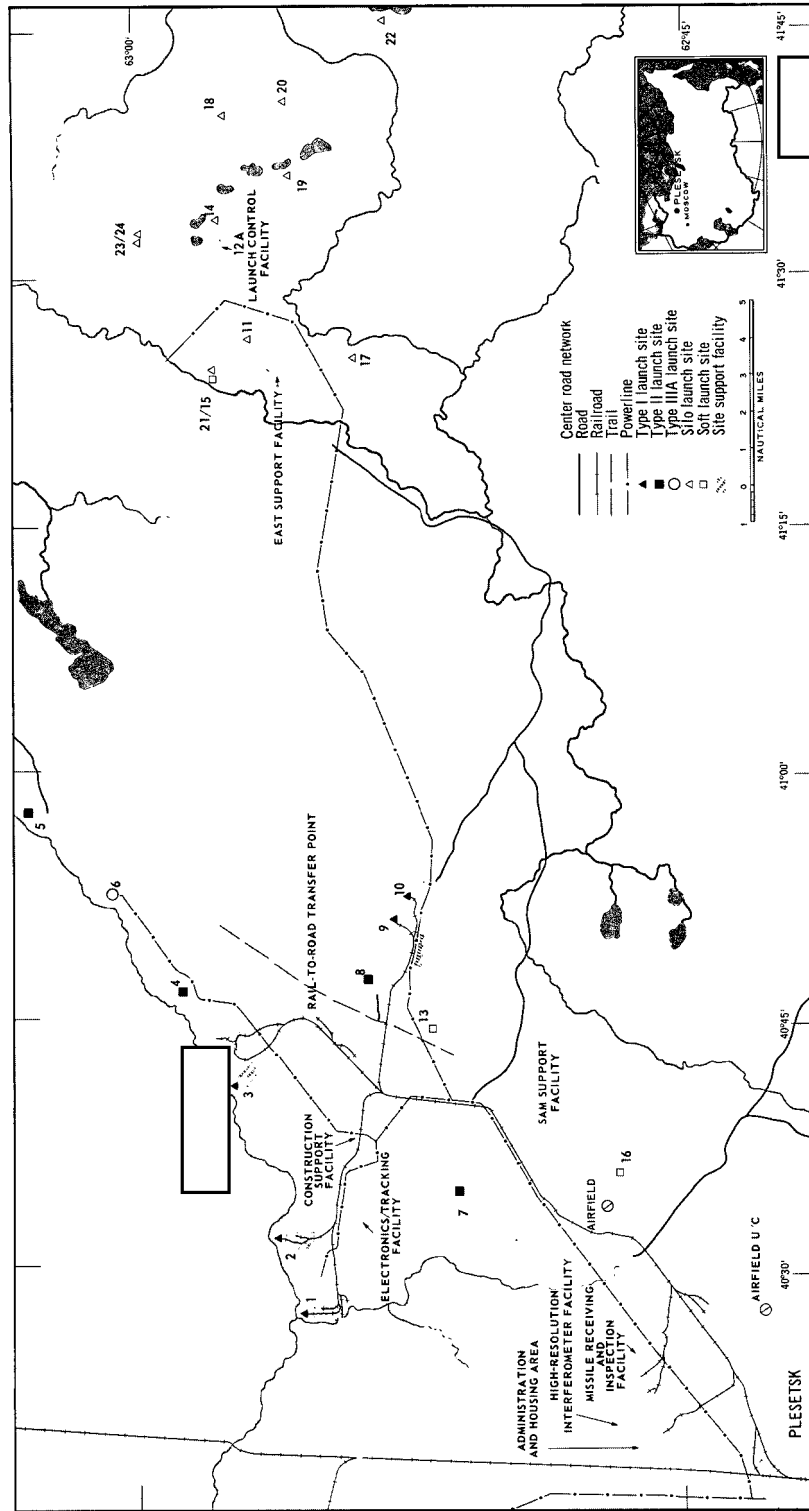


FIGURE 18. PLESETSK MISSILE AND SPACE CENTER.

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tinued at the triple-silo I7 site and the southernmost silo was essentially complete [redacted] A silo door similar in shape to those at Type IIIC silos was identified at one of the Site I7 silos which is nearing completion. Site I7 could reach operational status by late 1968.

**PLESETSK MISSILE AND SPACE CENTER**

Weapon system activities at the Plesetsk Missile and Space Center (PMSC) indicate continued emphasis on crew training and flight testing. Facility construction has remained at a high level. PMSC (Figure 18) now contains 38 identified launchers, of which 26 are complete and 12 are under construction. Some of these launchers are involved in the development of at least two new weapon systems. One of these systems is the solid propellant SS-13 (KY-6); the other is a new, apparently liquid-fueled, system designated PL-1, which has been

undergoing flight testing since [redacted]

Other new or continuing activity at Plesetsk involves: 1) the construction of a hardened (buried) antenna and communications receiving facility; 2) approaching completion of the large receiving, inspection, and checkout facility; 3) conversion to space use or deactivation of the four operational SS-6 launchers; 4) observation of exercises of SS-13 loading equipment at a training mock-up silo and at Site 11; 5) approaching completion of seven Type IIIE (SS-13) prototype single silos; 6) identification of a probable Scrooge-type vehicle at Site 21; 7) and a slowdown, [redacted] [redacted] in the construction of the three silos at Site 15.

Construction of additional communications facilities began at the PMSC in mid-1967, when a communications receiving facility was started 1 nm north of the new airfield. This facility now contains an arch-roofed control

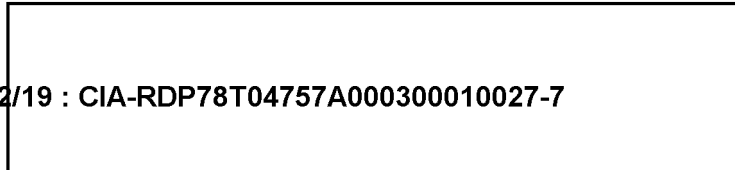
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building, several support structures, and about 15 Fishbone receiving antennas. This type receiving facility usually operates in conjunction with day - night rhombic transmitting antennas such as those identified in a mid-stage of construction at Plesetsk in [redacted]

Construction also started on a hardened (buried) communications antenna during early 1968. This antenna is located about 2 nm southeast of the main support base in an area previously associated with communications. This is the first hardened (buried) antenna to be identified at any of the Soviet test ranges.

Construction of a large receiving, inspection, and checkout facility near the main support base is virtually complete. The presence of two SS-13 transporter/erectors in the eastern secured area of this facility indicates that the area is missile associated. Conversely, facilities in the western secured area probably are related to the handling of space launch vehicles. The western area contains a multi-story masonry building (440 by 160 feet) which resembles both the newly constructed spacecraft facility at Tyuratam Complex A and the third assembly building at Plesetsk Site 2, which is complete.

Of the 15 original ICBM launchers at Plesetsk, four have been deactivated; these represented the total deployment of the SS-6. One SS-6 launcher at Site 2 was modified for a space role during 1964-1965 and is being used to launch SS-6 boosted space vehicles. Modification of service towers and lack of operational activity at the other three SS-6 pads strongly implies deactivation. However, conversion of additional SS-6 launchers for space use is suggested by construction activity underway at both Site 1 and in the support area of Site 3.

Testing of the SS-13 (KY-6) has continued at the PMSC, where ten silo launchers have

been associated with the solid propellant ICBM. All ten silos are similar in appearance and are deployed in an area some 20 nm east of the original area where the operational SS-7, SS-8, and space launchers are located. The Plesetsk SS-13 launchers are at Site 11, which has two silos, and Sites 14, 17-20, and 22-24, each with only one silo. Sites 11 and 14 probably are used for R&D firings. The others probably make up at least part of a prototype launch group which may be used primarily for training but which also could have an operational capability under certain conditions.

Construction of Sites 11 and 14 was started in late [redacted] Site 11 was not observed to be complete until [redacted] but the site probably could have supported the first SS-13 launch from Plesetsk on [redacted]

[redacted] Site 14 reached completion in late [redacted] Construction of Sites 17-20 was started at different times during [redacted] while Sites 23 and 24 were started in early [redacted] All of these sites were nearing completion in [redacted]

A missile loading operation was observed at one of the Site 11 silos two days before the [redacted] firing of an SS-13. In [redacted] an exercise of loading equipment was observed at the silo mock-up located in the SS-13 ground support equipment facility near the Plesetsk main support base (Figure 19). These missile loading operations/exercises involved the use of a transporter/loader (50 by 10 feet) which functions similarly to the US Minuteman trailer. The vehicle appears similar to a missile transporter/loader shown on a Moscow TV program in [redacted]

The absence of a launch control facility at Sites 17-20 and 22-24 indicates that they are controlled from off-site, probably the earth-mounded control building at Site 12 where no launcher has been identified. This earth-mounded building is similar to the building

