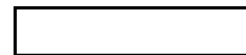


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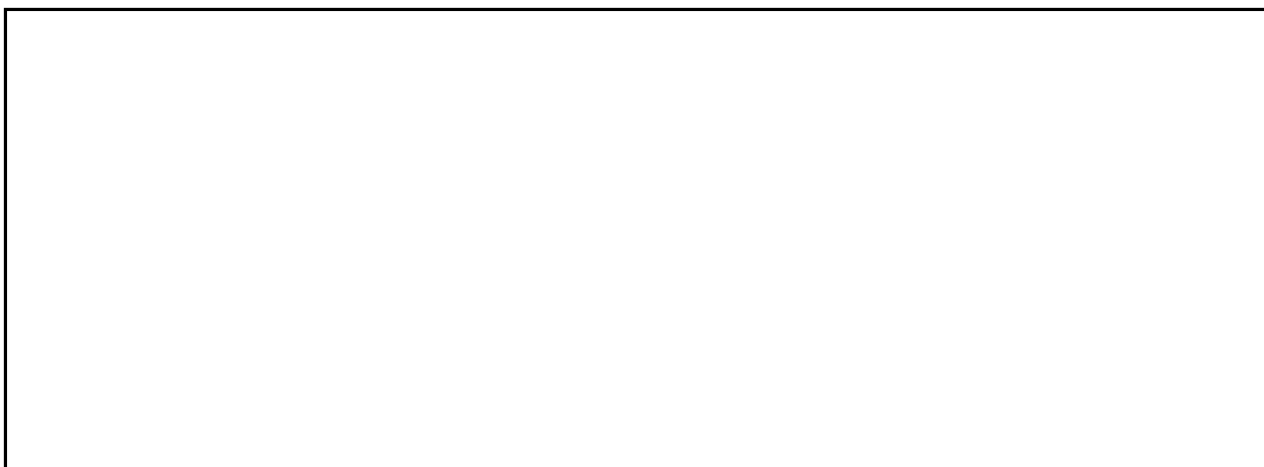
March 1965



**EVALUATIONS OF SOVIET
SURFACE-TO-SURFACE
MISSILE DEPLOYMENT
17TH REVISION**

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

Guided Missile and Astronautics Intelligence Committee



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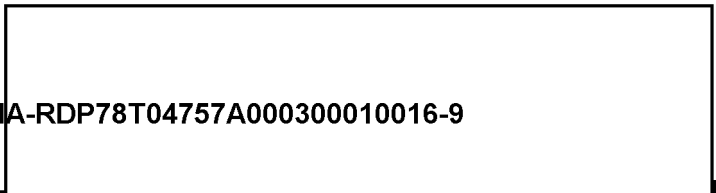
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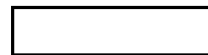
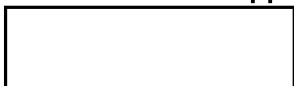
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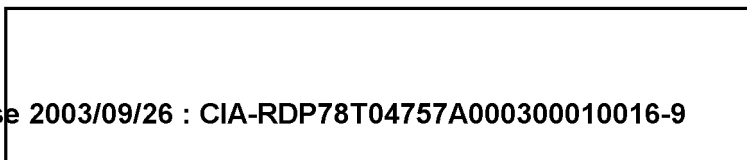
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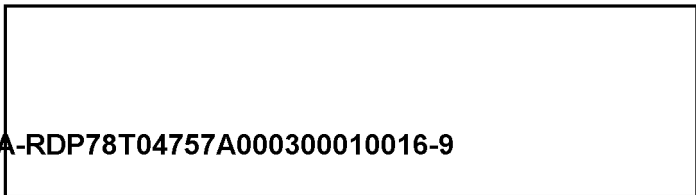
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PREFACE

This report, published bimonthly by the GMAIC Deployment Working Group (DWG), provides a comprehensive, ready-reference listing of all ICBM, IRBM, and MRBM deployment locations, types of site configurations, photographic references, 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. Additional data may be added to future revisions.

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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CONTENTS

	Page
Introduction	1
Soviet ICBM Deployment	1
Soviet IRBM/MRBM Deployment	63
Table 1. Summary of Estimated Status of Identified ICBM, IRBM, and MRBM Launchers at Deployed Complexes	72
Table 2. Summary Evaluation of Soviet ICBM Deployment	73
Table 3. Summary Evaluation of Soviet IRBM Deployment	77
Table 4. Summary Evaluation of Soviet MRBM Deployment	79
Table 5. Summary Evaluation of Launch Facilities, Kapustin Yar Missile Test Center	86
Table 6. Summary Evaluation of Soviet Fixed Field Sites (SSM Fixed Field Positions)	87
Table 7. Composition of IRBM/MRBM Complexes	91
Table 8. Soviet ICBM, IRBM, and MRBM Systems, Technical Characteristics and Performance	92

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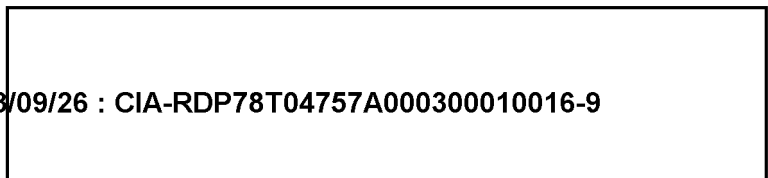


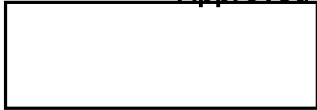
25X1

ILLUSTRATIONS

	Page
Figure 1. Deployment of Soviet ICBM Complexes.	Facing 1
Figure 2. Typical Configurations of ICBM Launch Sites, and Explanation of Types.	3
Figure 3. Artist's Concept of Type IIIC ICBM Launch Site	10
Figure 4. Launch Site B(2), Uzhur ICBM Complex	11
Figure 5. Launch Site A3(15), Tyuratam.	12
Figure 6. Launch Site B2(16), Tyuratam.	13
Figure 7. Launch Complex I(14), Tyuratam	14
Figure 8. Launch Site G7(18), Tyuratam.	15
Figure 9. Launch Sites K1 and K2(13), Tyuratam.	16
Figure 10. Site Support Facility at Type IIIC ICBM Launch Site.	17
Figure 11. Site Support Facility at Type IIIA ICBM Launch Site	18
Figure 12. Probable Control Bunker Under Construction, Launch Site C(3), Aleysk ICBM Complex	19
Figure 13. Complex Support Facility, Aleysk ICBM Complex.	20
Figure 14. Launch Sites D(4), E(5), and F(6), Kartaly ICBM Complex	21
Figure 15. Schematic Layout, Kartaly ICBM Complex	22
Figure 16. Launch Site F(6), Zhangiz-Tobe ICBM Complex.	23
Figure 17. Schematic Layout, Zhangiz-Tobe ICBM Complex	24
Figure 18. Artist's Concept of Central Launch Site, Type IIID ICBM Launch Group	31
Figure 19. Launch Site K3(20), Tyuratam.	32
Figure 20. Artist's Concept of Launch Site K3(20), Tyuratam	33
Figure 21. Artist's Concept of Launch Site G8/G9(19), Tyuratam.	34
Figure 22. Complex Support Facility and Rail-to-Road Transfer Point, Tatishchevo ICBM Complex	35
Figure 23. Schematic Layout, Launch Group D(4-13), Olovyannaya ICBM Complex.	36
Figure 24. Launch Group D(4-13), Olovyannaya ICBM Complex	37
Figure 25. Launch Group E(14-23), Olovyannaya ICBM Complex	39

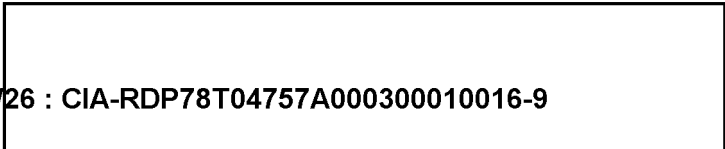
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ILLUSTRATIONS (Continued)