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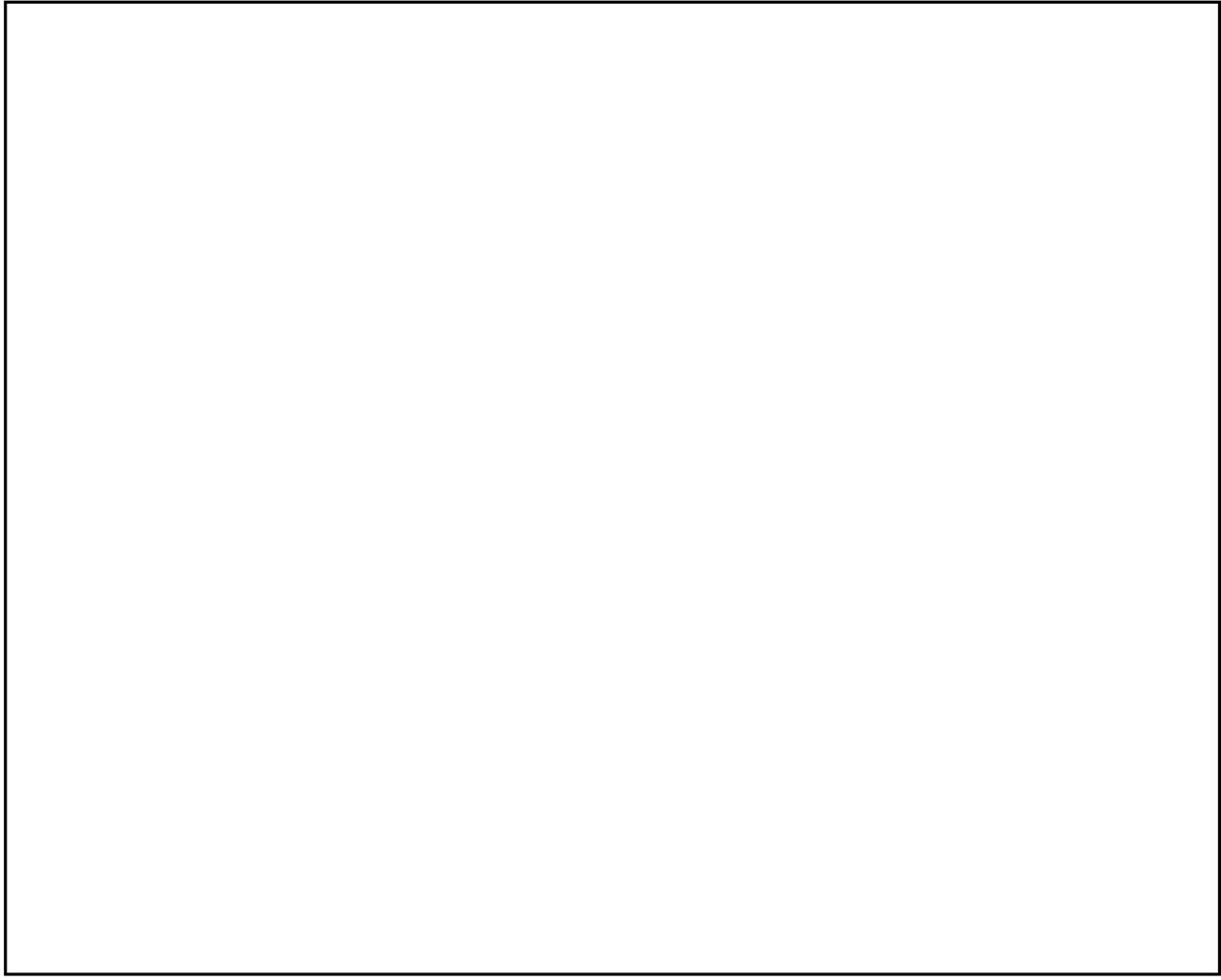
at the control facility for Launch Group L at Tyuratam. Although the control building at Site 12 at Plesetsk is similar to that for the L group at Tyuratam, the sites differ in other respects. The L group control site has a launch silo and an L-shaped electronics facility; Site 12 has neither.

A limited amount of activity has been observed at Sites 9 and 10 since our latest revision. This activity involved rail tank cars parked near propellant storage buildings and gantries positioned on one of the two rail-served pads at each site. At present only

one pad at each site is equipped with a gantry 160 feet high. Work on a second gantry is nearing completion at Site 10 and material for a second gantry is present at Site 9. The completed gantry-equipped pads at these sites probably have been capable of supporting launches since late 1966.

Good coverage of the two soft pads at both Site 21 and Site 16 and the three-launcher hard site at 15 revealed that only the soft launchers are complete. Site 21 was observed on [redacted] with no significant activity apparent. On [redacted] however, a trans-

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porter/loader with canister erected was on one of the pads (Figure 20). Although the photography does not permit viewing the base of the vehicle to determine whether it is wheeled or tracked, its size and other characteristics are similar to the Scrooge transporter-erector-launcher (TEL). The presence of this vehicle and the collocation of Site 21 with the multiple silos at Site 15 imply that the system may be intended for deployment in both fixed and mobile modes. The increase in construction activity at the soft pads at about the time that work slowed at the hard launchers at Site 15 suggests that emphasis may now be on the development of the mobile deployment mode.

Flight testing of a vehicle, designated PL-1, indicates that an R&D program which may relate to a new weapon system is underway at the Plesetsk Missile and Space Center. The limited amount of data gained does not allow us to understand clearly what type of system is undergoing test. Thus far there have been five launches of what appears to be a new liquid-propellant booster; these tests may have had different objectives. The first test on [redacted] ended in failure and the lack of participation by any known impact area facilities suggested a space launch. The four subsequent tests, two of which failed, were clearly intended for impact on Kamchatka Peninsula. The long burning time of the powered stage observed in telemetry is more indicative of a space vehicle than a ballistic missile. However, the apparent accelerometer alignment in the vehicle is reminiscent of a ballistic missile and the [redacted]

Soviet weapons systems tests. Based on the data presently available, it is not possible to determine whether these events are the early tests of a space weapon system or a ballistic missile system.

#### KAPUSTIN YAR MISSILE TEST CENTER

The only significant activity noted at the Kapustin Yar Missile Test Center (Figure 21) since the 28th Revision, involves Complex C.

A new field launch position has been constructed east of Launch Site 2C1. An SS-4 exercise was in progress at that position on [redacted] Construction activity continues at the southeast silo at Launch Site 4C1, where it appears that the silo liner is being repaired or modified. There is no indication that the diameter of the silo at 4C1 is being changed as it was at the southwest silo.

Compartments/rooms are being built in the 50-foot (approximate) diameter circular excavation at Launch Site 5C2, and large quantities of construction materials are piled along the road adjacent to the excavation. There are similarities between this site and the launch control facility 7A at the Yoshkar-Ola ICBM Complex. Although the purpose of the new facilities at Site 5C2 is not known they appear to have some association with Launch Site 6C.

Construction continues at Launch Site 6C, where silos 6C2 and 6C3 are in late stages. The headworks are in place and backfilling is nearly complete. Little work has been done at 6C1 since [redacted] but construction materials remain nearby. Extensive ditching is evident throughout the area.

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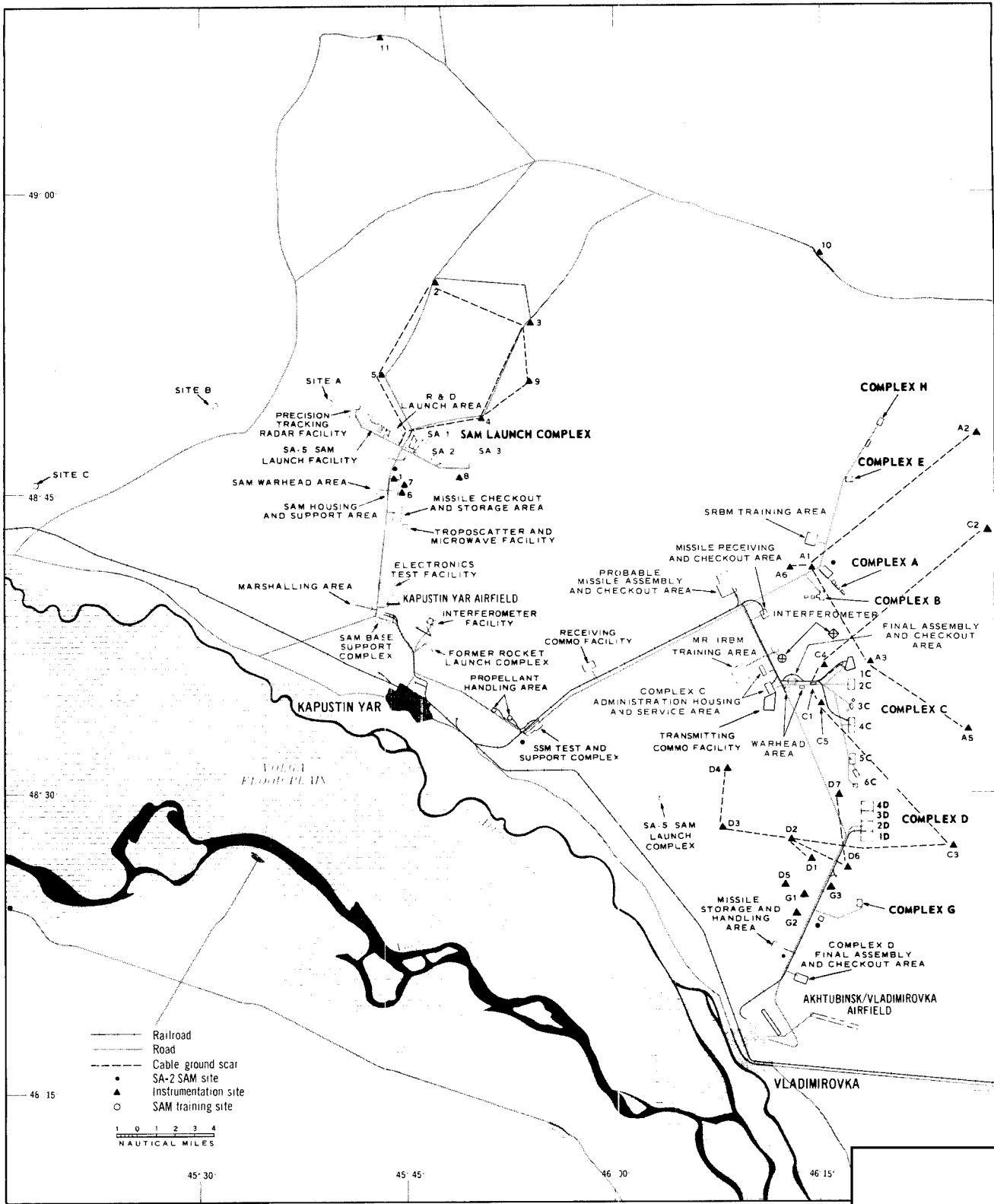


FIGURE 21. KAPUSTIN YAR MISSILE TEST CENTER.

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Table 1. Summary of Estimated Status of Identified ICBM, IRBM, and MRBM Launch Positions at Deployed Complexes,

TYPE	ACTIVE SITES	LAUNCH POSITIONS	OPERATIONAL	LAUNCH POSITIONS DEACTIVATED	U/C
<u>ICBM</u>					
IA	3	4	0	4	0
IIA	5	10	10		0
IIB	29	58	58		0
IIC	7	14	14		0
IID	30	60	60		0
IIIA	23	69	69		0
IIIB	3	9	9		0
IIIC	224	224	156		68
IIID	644	644	520		124
IIIE	<u>22</u>	<u>22</u>	<u>0</u>		<u>22</u>
TOTALS	990	1114	896	4	214
<u>IRBM</u>					
III	13	50	50		0
IV	<u>17</u>	<u>51</u>	<u>51</u>		<u>0</u>
TOTALS	30	101	101		0
<u>MRBM</u>					
I	76	308	308	32	0
II	47	188	188		0
IV	<u>21</u>	<u>84</u>	<u>84</u>		<u>0</u>
TOTALS	144	580	580	32	0
FAN-SHAPED					
PADS	2	13-14	0	0	13-14
GRAND TOTALS	176	694-695	681	32	13-14
INACTIVE					
SITES	6	24	0	0	0

\*Figures reflect 3 launch silos at Types IIIA and IIIB ICBM and Type IV IRBM sites, and 4 launch silos at Type IV MRBM sites. Types IIIC, IIID, and IIIE ICBM sites contain single silos. Types I and II MRBM and Type III IRBM soft sites have four launchers per site. The one exception is the Type III IRBM site at Bereza, which has two launchers.

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Table 2. Summary Evaluation of Soviet ICBM Deployment

Location*	BE Number*	Coordinates*	Type Grp/Site	No of Launchers		Group/Site Negated	Est Start	Status of Site When Last Observed**	Est Operational Status	Quarter Group/Site Est to be Opnl					
				Soft	Hard					1	2	3	4		
<b>Aleysk</b>															
Group A (3)		52-34N 082-42E	IIIC		6			C	Operational				66		
Group B (8)		52-18N 082-49E	IIIC		6			C	Operational				67		
Group C (18)		52-24N 083-05E	IIIC		6			C	Operational		68				
Group D (22)		52-24N 083-29E	IIIC		6			M	U/C					69	
<b>Dombarovskiy</b>															
Group A (3)		51-07N 059-38E	IIIC		6			C	Operational				66		
Group B (9)		51-06N 059-51E	IIIC		6			C	Operational	67					
Group C (15)		50-45N 059-36E	IIIC		6			C	Operational				67		
Group D (21)		50-52N 060-00E	IIIC		6			C	Operational				67		
Group E (31)		51-04N 060-13E	IIIC		6			C	Operational				68		
Group F (37)		51-20N 059-52E	IIIC		6			L	Operational					68	
Group G (44)		51-31N 059-58E	IIIC		6			M	U/C		69				
Group H (49)		50-58N 060-31E	IIIC		6			E	U/C					69	
<b>Drovyanaya</b>															
Site A (1)		51-25N 113-00E	IIIB	2				C	Operational		63				
Site B (2)		51-25N 113-04E	IIIA		3			C	Operational		64				
Site C (4)		51-28N 113-04E	IID	2				C	Operational					63	
Site D (3)		51-20N 113-01E	IID	2				C	Operational		64				
Site E (5)		51-28N 112-50E	IIIA		3			C	Operational					64	
Site F (6)		51-20N 112-55E	IIIA		3			C	Operational					64	
Group G (8)		51-35N 113-05E	IIID		10			C	Operational		66				
Group H (15)		51-27N 113-02E	IIID		10			C	Operational				66		
Group I (33)		51-35N 113-26E	IIID		10			C	Operational	67					
Group J (44)		51-16N 113-18E	IIID		10			C	Operational		67				
Group K (53)		51-26N 113-18E	IIID		10			C	Operational					67	
<b>Gladkaya</b>															
Site A (3)		56-20N 092-20E	IID	2				C	Operational					63	
Site B (2)		56-25N 092-27E	IID	2				C	Operational	64					
Site D (5)		56-21N 092-15E	IIIA		3			C	Operational					64	
Group F (7)		56-15N 092-15E	IIID		10			C	Operational					66	
Group G (23)		56-13N 091-50E	IIID		10			C	Operational					67	
Group H (27)		56-14N 092-38E	IIID		10			C	Operational	67					
Group I (35)		56-19N 093-04E	IIID		10			C	Operational			67			
Group J (49)		56-26N 092-39E	IIID		10			C	Operational			67			
Group K (60)		56-37N 093-06E	IIID		10			C	Operational			67			
<b>Imeni Gastello</b>															
Group A (4)		51-07N 066-12E	IIIC		6			C	Operational				66		
Group B (7)		50-57N 066-08E	IIIC		6			C	Operational					66	
Group C (17)		51-02N 065-41E	IIIC		6			C	Operational		67				
Group D (22)		51-26N 066-08E	IIIC		6			C	Operational		68				
Group E (29)		51-07N 065-44E	IIIC		6			M	U/C		69				
Site (34) F		51-31N 065-40E	IIIC		1			M	U/C					69	
Site (32) F		51-24N 065-49E	IIIC		1			E	U/C					69	
Site (33) F		51-29N 065-48E	IIIC		1			M	U/C					69	
Site (35) F		51-27N 065-32E	IIIC		1			M	U/C					69	
Site (36) F		51-21N 065-35E	IIIC		1			M	U/C					69	
<b>Itatka</b>															
Site (1)		56-59N 085-32E	IIIB	2				C	Operational				62		
Site (2)		57-01N 085-39E	IIIB	2				C	Operational	63					
Site (3)		56-54N 085-39E	IID	2				C	Operational					63	
<b>Kartaly</b>															
Group A (1)		53-02N 060-26E	IIIC		6			C	Operational				66		
Group B (8)		53-08N 060-33E	IIIC		6			C	Operational					66	
Group C (14)		53-01N 060-47E	IIIC		6			C	Operational				67		
Group D (29)		52-37N 060-37E	IIIC		6			C	Operational		68				
Group E (32)		52-43N 060-24E	IIIC		6			M	U/C		69				
Site (39) F		53-04N 060-47E	IIIC		1			E	U/C					69	
Site (40) F		53-11N 060-50E	IIIC		1			E	U/C					69	
Site (41) F		53-04N 060-57E	IIIC		1			E	U/C					69	

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TOP SECRET

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TOP SECRET

Table 2 (Continued)