	Page
Figure 26. Schematic Layout, Launch Group E(14-23), Olovyannaya ICBM Complex.	41
Figure 27. Launch Group A(1-11), Tatishchevo ICBM Complex	42
Figure 28. Launch Site A1(1), Launch Group A, Tatishchevo ICBM Complex. . .	43
Figure 29. Launch Group B(12-21), Tatishchevo ICBM Complex.	44
Figure 30. Launch Group G(7-16), Drovyanaya ICBM Complex	45
Figure 31. Launch Group F(7-13), Gladkaya ICBM Complex	96
Figure 32. Possible Launch Group G, Perm ICBM Complex	47
Figure 33. Possible Electronic Facility, Launch Site B(2), Olovyannaya ICBM Complex.	52
Figure 34. L-shaped Ground Scar, Launch Site B(2), Shadrinsk ICBM Complex.	53
Figure 35. Artist's Concept of Launch Site B3(17), Tyuratam	56
Figure 36. Artist's Concept of Launch Site G1/G2(7), Tyuratam.	57
Figure 37. Artist's Concept of Launch Site G3/G4(11), Tyuratam.	58
Figure 38. Launch Site G5/G6(12), Tyuratam	59
Figure 39. Artist's Concept of Launch Site G5/G6(12), Tyuratam.	60
Figure 40. Launch Complex J, Tyuratam.	61
Figure 41. Deployment of Soviet IRBM/MRBM Complexes	62
Figure 42. Typical Configurations of IRBM/MRBM Launch Sites, With Associated Missile Systems	64
Figure 43. Bereza IRBM Launch Site	66
Figure 44. Nosecone Vans at Anastasyevka Launch Site 2	67
Figure 45. Soviet Nosecone Vans at MRBM Launch Site in Cuba	68
Figure 46. Akhtyrka Fixed Field Site, Akhtyrka MRBM Complex	69
Figure 47. Rozhdestvenka MRBM Launch Site	70
Figure 48. Launch Complex H, Kapustin Yar.	71



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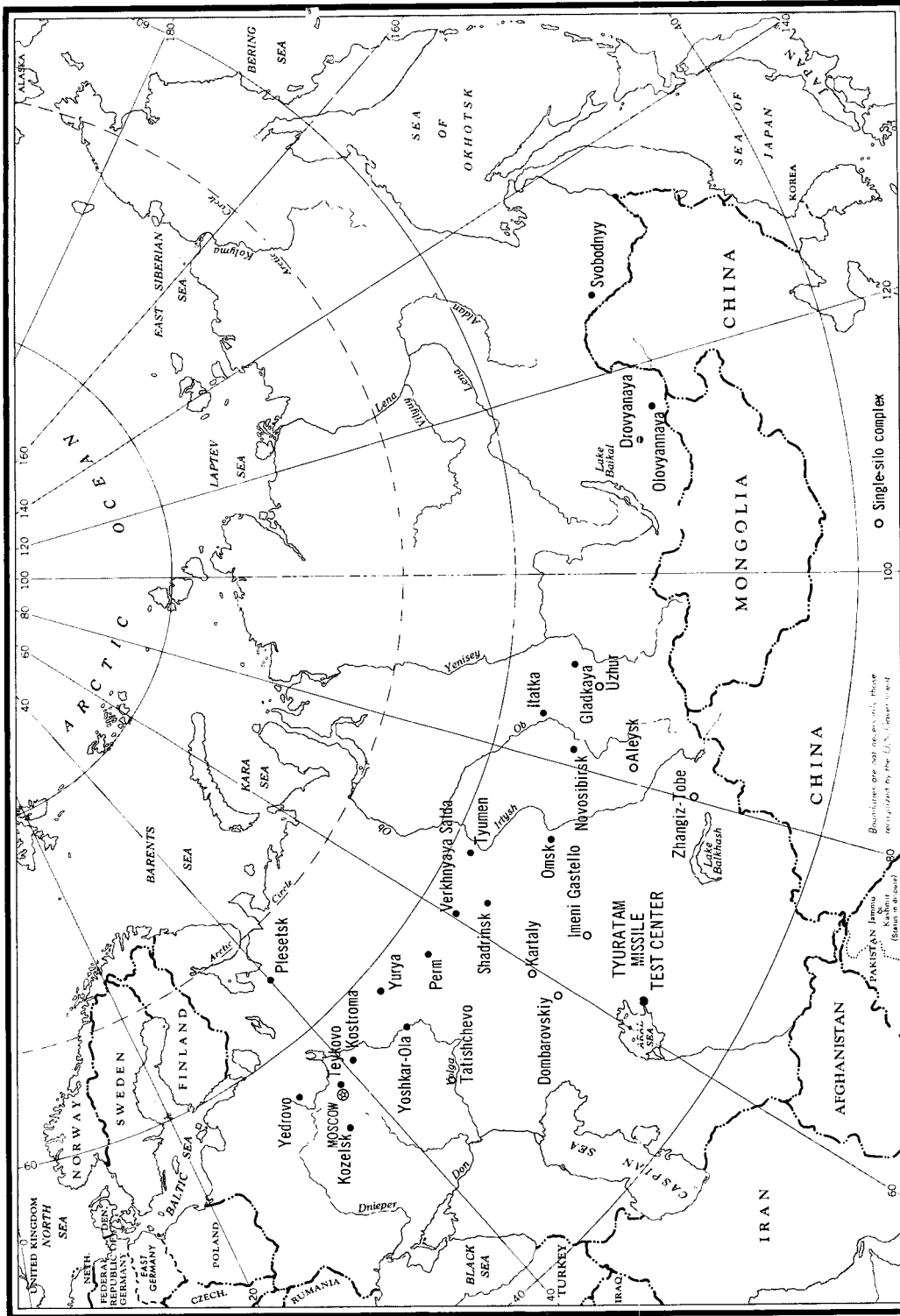
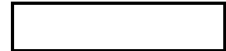
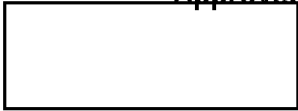



FIGURE 1. DEPLOYMENT OF SOVIET ICBM COMPLEXES.

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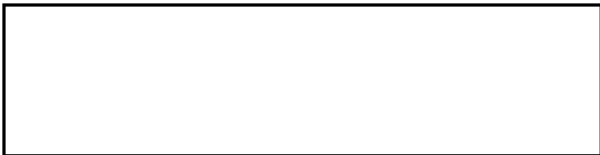


INTRODUCTION

This report is the 17th 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). While information contained in this and previous revisions is self-sustaining, it serves to supplement the basic DWG report Soviet Surface-to-Surface Missile Deployment, which provides detailed information on individual launch facilities of the Soviet Strategic Rocket Forces. The basic report, dated 1 January 1962 (Control Number  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.

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Continuing analysis of previous missions and other sources have provided additional information on the Soviet strategic ballistic missile deployment program. The new data are reflected in Table 1 and in the estimated operational status shown in Tables 2, 3, and 4. Also in this revision are the addition of a new Table 5 containing information on surface-to-surface missile launch sites at the Kapustin Yar Missile Test Center, and Table 8 which lists the technical characteristics of Soviet ICBM, IRBM, and MRBM systems currently operational or under development. Cutoff date for information contained in this report is 20 February 1965.

SOVIET ICBM DEPLOYMENT

Significant developments in the Soviet ICBM deployment program since publication of our 16th Revision include confirmation that single

silos of 2 different configurations are being deployed; identification of single-silo deployment at 1 new and 3, possibly 4, of the 18 older complexes; additional single-silo deployment at complexes previously associated with these configurations; and probable completion of the last 3 Type IIIA sites of the group begun in 1963. At the Tyuratam Missile Test Center, a newly identified single-silo site has been designated Launch Site K3(20).

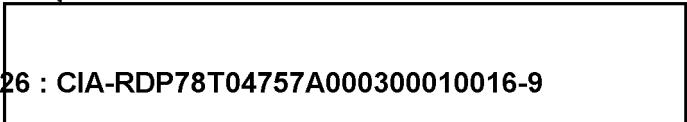
CURRENT DEPLOYMENT

The number of identified ICBM complexes is now 25, following the identification of a new complex at Tatishchevo, near Saratov. The 25 complexes now contain a total of 323 confirmed and probable launchers in various stages of construction, of which 150 are soft and 173 are hard. Included in the hard launchers are 95 single silos. See Figure 1 for locations of deployed ICBM complexes.

Of the 323 confirmed and probable launchers, 224 are estimated to be operational, including 78 in a hard configuration. In addition, we believe that 26 of the 36 launchers at Tyuratam are operational, although not normally considered as part of the operational ICBM force.

Eleven of the 25 complexes contain both hard and soft launchers, 4 contain only soft sites, and 10 have hard sites only. The number of launchers identified at individual complexes ranges from a low of 3 at Omsk to a high of 29 at Olovyannaya. We cannot determine the typical number of sites or launchers which any individual complex ultimately will contain.

In the past, Plesetsk has been the only complex at which more than 1 missile system was deployed. It now appears that mixed deployment is occurring at Olovyannaya, Drovyanaya, Gladkaya, and possibly Perm, since we believe it unlikely that the SS-7 or any missile



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of similar size can be accommodated in the single silos under construction at these complexes.

The ICBM sites have been designated by type, as shown and explained in Figure 2. The single silos have been designated Types IIIC and IIID and diagrams have been included, although final configurations cannot be determined as yet. We have also included a diagram of the Type IB probable rail-served soft sites under construction at Plesetsk, although we do not know the final configuration or associated missile system.