Location*	BE Number*	Coordinates*	Type Grp/Site	No of Launchers		Group/Site Negated	Est Start	Status of Site When Last Observed**	Est. Operational Status	Quarter Group/Site Est to be Opnl				
				Soft	Hard					1	2	3	4	
<b>Kostroma</b>														
Site A (1)		58-02N 041-21E	IIB	2				C	Operational		62			
Site B (2)		58-02N 041-06E	IIB	2				C	Operational		62			
Site C (3)		57-59N 041-09E	IIB	2				C	Operational			62		
Site D (4)		58-05N 041-39E	IIB	2				C	Operational	63				
Site E (5)		57-58N 041-14E	IIIA		3			C	Operational				63	
Site F (6)		57-55N 041-10E	IID	2				C	Operational				63	
Site G (7)		58-07N 041-32E	IID	2				C	Operational	64				
Group I (21)		57-51N 041-16E	IIID		10			C	Operational	68				
Group J (12)		58-06N 041-36E	IIID		10			C	Operational				68	
Group K (38)		57-39N 041-10E	IIID		10			L	U/C				68	
Group L (48)		57-49N 041-19E	IIID		10			L	U/C				68	
Site (60) M		57-52N 041-45E	IIID		1			U	U/C	69				
Site (61) M		57-54N 041-34E	IIID		1			U	U/C	69				
Site (62) M		57-57N 041-45E	IIID		1			U	U/C	69				
Site (63) M		57-51N 041-38E	IIID		1			M	U/C	69				
Site (64) M		57-55N 041-50E	IIID		1				U/C	69				
<b>Kozelsk</b>														
Site A (3)		55-54N 035-45E	IIC	2				C	Operational			63		
Site B (2)		53-49N 035-47E	IIC	2				C	Operational				63	
Site D (4)		53-54N 035-51E	IIC	2				C	Operational				63	
Site E (5)		53-51N 035-41E	IIB		3			C	Operational	64				
Site F (6)		53-41N 035-39E	IIB		3			C	Operational				64	
Group G (7)		53-48N 035-48E	IID		10			C	Operational				67	
Group H (15)		54-02N 035-27E	IID		10			C	Operational				67	
Group I (32)		53-54N 035-53E	IID		10			C	Operational				67	
Group J (48)		54-11N 035-40E	IID		10			C	Operational	68				
Group K (56)		54-28N 035-32E	IID		10			L	U/C				68	
Group L (63)		53-46N 035-29E	IID		10			L	U/C				68	
Group M (69)		54-17N 035-14E	IID		10			M	U/C	69				
Site (89) N		54-00N 035-15E	IID		1			U	U/C				69	
Site (90) N		53-59N 035-07E	IID		1			U	U/C				69	
Site (91) N		54-01N 034-59E	IID		1			U	U/C				69	
<b>Novosibirsk</b>														
Site 1		55-19N 083-02E	IIIA		3			C	Operational			63		
Site 2		55-19N 083-10E	IIB	2				C	Operational	63				
Site 3		55-23N 082-55E	IIIA		3			C	Operational			64		
Site 4		55-22N 083-14E	IID	2				C	Operational				63	
Site 5		55-20N 082-56E	IID	2				C	Operational	64				
<b>Olovyannaya</b>														
Site A (1)		50-54N 115-48E	IIIA		3			C	Operational	64				
Site B (2)		50-55N 115-45E	IIIA		3			C	Operational				64	
Site C (3)		51-01N 115-57E	IIIA		3			C	Operational				64	
Group D (7)		51-04N 116-05E	IIID		10			C	Operational			66		
Group E (17)		50-56N 115-58E	IIID		10			C	Operational				66	
Group F (40)		50-50N 116-04E	IIID		10			C	Operational				66	
Group G (25)		50-44N 115-45E	IIID		10			C	Operational				67	
Group H (46)		50-40N 115-58E	IIID		10			C	Operational				67	
Group I (55)		50-58N 116-12E	IIID		10			C	Operational			67		
Group J (60)		50-34N 115-56E	IIID		10			C	Operational			67		
Group K (63)		51-12N 116-00E	IIID		10			C	Operational				67	
Group L (90)		50-52N 116-33E	IIID		10			C	Operational	68				
<b>Omsk</b>														
Site (1)		55-09N 073-38E	IIID		3			C	Operational	64				

TOP SECRET

TOP SECRET

Table 2 (Continued)

Location*	BE Number*	Coordinates*	Type Grp/Site	No of Launchers		Group/Site Negated	Est Start	Status of Site When Last Observed**	Est Operational Status	Quarter Group/Site Est to be Opnl				
				Soft	Hard					1	2	3	4	
Perm														
Site A (1)		57-41N 056-12E	IIB	2				C	Operational		62			
Site B (2)		57-44N 055-55E	IIB	2				C	Operational			62		
Site C (3)		57-37N 056-08E	IIB	2				C	Operational			63		
Site D (5)		57-42N 055-47E	IID	2				C	Operational	64				
Site E (6)		57-45N 056-00E	IID	2				C	Operational				63	
Site F (4)		57-41N 056-04E	IIIA		3			C	Operational				64	
Group G (13)		57-44N 056-17E	IIID		10			C	Operational		66			
Group H (29)		57-50N 056-28E	IIID		10			C	Operational	67				
Group I (10)		57-43N 055-51E	IIID		10			C	Operational			66		
Group J (49)		57-32N 056-44E	IIID		10			C	Operational	67				
Group K (70)		57-42N 056-41E	IIID		10			L	U/C			68		
Site (72) L		57-39N 056-26E	IIID	1				M	U/C				69	
Site (75) L		57-37N 056-27E	IIID	1				E	U/C				69	
Site (76) L		57-35N 056-19E	IIID	1				E	U/C				69	
Site (77) L		57-38N 056-21E	IIID	1				E	U/C				69	
Site (78) L		56-36N 056-14E	IIID	1				E	U/C				69	
Site (79) L		57-33N 056-29E	IIID	1				M	U/C				69	
Plesetsk														
Site (1)		62-56N 040-27E	IA	2				C	Converted from SS-6					
Site (2)		62-56N 040-32E	IA	1				C	Converted from SS-6					
Site (3)		62-58N 040-41E	IA	1				C	Converted from SS-6					
Site (4)		62-59N 040-47E	IIA	2				C	Operational			61		
Site (5)		63-03N 040-57E	IIB	2				C	Operational		62			
Site (6)		63-01N 040-53E	IIIA		3			C	Operational	63				
Site (7)		62-51N 040-35E	IIC	2				C	Operational			63		
Site (8)		62-54N 040-47E	IIC	2				C	Operational			63		
For Sites 9-24, see Primary Evaluation of Research and Development														
Facilities, Tyuratam and Plesetsk Missile Test Centers														
Shadrinsk														
Site (1)		56-08N 063-50E	IIIA		3			C	Operational			63		
Site (2)		56-10N 064-01E	IIIA		3			C	Operational	64				
Site (3)		56-07N 063-56E	IIIA		3			C	Operational			64		
Svobodnyy														
Site A (3)		51-55N 128-09E	IIB	2				C	Operational			62		
Site B (1)		51-49N 128-18E	IIB	2				C	Operational			62		
Site C (2)		51-53N 128-23E	IIB	2				C	Operational			62		
Site D (4)		51-58N 128-06E	IID	2				C	Operational	64				
Site E (6)		51-43N 127-59E	IID	2				C	Operational			63		
Site F (5)		51-51N 128-12E	IID	2				C	Operational			63		
Site G (7)		51-30N 127-57E	IIIA		3			C	Operational			64		
Site H (8)		52-03N 128-04E	IID	2				C	Operational	64				
Group I (11)		51-53N 128-11E	IIID		10			C	Operational			67		
Group J (18)		51-43N 127-56E	IIID		10			C	Operational			67		
Group K (25)		51-27N 127-56E	IIID		10			C	Operational			67		
Group L (40)		51-16N 127-39E	IIID		10			C	Operational			67		
Group M (58)		51-39N 128-15E	IIID		10			C	Operational		68			
Group N (67)		51-50N 128-22E	IIID		10			C	Operational			68		
Tatishchevo														
Group A (1)		51-48N 045-40E	IIID		10			C	Operational		66			
Group B (12)		51-37N 045-30E	IIID		10			C	Operational			66		
Group C (26)		51-29N 045-10E	IIID		10			C	Operational			66		
Group D (36)		51-43N 045-14E	IIID		10			C	Operational	67				
Group E (77)		51-55N 045-50E	IIID		10			C	Operational		67			
Group F (58)		51-53N 045-20E	IIID		10			C	Operational		67			
Group G (67)		52-03N 045-27E	IIID		10			C	Operational		67			
Group H (110)		52-09N 045-39E	IIID		10			C	Operational		67			
Group I (91)		52-15N 045-23E	IIID		10			C	Operational	67				
Group J (94)		52-00N 046-03E	IIID		10			C	Operational			67		
Group K (124)		51-51N 046-08E	IIID		10			C	Operational			67		
Group L (146)		51-40N 045-42E	IIID		10			M	Operational			68		

TOP SECRET

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Table 2 (Continued)

Location*	BE Number*	Coordinates*	Type Grp/Site	No of Launchers Soft Hard	Group/Site Negated	Est Start	Status of Site When Last Observed**	Est Operational Status	Quarter Group/Site Est to be Opnl				
									1	2	3	4	
Teykovo													
Site (1)		56-55N 040-27E	IIB	2			C	Operational		62			
Site (2)		56-56N 040-33E	IIB	2			C	Operational		62			
Site (3)		56-55N 040-17E	IIB	2			C	Operational	63				
Site (4)		56-59N 040-40E	IIB	2			C	Operational				63	
Site (5)		56-49N 040-10E	IIB	2			C	Operational					63
Site (6)		56-55N 040-22E	IIB	2			C	Operational		64			
Group A (13)		56-52N 040-44E	IID		10		L	U/C				68	
Group B (23)		56-42N 040-26E	IID		10		M	U/C	69				
Site (24) C		56-55N 040-18E	IID	1			M	U/C		69			
Site (25) C		56-56N 040-23E	IID	1			M	U/C		69			
Site (33) C		56-55N 040-14E	IID	1			E	U/C		69			
Site (34) C		56-57N 040-14E	IID	1			E	U/C		69			
Site (35) C		56-57N 040-08E	IID	1			U	U/C		69			
Site (36) C		56-53N 040-06E	IID	1			U	U/C		69			
Site (37) D		56-25N 039-52E	IID	1			U	U/C				69	
Site (38) D		56-22N 039-49E	IID	1			U	U/C					69
Tyumen													
Site (2)		56-51N 065-27E	IIC	2			C	Operational				63	
Site (3)		56-52N 065-34E	IIC	2			C	Operational				63	
For Tyuratam Site Summary Evaluation of Research and Development Launch Facilities, Tyuratam and Plesetsk Missile Test Centers													
Uzhur													
Group A (2)		55-18N 089-38E	IIC	6			C	Operational	66				
Group B (8)		55-19N 089-20E	IIC	6			C	Operational				66	
Group C (12)		55-07N 089-38E	IIC	6			C	Operational	67				
Group D (21)		55-03N 089-25E	IIC	6			C	Operational		67			
Group E (27)		55-15N 089-54E	IIC	6			C	Operational		67			
Group F (34)		55-13N 090-15E	IIC	6			M	U/C		68			
Group G (43)		55-21N 090-44E	IIC	6			M	U/C		68			
Group & (46)		55-34N 089-31E	IIC	6			E	U/C		69			
Verkhnyaya Salda													
Site (1)		58-06N 060-22E	IIA	2			C	Operational				61	
Site (2)		58-09N 060-16E	IIB	2			C	Operational	62				
Site (3)		58-10N 060-28E	IIA	2			C	Operational				61	
Site (4)		58-12N 060-35E	IIB	2			C	Operational		62			
Site (5)		58-14N 060-55E	IIB	2			C	Operational				62	
Site (7)		58-14N 060-41E	IIIA		3		C	Operational		63			
Site (8)		58-13N 060-49E	IIIA		3		C	Operational				63	
Site (9)		58-05N 060-12E	IID	2			C	Operational				63	
Site (10)		58-08N 060-32E	IID	2			C	Operational				63	
Yedrovo													
Site A (2)		57-48N 033-36E	IIB	2			C	Operational				62	
Site B (1)		57-48N 033-14E	IIB	2			C	Operational				62	
Site C (5)		57-49N 033-08E	IID	2			C	Operational				63	
Site D (4)		57-48N 033-28E	IID	2			C	Operational				63	
Site E (8)		57-52N 033-18E	IIIA		3		C	Operational	64				
Site F (6)		57-47N 033-06E	IID	2			C	Operational				63	
Site G (7)		57-47N 033-02E	IID	2			C	Operational	64				
Site H (3)		57-52N 033-27E	IIIA		3		C	Operational				63	
Group I (11)		57-52N 033-37E	IID		10		C	Operational		67			
Group J (27)		57-48N 033-13E	IID		10		C	Operational				67	
Group K (37)		57-58N 033-40E	IID		10		C	Operational		68			
Group L (41)		57-47N 033-53E	IID		10		C	Operational		68			
Group M (64)		58-07N 033-08E	IID		10		M	U/C				68	
Group N (76)		57-31N 032-52E	IID		10		U	U/C				69	
Site (82) O		57-31N 032-52E	IID		1		U	U/C					69
Site (83) O		57-30N 032-46E	IID		1		U	U/C					69

TOP SECRET



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Table 2 (Continued)

Location*	BE Number*	Coordinates*	Type Grp/ Site	No of Launchers		Group/Site Negated	Est Start	Status of Site When Last Observed**	Est Operational Status	Quarter Group/Site Est to be Opnl			
				Soft	Hard					1	2	3	4
Yoshkar-Ola													
Site (1)		56-35N 048-09E	IIB	2				C	Operational		62		
Site (2)		56-35N 048-18E	IIB	2				C	Operational			62	
Site (3)		56-32N 048-27E	IIB	2				C	Operational	63			
Site (4)		56-31N 048-20E	IID	2				C	Operational			63	
Site (5)		56-34N 048-13E	IID	2				C	Operational				63
Site (6)		56-37N 048-28E	IID	2				C	Operational	64			
Site (8)		56-35N 048-18E	III E***		1			L	U/C			69	
Site (9)		56-32N 048-23E	III E		1			L	U/C			69	
Site (10)		56-36N 048-28E	III E		1			M	U/C			69	
Site (12)		56-38N 048-25E	III E		1			L	U/C			69	
Site (13)		56-40N 048-28E	III E		1			L	U/C			69	
Site (14)		56-34N 048-13E	III E		1			M	U/C			69	
Site (16)		56-34N 048-31E	III E		1			M	U/C			69	
Site (17)		56-42N 048-28E	III E		1			L	U/C			69	
Site (18)		56-39N 048-07E	III E		1			M	U/C			69	
Site (19)		56-43N 048-09E	III E		1			M	U/C			69	
Site (20)		56-39N 048-17E	III E		1			M	U/C			69	
Site (23)		56-50N 048-40E	III E		1			M	U/C			69	
Site (24)		56-42N 048-36E	III E		1			M	U/C			69	
Site (25)		56-45N 048-46E	III E		1			M	U/C			69	
Site (27)		56-46N 048-28E	III E		1			M	U/C	70			
Site (28)		56-52N 048-34E	III E		1			M	U/C	70			
Site (29)		56-35N 048-06E	III E		1			M	U/C			69	
Site (30)		56-25N 039-52E	III E		1			E	U/C			69	
Site (31)		56-44N 048-42E	III E		1			M	U/C	70			
Site (32)		56-48N 048-20E	III E		1			E	U/C	70			
Site (34)		56-55N 048-16E	III E		1			E	U/C		70		
Site (35)		57-00N 048-26E	III E		1			E	U/C		70		
III E LCF (7)		56-36N 048-21E							U/C			69	
III E LCF (22)		56-49N 048-36E							U/C			69	
III E LCF (33)		57-00N 048-20E							U/C		70		
Yurya													
Site (1)		59-09N 049-39E	IIA	2				C	Operational				61
Site (2)		59-10N 049-31E	IIA	2				C	Operational				61
Site (3)		59-13N 049-25E	IIB	2				C	Operational	62			
Site (4)		59-16N 049-22E	IIB	2				C	Operational		62		
Site (5)		59-23N 049-17E	IIIA		3			C	Operational			62	
Site (6)		59-04N 049-51E	IIIA		3			C	Operational	64			
Site (7)		59-21N 049-14E	IIB	2				C	Operational	63			
Site (8)		59-11N 049-47E	IID	2				C	Operational			63	
Site (9)		59-06N 049-46E	IID	2				C	Operational	64			
Site (10)		59-13N 049-18E	IIIA		3			C	Operational			64	
Site (11)		59-21N 049-26E	IID	2				C	Operational	64			
Zhangiz-Tobe													
Group A (1)		49-12N 081-00E	III C		6			C	Operational			66	
Group B (10)		49-22N 080-58E	III C		6			C	Operational			66	
Group C (14)		49-10N 081-22E	III C		6			C	Operational			67	
Group D (21)		48-57N 081-00E	III C		6			C	Operational			68	
Group E (30)		49-03N 080-50E	III C		6			M	U/C		69		
Group F (38)		49-34N 081-16E	III C		6			U	U/C			69	

\*For launch groups, TDI number, BE number, and coordinates are those of the group control site.  
 \*\*E = early; M = midstage; L = late; C = complete; U = undetermined.  
 \*\*\*No grouping established so IDC estimated about two years after estimated start of construction.

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Table 3. Summary Evaluation of R&D and Training Launch Facilities, Tyuratam and Plesetsk Missile Test Centers

Location	BE Number	Coordinates	Type of Site	Number of Launchers		Stage of Const on Latest Usable Coverage	Remarks
				Soft	Hard		
<b>TYURATAM</b>							
Launch Complex A							
Site A1		45-55N 63-21E	I	1		Complete	Operational
Site A2		45-55N 63-21E	I	1		Complete	Operational
Site A3			I	1		Complete	Operational
Launch Complex B							
Site B1		46-00N 63-34E	IA	1		Complete	Operational
Site B2		46-00N 63-34E	II	1		Complete	Operational
Launch Complex C							
Site C1		45-48N 63-38E	II	1		Complete	Operational
Site C2		45-48N 63-39E	II	1		Complete	Operational
Site C3		45-48N 63-39E	II	1		Complete	Operational
Launch Complex D							
Site D1		45-59N 63-57E	IIIA		3	Complete	Operational
Site D2		45-59N 63-57E	IIIA		3	Complete	Operational
Launch Complex E							
Site E1		45-48N 63-12E	IIC	1		Complete	Operational
Site E2		45-48N 63-12E	IIC	1		Complete	Operational
Site E3		45-48N 63-12E	IIC	1		Complete	Operational
Launch Complex F		46-02N 63-06E	IIIB		3	Complete	Operational
Launch Complex G							
Site G1-G2		46-03N 62-56E	I	2		Complete	Operational
Site G3-G4		46-03N 62-56E	I	2		Complete	Operational
Site G5-G6		46-05N 62-54E	II	2		Complete	Operational
Launch Complex H		45-59N 63-42E	I	2		Complete	Operational
Launch Group I							
Site I1		45-56N 63-26E	IIIC		1	Complete	Operational
Site I2		45-57N 63-26E	III		1	MID	U/C
Site I3		45-57N 63-26E	III		1	MID	U/C
Site I4		45-54N 63-20E	IIIC		1	Complete	Operational
Site I5		45-59N 63-33E	IIIC		1	Complete	Operational
Site I6		46-00N 63-31E	III		1	Early	U/C
Site I7		45-57N 063-28E	III		3	Late	U/C
Launch Complex J		45-54N 63-54E	I	2		Late	U/C
Launch Group K							
Site K1		46-02N 63-03E	IIIC		1	Complete	U/C
Site K2		46-02N 63-03E	IIIC		1	Complete	U/C
Site K3		46-04N 62-56E	IIIC		1	Complete	U/C
Launch Group L							
Sites L1-L10		46-03N 62-59E	IIID		10	Complete	Operational
Launch Group M							
Site M1			III		1	MID	U/C
Site M2			III		1	MID	U/C
Site M3			III		1	MID	U/C
Launch Group N							
Site N1		46-02N 63-02E	IIID		1	Complete	Operational
Site N2		46-04N 62-57E	III		1	Complete	Operational
Site N3		46-04N 62-57E	III		1	Complete	Operational
Launch Group O							
Site O1		46-00N 63-10E	III		1	MID	U/C
Site O2		45-56N 63-03E	III		1	MID	U/C
Site O4		45-59N 62-54E	III		1	MID	U/C
Control Site O3		46-01N 63-03E	N/A		0		U/C