Evaluation of all evidence received since our last revision has resulted in the following changes at the complexes indicated, and at Tyuratam:

ADDITIONS:

DROVYANAYA, Launch Group G(7-16), Type IIID, under construction
 GLADKAYA, Launch Group F(7-13), Type IIID, under construction
 KARTALY, Launch Sites D(4), E(5), and F(6), Type IIIC, under construction
 OLOVYANNAYA, Launch Group E (14-23), Type IIID, under construction
 PERM, Possible Launch Group G, Type IIID, under construction
 TATISHCHEVO (New Complex), Launch Groups A(1-11) and B(12-21), Type IIID, under construction
 UZHUR, Possible Launch Sites G(7) and H(8), Type IIIC, under construction
 ZHANGIZ-TOBE, Launch Site F(6), Type IIIC, under construction
 TYURATAM, Launch Site K3(20), Type IIID, under construction.

DELETION:

KOSTROMA, Launch Site H(8), Type IIIA, abandoned.

SINGLE-SILO DEPLOYMENT

General

We have now identified nearly 100 confirmed, probable, and possible single-silo launch sites in early, mid, and late stages of construction* at 7 new and 3, possibly 4, of the older SS-7 complexes. We believe that this deployment program will continue.

Recent photography of deployed sites and the Tyuratam Missile Test Center, particularly [redacted] indicates that single silos of 2 different types are being deployed. We have designated these 2 configurations as Type IIIC and Type IIID. Our analysis of these site configurations, and the deployment program associated with each, is presented in the following paragraphs.

Type IIIC Sites

GENERAL

We have identified 35 sites of the Type IIIC configuration, located at the previously identified single-silo complexes at Aleysk, Dombarovskiy, Imeni Gastello, Kartaly, Uzhur, and Zhanguz-Tobe. Each of the complexes, except Dombarovskiy, currently contains 6 confirmed launch sites. The Dombarovskiy complex, which had 5 sites when last observed on good photography in [redacted] probably also has a sixth site as yet undetected. In addition, recently initiated construction activity at Uzhur, the farthest advanced of the 6 complexes, suggests the start of another 3 sites. The launch

*To clarify our use of the terms early, mid, and late in referring to construction stages at single-silo sites, identifiable steps in the construction process have been categorized as follows:

early stage, clearing and grading, open-cut silo excavation, silo coring; midstage, silo under construction, silo backfilling; late stage, silo cover installed, final backfill and grading; complete, final configuration apparent; operational, equipment installed and checked out (estimated).

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sites at each complex are separated by distances ranging from 3 to 6 miles.

All 6 complexes are rail-served and all are located in the south-central USSR, in a belt generally south of that containing the 18 older complexes. Each consists of a complex support facility and a rail-to-road transfer point, in addition to the launch sites. The earliest construction at any of the single-silo complexes was begun in [redacted] following the cessation of construction starts of older site configurations and subsequent to, or concurrent with, abandonment of several second-generation sites that were in early-to-mid construction stages. Construction of the earliest single silos probably commenced about [redacted] and all of those currently confirmed were under construction by [redacted]

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SITE CONFIGURATION

Each Type IIIC launch site contains a modest site support facility and a single silo similar in shape, size, and technique of construction to the individual silos accommodating the SS-7 missile (and possibly the SS-9) at Type IIIA sites. An artist's concept of a Type IIIC site is depicted in Figure 3. Construction begins with the digging of a square excavation approximately 100 to 140 feet on a side and an estimated 20 to 30 feet deep. Access to the excavation is provided by 2 earth ramps which, along with the excavation, present a U-shaped appearance. The next step in construction appears to be silo coring in the approximate center of the excavation. Mensuration of this coring is difficult but the diameter appears to be approximately 30 to 40 feet. Spoil from the excavation is usually arranged in a neat flat-topped rectangle approximately 150 to 180 by 75 feet on one side of the coring, and a flat-topped square approximately 75 by 75 feet on the other side. In a few instances, the nature

of the terrain has dictated that these surfaces be formed by cutting rather than filling. At several sites, the tops of these earth mounds have been surfaced with what appears to be concrete, suggesting that the earth mounding provides a hardstand at ground level, probably to facilitate future missile handling and servicing. No evidence of a structure under the earth mounds has been detected.