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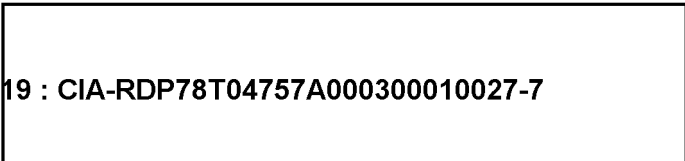
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Table 3 (Continued)

Location	BE Number	Coordinates	Type of Site	Number of Launchers		Stage of Const on Latest Usable Coverage	Remarks
				Soft	Hard		
PLESETSK							
Site 9		62-53N 40-51E	IB	2		Late	U/C
Site 10		62-53N 40-52E	IB	2		Late	U/C
Site 11		62-58N 41-27E	Dual IIIE		2	Complete	Operational
Launch Control 12A		62-58N 41-32E				Late	U/C
Site 13		62-52N 40-44E	II	2		Complete	Operational
Site 14		62-58N 41-34E	III E		1	Complete	Operational
Site 15		62-58N 41-24E	III		3	Late	U/C
Site 16		62-47N 40-35E	II	2		Complete	Operational
Site 17		62-55N 41-24E	III E		1	Late	U/C
Site 18		62-58N 41-40E	III E		1	Late	U/C
Site 19		62-56N 41-36E	III E		1	Late	U/C
Site 20		62-55N 41-40E	III E		1	Late	U/C
Site 21		62-58N 41-23E	II	2		Complete	Operational
Site 22		62-53N 41-46E	III E		1	Late	U/C
Site 23		63-01N 41-32E	III E		1	Late	U/C
Site 24		63-01N 41-33E	III E		1	Late	U/C

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Table 4. Summary Evaluation of Soviet IRBM Deployment.

Location*	BE Number	Coordinates	Type	No of Pads/ Launchers	Remarks
AKTYUBINSK Launch Complex PETROVSKIY		50-00N 56-57E	IV	3	Operational
GELLI Launch Complex KAKASHURA		42-38N 47-27E	IV	3	Operational
GELLI		42-46N 47-28E	IV	3	Operational
PARAUL		42-47N 47-23E	IV	3	Operational
GRANOV Launch Complex GRANOV 1		48-56N 29-30E	III	4	Operational
GRANOV 2		48-50N 29-28E	IV	3	Operational
KALNIK		48-59N 29-21E	IV	3	Operational
KROLEVETS Launch Complex KROLEVETS 1		51-36N 33-29E	III	4	Operational
KROLEVETS 2		51-40N 33-31E	III	4	Operational
BEREZA		51-43N 33-43E	III	2	Operational
LEBEDIN Launch Complex LEBEDIN 1		50-32N 34-25E	III	4	Operational
LEBEDIN 2		50-35N 34-24E	III	4	Operational
LEBEDIN 3		50-37N 34-27E	III	4	Operational
NIGRANDE Launch Complex NIGRANDE		56-31N 22-02E	III	4	Operational
SKRUNDA		56-35N 21-49E	IV	3	Operational
VAINODE		56-28N 21-50E	IV	3	Operational
NOVOSYSOYEVKA Launch Complex NOVOSYSOYEVKA 1		44-11N 133-26E	III	4	Operational
NOVOSYSOYEVKA 2		44-07N 133-28E	IV	3	Operational
PERVOMAYSK Launch Complex KAMENNY MOST		47-58N 30-53E	IV	3	Operational
SEMENOVKA 1		47-58N 30-58E	IV	3	Operational
SEMENOVKA 2		47-53N 30-58E	IV	3	Operational
SARY OZEK Launch Complex KARA BABAU 1		44-31N 77-46E	III	4	Operational
KARA BABAU 2		44-30N 77-59E	IV	3	Operational
KARA BABAU 3		44-31N 77-41E	IV	3	Operational
SMORGON Launch Complex SMORGON 1		54-31N 26-17E	III	4	Operational
SMORGON 2		54-26N 26-18E	IV	3	Operational
SMORGON 3		54-36N 26-22E	III	4	Operational
TAYBOLA Launch Complex TAYBOLA 1		68-28N 33-15E	IV	3	Operational
TAYBOLA 2		68-30N 33-22E	IV	3	Operational
UGOLNYY Launch Complex UGOLNYY		64-47N 177-56E	III	4	Operational

\*TDI site designators have been adopted for IRBM launch sites.

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Table 5. Summary Evaluation of Soviet MRBM Deployment.

Location*	BE Number	Coordinates	Type	No of Pads/ Launchers	Remarks
AKHTYRKA Launch Complex					
AKHTYRKA 1		50-16N 34-50E	II	4	Operational
AKHTYRKA 2		50-22N 34-57E	II	4	Operational
ALUKSNE Launch Complex					
LEJASCIEMS 1		57-20N 26-44E	II	4	Operational
RUSKI		57-25N 26-49E	II	4	Operational
LEJASCIEMS 2		57-13N 26-33E	IV	4	Operational
ANASTASYEVKA Launch Complex					
ANASTASYEVKA 1		48-34N 135-37E	II	4	Operational
ANASTASYEVKA 2		48-36N 135-41E	II	4	Operational
BALTA Launch Complex					
BALTA 1		48-01N 29-34E	II	4	Operational
BALTA 2		48-07N 29-34E	II	4	Operational
BARANO-ORENBURGSKOYE Launch Complex					
SOFIYE ALEKSEYEVSKOYE		44-15N 131-22E	I	4	Operational
BARANO-ORENBURGSKOYE		44-20N 131-30E	I	4	Operational
BELOKOROVICHI Launch Complex					
OLEVSK 1		51-08N 27-59E	I	4	Operational
OLEVSK 2		51-10N 28-03E	I	4	Operational
RUDNYA ZLOTINSKAYA		51-03N 28-07E	IV	4	Operational
BORSHCHEV Launch Complex					
SKALA PODOLSKAYA 1		48-51N 26-08E	I	4	Operational
SKALA PODOLSKAYA 2		48-52N 26-03E	I	4	Operational
BREST Launch Complex					
BREST 1		51-48N 24-00E	II	4	Operational
BREST 2		51-51N 24-01E	II	4	Operational
BRODY Launch Complex					
BRODY 1		50-06N 25-12E	IV	4	Operational
BRODY 2		50-12N 25-05E	I	4	Operational
BERESTECHKO		50-20N 25-05E	I	4	Operational
DERAZHNYA Launch Complex					
DERAZHNYA 1		49-20N 27-26E	II	4	Operational
DERAZHNYA 2		49-26N 27-28E	II	4	Operational
KHMELNITSKIY		49-24N 27-08E	IV	4	Operational
DISNA Launch Complex					
DISNA		55-35N 28-16E	I	4	Operational
ZELKI		55-35N 28-24E	I	4	Operational
BORKOVICHI		55-41N 28-27E	II	4	Operational
DOLINA Launch Complex					
DOLINA 1		49-03N 24-03E	I	4	Operational
DOLINA 2		49-06N 24-08E	I	4	Operational
BOLEKHOV		49-06N 23-51E	IV	4	Operational

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Table 5. (Continued).