The overall silo structure arising from the bottom of the excavation appears to be square, and roughly 60 feet on a side. Mensuration of the inner silo, which ranges from 25 to 30 feet in diameter, has been difficult on available photography. Rings, which we believe are utilized to form the inner wall of the silo, have been identified on 2 occasions and appear to have an inner diameter of about [redacted]

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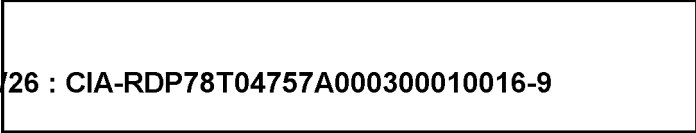
The most advanced of the deployed Type IIIC sites are now in a midstage of construction, with ramps extending from the sides of the excavation to the silo structures, none of which has yet reached ground level. At 1 launch site at Kartaly, it appears that apertures are located on 2 sides of the silo structure. These could be the flame exhaust ports inherent in a W-shaped flame deflection system which permit the missile to fly out of the silo.

At Uzhur, the most advanced complex, a probable hardened control facility and a probable interferometer (Figure 4) are under construction at Launch Site B(2). Cabling leads from this launch site toward the other sites in the complex. Control facilities are probably under construction at Aleysk Launch Site C(3), Dombarovskiy Launch Site B(3), Imeni Gastello Launch Site D(4), Zhangiz-Tobe Launch Site A(1), and possibly at Kartaly Launch Site A(1).

TYURATAM PROTOTYPES

We believe that the prototype of the Type IIIC site at the Tyuratam Missile Test Center

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is either the group formed by Launch Sites A3(15), B2(16), and Launch Complex I(14), or Launch Sites G7(18) and K1 and K2(13), or both. We can see no significant difference between the sites of these groups at the rangehead, or between them and deployed Type IIIC sites. We cannot explain the wide physical separation of the 2 groups of sites at the rangehead, however.

the launch and control facilities of 2 or more groups in such a manner as to permit maximum flexibility in the event that 1 control center and/or guidance facility is rendered inoperative.

In making this judgment we examined what appeared to be 3 possible alternatives: (1) each site an entity, (2) groups of 3 sites, and (3) groups of 6 sites. We eliminated the first alternative because there is good evidence that not all sites will contain control/guidance facilities. The third alternative seems less likely than the second because of construction timing (starts for some groups of 6 sites were spread out over relatively long periods of time, including a 10-month period at 1 complex). The group of 3 sites appears the most logical in view of the prototype groups at Tyuratam, construction timing observed, and the demonstrated proclivity of the Soviets for groups of 3 at the older SS-7 and SS-8 hard sites. Additionally, at Aleysk and Imeni Castello, the only complexes where security fences can be identified at all 6 sites, 2 fences are of the large size and configuration reminiscent of Launch Complex I(14) and Launch Site G7(18) at Tyuratam, while the other 4 are too small to accommodate interferometers.

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Construction of the group formed by Launch Sites A3(15), B2(16), and Launch Complex I(14), was first observed in [redacted] and probably began concurrently with deployment of the sites. All 3 sites (Figures 5, 6, and 7) are currently in a midstage of construction and are joined by what appear to be cable ditches. A probable hardened control facility and an L-shaped interferometer are under construction at Launch Complex I(14), indicating that control of all 3 sites will be exercised from a common facility. The probable control facility is located at the apex of the L.

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Construction of the group formed by Launch Sites G7(18) and K1 and K2(13) was first observed in [redacted] and probably began in [redacted]. As with the other group, all 3 sites are in a midstage of construction and all are connected by probable cable ditches (Figures 8 and 9). A probable hardened control facility and an L-shaped interferometer are under construction at Launch Site G7(18), but none can be observed at the 2 associated sites.

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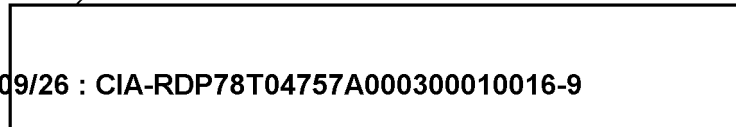
CONSTRUCTION TIMING

Construction of Type IIIC sites has been progressing more slowly than we had originally anticipated, or can fully understand in view of the similarity between this type of single silo and the earlier SS-7 variety. Some of the later Type IIIA sites were apparently completed in 17 months. The earliest of the Type IIIC sites have now been under construction for more than a year and have not yet reached a late stage of construction. As backfilling and other construction procedures are difficult during the winter months, we expect to see considerably greater progress with the advent of warmer weather. We believe, however, that it will take a minimum of 18 to 21 months for the "brick and mortar"