Location*	BE Number	Coordinates	Type	No of Pads/ Launchers	Remarks
DROGOBYCH Launch Complex					
MEDENITSA		49-22N 23-45E	I	4	Operational
DROGOBYCH		49-25N 23-34E	I	4	Operational
STRYY		49-16N 23-42E	IV	4	Operational
DYATLOVO Launch Complex					
DYATLOVO		53-32N 25-17E	I	4	Operational
BEREZOVKA		53-35N 25-27E	I	4	Operational
ZBLYANY		53-35N 25-17E	II	4	Operational
GOMEL Launch Complex					
BORKHOV 1		52-18N 30-42E	II	4	Operational
BORKHOV 2		52-24N 30-38E	II	4	Operational
GRESK Launch Complex					
GRESK 1		53-14N 27-42E	I	4	Operational
GRESK 2		53-16N 27-40E	I	4	Operational
URECHYE		53-11N 27-58E	II	4	Operational
GROZNYI Launch Complex					
SUNZHENSKOYE		43-08N 44-54E	I	4	Operational
NESTEROVSKAYA		43-11N 44-57E	I	4	Operational
ACHKHOY-MARTAN		43-10N 45-10E	IV	4	Operational
GUSEV Launch Complex					
GUSEV 1		54-41N 22-04E	I	4	Operational
GUSEV 2		54-44N 22-03E	I	4	Operational
JELGAVA Launch Complex					
IECAVA 1		56-35N 24-04E	II	4	Operational
IECAVA 2		56-39N 24-07E	II	4	Operational
IECAVA 3		56-33N 24-20E	IV	4	Operational
JONAVA Launch Complex					
KARMELAVA		54-57N 24-05E	II	4	Operational
JONAVA		55-00N 24-14E	II	4	Operational
KAMENETS-PODOLSKIY Launch Complex					
KAMENETS-PODOLSKIY		48-51N 26-42E	II	4	Operational
DUNAYEVTSY		48-55N 26-59E	II	4	Operational
KIVERTSY Launch Complex					
KIVERTSY 1		50-53N 25-30E	I	4	Operational
KIVERTSY 2		50-56N 25-36E	I	4	Operational
TROSTYANETS		50-58N 25-39E	II	4	Operational
KONKOVICHI Launch Complex					
PETRIKOV		52-10N 28-34E	I	4	Operational
KONKOVICHI		52-15N 28-37E	I	4	Operational

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Table 5 (Continued)

Location*	BE Number	Coordinates	Type	No of Pads/ Launchers	Remarks
KOROSTEN Launch Complex					
KOROSTEN 1		50-51N 28-18E	II	4	Operational
KOROSTEN 2		50-52N 28-31E	II	4	Operational
KOZHANOVICHI Launch Complex					
KOZHANOVICHI 1		52-10N 27-51E	I	4	Operational
KOZHANOVICHI 2		52-11N 27-48E	I	4	Operational
KRASNOZNAMENSK Launch Complex					
VIESVILLE		55-01N 22-23E	I	4	Operational
RAGNIT		55-01N 22-11E	I	4	Operational
KREMOVO Launch Complex					
KREMOVO		44-01N 132-19E	I	4	Operational
LYALICHI		44-02N 132-26E	I	4	Operational
KURGANCHA Launch Complex					
KURGANCHA 1		39-37N 65-57E	I	4	Operational
KURGANCHA 2		39-36N 65-52E	I	4	Operational
TYM		39-35N 65-42E	IV	4	Operational
LIDA Launch Complex					
LIDA 1		53-47N 25-20E	I	4	Operational
LIDA 2		53-57N 25-27E	I	4	Operational
LUTSK Launch Complex					
LUTSK 1		50-46N 25-02E	I	4	Operational
LUTSK 2		50-50N 25-03E	I	4	Operational
VLADIMIR-VOLYNSKIY		50-48N 24-42E	IV	4	Operational
MAYKOP Launch Complex					
KURDZHIPSKAYA		44-31N 40-00E	II	4	Operational
SHIRVANSKAYA		44-25N 39-53E	IV	4	Operational
MOLOSKOVITSY Launch Complex					
MOLOSKOVITSY 1		59-28N 29-05E	II	4	Operational
MOLOSKOVITSY 2		59-29N 29-12E	II	4	Operational
GURLEVO		59-25N 28-54E	IV	4	Operational
NADVORNAYA Launch Complex					
PARYSCHE		48-37N 24-42E	I	4	Operational
NOVA VES		48-39N 24-48E	I	4	Operational
OTYNYA		48-47N 24-50E	IV	4	Operational
OSTROG Launch Complex					
OSTROG 1		50-14N 26-43E	I	4	Operational
OSTROG 2		50-17N 26-41E	I	4	Operational
OSTROV Launch Complex					
ASANOVSHCHINA		57-31N 28-12E	I	4	Operational
SHEVELEVO		57-37N 28-11E	I	4	Operational
REDKINO		57-24N 28-26E	IV	4	Operational

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Table 5 (Continued)

Location*	BE Number	Coordinates	Type	No of Pads/ Launchers	Remarks	
PINSK Launch Complex						
IVANOVO		52-10N 25-41E	I	4	Operational	
MOTOL		52-12N 25-44E	I	4	Operational	
POLOTSK Launch Complex						
POLOTSK 1		55-22N 28-44E	II	4	Operational	
POLOTSK 2		55-24N 28-33E	II	4	Operational	
POSTAVY Launch Complex						
POSTAVY 1		55-09N 26-53E	II	4	Operational	
KOZYANY		55-20N 26-51E	II	4	Operational	
POSTAVY 2		55-06N 27-00E	IV	4	Operational	
PRUZHANY Launch Complex						
PRUZHANY 1		52-30N 24-08E	II	4	Operational	
PRUZHANY 2		52-33N 24-06E	II	4	Operational	
RAKVERE Launch Complex						
SIMUNA		59-08N 26-26E	II	4	Operational	
VAIKE MAARJA		59-11N 26-20E	II	4	Operational	
RISTI Launch Complex						
RISTI 1		59-04N 24-04E	I	4	Operational	
RISTI 2		59-07N 24-06E	I	4	Operational	
RUZHANY Launch Complex						
KRUPA 1	52-47N 24-42E	II	4	Operational		
KRUPA 2	52-49N 24-45E	II	4	Operational		
SATEIKIAI Launch Complex						
SALANTAI 1	55-59N 21-38E	I	4	Operational		
SALANTAI 2	56-02N 21-41E	I	4	Operational		
ZEMAICIU KALVARIJA	56-01N 21-54E	IV	4	Operational		
SLONIM Launch Complex						
BYTEN 1	52-52N 25-21E	I	4	Operational		
BYTEN 2	52-55N 25-21E	I	4	Operational		
SOKAL Launch Complex						
SOKAL 1	50-22N 24-18E	I	4	Operational		
SOKAL 2	50-27N 24-20E	I	4	Operational		
SOKAL 3	50-20N 24-26E	IV	4	Operational		
SOVETSK Launch Complex						
SLAVSK 1	54-59N 21-36E	I	4	Operational		
SLAVSK 2	54-59N 21-28E	I	4	Operational		

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Table 5 (Continued)

Location*	BE Number	Coordinates	Type	No of Pads/ Launchers	Remarks	
SUCHAN Launch Complex						
NOVITSKOYE		43-01N 133-17E	I	4	Operational	
SEVERNYY SUCHAN		43-10N 133-20E	I	4	Operational	
TAURAGE Launch Complex						
TAURAGE 1		55-10N 22-20E	I	4	Operational	
TAURAGE 3		55-05N 22-19E	I	4	Operational	
TORVA Launch Complex						
TORVA 1		57-56N 26-04E	I	4	Operational	
TORVA 2		57-59N 26-05E	I	4	Operational	
TSIRGULIINA		57-49N 26-12E	IV	4	Operational	
UKMERGE Launch Complex						
VEPRIAI		55-07N 24-38E	I	4	Operational	
UKMERGE		55-11N 24-42E	I	4	Operational	
UMAN Launch Complex						
MOLODETSKOYE		48-53N 30-27E	I	4	Operational	
MANKOVKA		48-57N 30-24E	I	4	Operational	
KISHENTSY		49-00N 30-13E	IV	4	Operational	
USOVO Launch Complex						
OVRUCH 1		51-17N 28-16E	I	4	Operational	
OVRUCH 2		51-18N 28-10E	I	4	Operational	
LIPNIKI		51-12N 28-26E	II	4	Operational	
VORU Launch Complex						
VORU 1		57-45N 26-47E	II	4	Operational	
VORU 2		57-49N 26-50E	II	4	Operational	
VSELYUB Launch Complex						
VSELYUB 1		53-45N 25-42E	I	4	Operational	
VSELYUB 2	53-47N 25-46E	I	4	Operational		
YELSK Launch Complex						
YELSK 1	51-42N 29-12E	I	4	Operational		
YELSK 2	51-47N 29-18E	I	4	Operational		
ZAGARE Launch Complex						
ZAGARE 1	56-23N 23-19E	I	4	Operational		
ZAGARE 2	56-28N 23-21E	I	4	Operational		
LIELELEJA	56-24N 23-36E	IV	4	Operational		
ZHITOMIR Launch Complex						
ZHITOMIR 1	50-04N 28-15E	II	4	Operational		
ZHITOMIR 2	50-10N 28-16E	II	4	Operational		
BERDICHEV	50-05N 28-22E	I	4	Operational		
ZHMERINKA Launch Complex						
GNIVAN	49-08N 28-11E	I	4	Operational		
ZHMERINKA	49-10N 28-04E	II	4	Operational		
VINNITSA	49-17N 28-20E	IV	4	Operational		
ZNAMENSK Launch Complex						
ZNAMENSK 1	54-32N 21-10E	I	4	Operational		
ZNAMENSK 2	54-35N 21-07E	I	4	Operational		

\*TDI site designators have been adopted for MRBM launch sites.