DEPLOYMENT PATTERN

Although the pattern at deployed complexes is far less clear than at Tyuratam, the majority of the DWG believes, based on analysis of available evidence, that deployment of Type IIIC sites will be in groups of 3, with a common control and guidance facility located at 1 launch facility. (One member believes that until such time as a second interferometer is confirmed groups of 6 sites are equally likely.) We further believe that redundant cabling will interconnect

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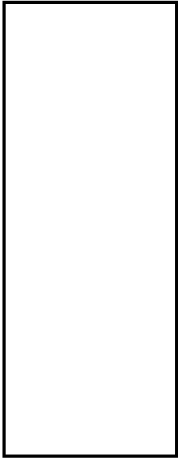
phase of silo construction to be completed at the most advanced of the deployed sites. With additional time for the installation and checkout of equipment, we believe that it will take a minimum of 21 to 24 months for each of these groups of sites to become operational.

Since we have estimated that Type IIIC sites will be employed in groups of 3, we are assuming also that they will become operational in the same manner, although we do not exclude the possibility that 1 or 2 silos of each group could have a somewhat earlier emergency capability.

In order to estimate probable completion dates, we have attempted to determine the operational groups of Type IIIC sites at each complex, based on geographical location, construction timing, and actual or postulated location of sites containing control/guidance facilities. The resultant groupings, listed below, are very tenuous. However, reasonable alternatives within each complex will not materially affect estimated operational dates.

Complex/Site Estimated Start

- Aleysk
 - Launch Sites A(1),B(2),C(3)
 - Launch Sites D(4),E(5),F(6)
- Dombarovskiy
 - Launch Sites A(4),B(3),C(2)
 - Launch Sites D(1),E(6),F (assumed)
- Imeni Gastello
 - Launch Sites A(1),D(4),E(5)
 - Launch Sites B(2),C(3),F(6)
- Kartaly
 - Launch Sites A(1),E(5),F(6)
 - Launch Sites B(2),C(3),D(4)
- Uzhur
 - Launch Sites A(1),B(2),E(5)
 - Launch Sites C(3),D(4),F(6)
- Zhangiz-Tobe
 - Launch Sites A(1),B(2),C(3)
 - Launch Sites D(4),E(5),F(6)



The list above also depicts our estimate of starting dates for the tentative groups of 3 sites within each complex.* Our estimated op-

*Estimated starting dates represent the majority view of the DWG membership and may not correspond precisely to individual assessments by each member.

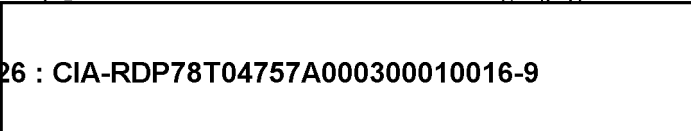
erational dates for these groups are contained in Table 2 and are based on a 21- to 24-month construction period, beginning with the start of the first site in each group.

LOGISTIC SUPPORT

Logistic support facilities at each of the 6 complexes associated with Type IIIC site deployment consists of a complex support facility, a rail-to-road transfer point, and relatively limited individual site support facilities. All of these facilities are currently in varying stages of construction and assessment is difficult at this stage in the deployment program. However, a general comparison can be made with similar facilities at the 18 older ICBM complexes.

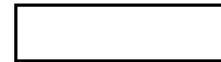
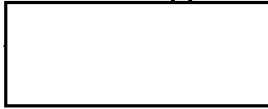
Complex support facilities at the older complexes vary significantly in terms of area and extent of facilities. The number of buildings, for example, ranges from a low of approximately 45 at Gladkaya to a high of about 230 at Verkhnyaya Salda. From present evidence, it appears that, in terms of numbers of buildings, the complex support facilities at the newer complexes will equate to the smallest of the old. It is too early to attempt a detailed comparison of complex support facilities at the older and newer complexes, but the newer complexes do have a facility that is not apparent at the older complexes. It consists of an adjacent secured area approximately 1,100 by 900 feet containing 9 to 11 large rectangular buildings and 10 to 15 other buildings of various sizes, including 1 that is T-shaped. The function of this facility cannot be determined at the present time.

Rail-to-road transfer points at the 6 newer complexes are in an early stage of construction and we have no basis as yet to compare them with similar facilities at the older complexes. The relative location of the transfer points is identical at both the newer and older complexes, i.e., between the complex support facilities and the launch sites, indicating that incoming mis-



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siles and associated equipment will go directly to the launch sites from the rail-to-road transfer point.