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Table 6. Fan-Shaped Pads and Inactive MRBM Launch Sites

Location	BE Number	Coordinates	Type	No of Pads/ Launchers	Remarks
GVARDEYSK Launch Complex					
GVARDEYSK 1		54-40N 21-07E	I	4	6/7 fan-shaped pads
GVARDEYSK 2		54-45N 21-09E	I	4	Inactive
MUKACHEVO Launch Complex					
MUKACHEVO 1		48-18N 22-30E	I	4	Inactive
MUKACHEVO 2		48-19N 22-37E	I	4	Inactive
PAPLAKA Launch Complex					
PAPLAKA 1		56-22N 21-17E	I	4	Inactive
PAPLAKA 2		56-25N 21-16E	I	4	Inactive
SIMFEROPOL Launch Complex					
MAZANKA	44-53N 34-19E	I	4	Inactive	
BALKI	44-56N 34-26E	I	4	7 fan-shaped pads	

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Table 7. Summary Evaluation of Selected Launch Facilities, Kapustin Yar Missile Test Center

Complex/Area/Site	BE Number	Coordinates	Type of Site	Number of Positions		Site Negated	Stage of Construction on Latest Usable Coverage	Remarks
				Pad	Silo			
Complex A		48-42N 46-15E	SRBM	1	--		Complete	Operational
Launch Site 1A1			SRBM	1	--		Complete	Operational
Launch Site 1A2			R&D	--	1		Complete	Abandoned
Launch Site 2A1			R&D	--	1		Inactive	Abandoned
Complex C		48-36N 46-17E	Space R&D*	1	--		Complete	Operational
Launch Site 1C1			Probable Space	1	--		Complete	Undet
Launch Site 1C2			Probable Space	1	--		Complete	Undet
Launch Site 1C3		R&D/Trng	2	--	Complete		Operational	
Launch Area 2C		48-35N 46-17E	R&D/Trng	1	--		Complete	Operational
Launch Area 3C		48-34N 46-17E	R&D/Trng	1	--		Complete	Operational
Launch Site 4C1		48-34N 46-17E	Type IV MRBM <sub>p</sub>	--	4		Complete, being modified	Operational (SW silo being modified)
Launch Site 4C2		48-33N 46-17E	Type IV IRBM <sub>p</sub>	--	3		Complete	Operational
Launch Site 5C1		48-33N 46-17E	2 soft IRBM pads	2	--		Complete	Operational
Launch Site 5C2		48-33N 46-17E	--	--	--		Never completed	Abandoned
Launch Site 6C	48-33N 46-17E	--	--	3		U/C		
Complex E		48-46N 46-18E	Undet	1	--	Complete	Operational	
Complex G		48-24N 46-17E	Trng	2	--	Complete	Abandoned	
Complex H		48-48N 46-20E	Undet	2	--	Complete	Undet	

\*R&D/Trng site on first coverage,  
 p Prototype.

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Table 8. Soviet ICBM Systems, Estimated Characteristics and Performance <sup>1/</sup>

Initial Operational Capability (IOC)	SS-7	SS-8	SS-9	SS-11	SS-13 <sup>2/</sup>	
Maximum operational range (N.R.E.-nm)	6,500/5,500 <sup>3/</sup>	6,000	6,500/5,000 <sup>3/</sup>	5,500	About 5,500	
Reentry vehicle weight (lbs)	3,500±500 <sup>3/</sup>	3,500±500	10,000±1,000 <sup>3/</sup>	1,500±300	About 1,000	
Warhead weight (lbs)	4,200±500		12,500±1,000 <sup>4/</sup>			
Warhead weight (lbs)	2,800±400 <sup>3/</sup>	2,800±400	8,000±1,000 <sup>3/</sup>	1,100±300	About 750	
Accuracy (CEP-nm) <sup>5/</sup>	1.0-1.25	1.0	10,000±1,000 <sup>4/</sup>	1.0-1.5	1.0-1.5 (hard) 1.5-2 (mobile)	
Improvement year	--	--	About 0.5 (Radio inertial) About 0.75 (inertial)	--	--	
Deployment	Soft/hard	Soft/hard	Hard	Hard	Hard and mobile	
Reliability (percent)						
Launch	90	80	90	95	85	80
Inflight	95	85	90	95	80	80
Warhead	95	95	95	95	95	95
Weapon system <sup>6/</sup>	80	65	75	85	65	60
Alert rate <sup>7/</sup>	85-95	85-95	90-95	90-95	90-95	80-90
Force <sup>1/ 8/</sup>	70-75	55-60	70-75	75-80	55-60	50-55
Improvement	--	--	--	--	70-75/IOC	60-65/IOC
					+ 1 year	+ 1 year
Time to fire	Soft Hard	Soft Hard				
From normal readiness condition	1-3 hrs 5-15 min	1-3 hrs 30-45 min	3-5 min	0.5-3 min	0.5-2 min	<sup>9/</sup>
From peak readiness condition	3-5 min 3-5 min	5-10 min 5-10 min	3-5 min	0.5-3 min	0.5-2 min	0.5-2 min
Hold time (At peak readiness)	Many days hrs	About 1 hr	Unlimited	Unlimited	Unlimited	About 1 day
Refire time	2-4 hrs --	2-4 hrs --	--	--	--	--
Configuration	Two stage	Two stage	Two stage	Two stage	Three stage	
Approximate gross Lift-off Weight (lbs)	325,000	165,000	430,000	100,000	100,000	
Guidance	Inertial	Radio inertial	Radio inertial & Inertial	Inertial (poss radio inertial)	Inertial	
Propellant	Storable liquid	Nonstorable liquid	Storable liquid	Storable liquid	Solid	

- <sup>1/</sup> The SS-6 had been phased out of the Soviet ICBM force by mid-1968; for characteristics of this system in previous years, see Table 10 in 23rd Revision.
- <sup>2/</sup> Based on the Savage parade missile and the KY-6 flight program.
- <sup>3/</sup> These ICBMs have operational reentry vehicles (RV) of different weights and warheads with different maximum ranges; the heavy RV goes to the shorter ranges and vice versa.
- <sup>4/</sup> We project possible multiple reentry vehicles (MRVs) on the heavy payload version of the SS-9.
- <sup>5/</sup> CEP (circular error probability) is the radius of a circle centered on the extended target, within which 50 percent of the arriving missile warheads are expected to fall.
- <sup>6/</sup> Weapon system reliability is the product of launch, inflight, and warhead reliability.
- <sup>7/</sup> A spread of reliabilities is given for Alert Rate and Force Reliability. The low side indicates day-to-day posture, and the high side reflects a generated alert condition in time of international tension. It is estimated that storable liquid propellant missiles could be held in a generated alert condition for about 2 weeks. Solid propellant missiles could be held for about 30 days.
- <sup>8/</sup> Force reliability is the percentage of the operational missile force that, in the absence of countermeasures, will successfully detonate within 3.5 CEPs of the intended targets. It is the product of alert rate and weapon system reliability.
- <sup>9/</sup> It probably would require about 30 minutes after arrival at the launch site for a mobile system to reach peak readiness; thereafter the missile probably could fire in about 1 minute.

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Table 9. Soviet MRBM and IRBM Systems Estimated Characteristics and Performance

	SS-4		SS-5		SS-14 <u>1/</u>	
Initial Operational Capability (IOC)	[Redacted]					
Maximum range (nm)	1,020		2,200		About 1,500	
Guidance	Inertial		Inertial		Inertial	
CEP (nm)	1.25		1.0		0.5-1.0 (fixed) 1.0-1.5 (mobile)	
Reentry vehicle weight (lbs)	3,300±500		3,500±500		About 1,000	
Warhead weight (lbs)	2,200±500		2,800±400		About 750	
Gross liftoff wt. (lbs)	88,000		About 200,000		About 35,000	
Configuration	Single stage		Single stage		Two stage	
Propellant	Storable liquid		Storable liquid		Solid	
Reliability (percent)	Fixed		Fixed		Fixed	Mobile
Launch	90		90		85	80
In-Flight	95		95		80	80
Warhead	95		95		95	95
Weapon system <u>2/</u>	80		80		65	60
Alert rate <u>3/</u>	85-95		85-95		90-95	80-90
Force <u>3/</u> <u>4/</u>	70-75		70-75		55-60	50-55
					70-75/IOC+	60-65/IOC+
					1 year	1 year
Time to fire	Soft	Hard	Soft	Hard	Hard	Mobile
From normal readiness condition	1-3 hrs	5-15 min	1-3 hrs	5-15 min	About 1 min <u>5/</u>	
From peak readiness condition	3-5 min	3-5 min	3-5 min	3-5 min	About 1 min	About 1 min
Hold time (Condition 1)	Many hours	Days	Many hours	Days	Unlimited	About 1 day
Refire time	2-4 hrs	--	2-4 hrs	--	--	- ? -

1/ Based on the use of the second and third stages of the SS-13.

2/ Weapon system reliability is the product of launch, in-flight, and warhead reliability.

3/ A spread of reliabilities is given for alert rate and force reliability. The low side indicates a day-to-day posture, and the high side reflects a generated alert condition in time of international tension. It is estimated that liquid propellant missiles could be held in a generated alert condition for about two weeks. Solid propellant missiles probably could be held for about 30 days.

4/ Force reliability is the percentage of the operational missile force that, in the absence of countermeasures, will successfully detonate within 3.5 CEPs of the intended targets. It is the product of alert rate and weapon system reliability.

5/ It probably would require about 30 minutes after arrival at the launch site for a mobile system to reach peak readiness; thereafter the missile probably could fire in about 1 minute.

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