Site support facilities at Type IIIC sites apparently will be much more limited than at comparable hard sites at the older complexes. In general they are being constructed concurrently with the launch facility and consist of 2 to 5 rectangular buildings approximately 150 by 50 feet (Figure 10). At the older complexes, site support facilities are much larger, containing an administration and housing section, as well as what appears to be a technical support section (Figure 11).

Previous assessments of the 18 older complexes have shown that no meaningful estimate of the total number of launch sites intended for a given complex can be made based on the size of the complex support facility. In most cases, if not all, the size of the complex support facility appears out of proportion to the relatively small number of sites deployed. Therefore, we do not believe it feasible to estimate the total number of sites that the new complexes will contain based on the size of the support facilities.

DEVELOPMENTS AT DEPLOYED TYPE IIIC COMPLEXES

[Redacted] of the Aleysk Complex. All 6 launch sites are in a midstage of construction, although snow cover precludes detailed interpretation. A probable control bunker (Figure 12) is under construction at Launch Site C(3). Excellent coverage of the complex support facility was obtained on the [Redacted] photography (Figure 13). This facility now contains approximately 115 buildings in the administration and housing area, 19 buildings in the railhead and storage area, and 7 buildings, including a 505- by 80-foot structure, in an area of unidentified activity 3,200 feet southeast of the railhead and storage area.

The Dombarovski Complex is covered by good quality photography on [Redacted] Launch Sites A(4) through D(1) remain in a midstage of construction, while Launch Site E(6) remains in an early stage. A probable control facility is under construction at Launch Site B(3), approximately 250 feet east of the silo excavation. The security fence at this site encompasses an area large enough to accommodate an interferometer of the type identified at Launch Site G7(18) and Launch Complex I(14) at Tyuratam.

The Imeni Gastello Complex is well covered [Redacted] All 6 launch sites are in a midstage of construction and a probable control bunker is under construction at Launch Site D(4). The fence at this site is also of the size and configuration required to accommodate an interferometer.

Coverage of the Kartaly Complex on Mission [Redacted] (Figure 14) confirmed Launch Sites B(2) and C(3) and revealed newly identified Launch Sites D(4), E(5), and F(6). All 6 sites are in a midstage of construction. Launch Site D(4), located 12.7 nm south-southwest of the complex support facility, can be negated in [Redacted] and was first visible in [Redacted]

[Redacted] Launch Site E(5), located 11.8 nm west-southwest of the complex support facility, can be negated in [Redacted] and was first observed in [Redacted]

[Redacted] Launch Site F(6), located 10 nm west-northwest of the complex support facility, can be negated in [Redacted] and was first seen later the same month on [Redacted]

[Redacted] Further coverage of this complex on [Redacted] showed a possible control bunker under construction at Launch Site A(1). A schematic layout of this complex is shown in Figure 15.

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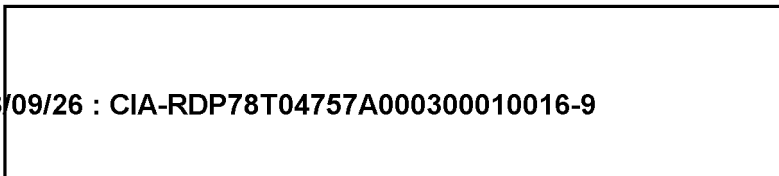
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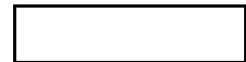
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The Uzhur Complex is covered by good quality stereo photography on [redacted]

[redacted] All 6 sites are in a midstage of construction and, at Launch Site B(2), a control bunker and L-shaped guidance facility

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(interferometer) are under construction (Figure 4). The segments of the guidance facility meet at an approximate right angle at an excavation which will probably contain the control facility. Each segment of the interferometer is approximately 1,350 feet long. Ground scarring, probably cable ditches, extends from Launch Site B(2) toward Launch Sites A(1), C(3), E(5), and F(6). [redacted] provided no new developments at Launch Sites A(1) through F(6), but revealed 2 possible new

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sites, designated possible sites G(7) and H(8), apparently in a very early stage of construction. Both areas of activity can be negated in [redacted]

[redacted]

Coverage of the Zhangiz-Tobe Complex on [redacted] (Figure 16) revealed a new launch site, designated Launch Site F(6), in an early stage of construction. Construction activity at this site can be negated on [redacted]. The other 5 sites at the complex remain in a midstage of construction. A probable control facility is under construction at Launch Site A(1). An updated schematic layout of the complex is shown in Figure 17.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

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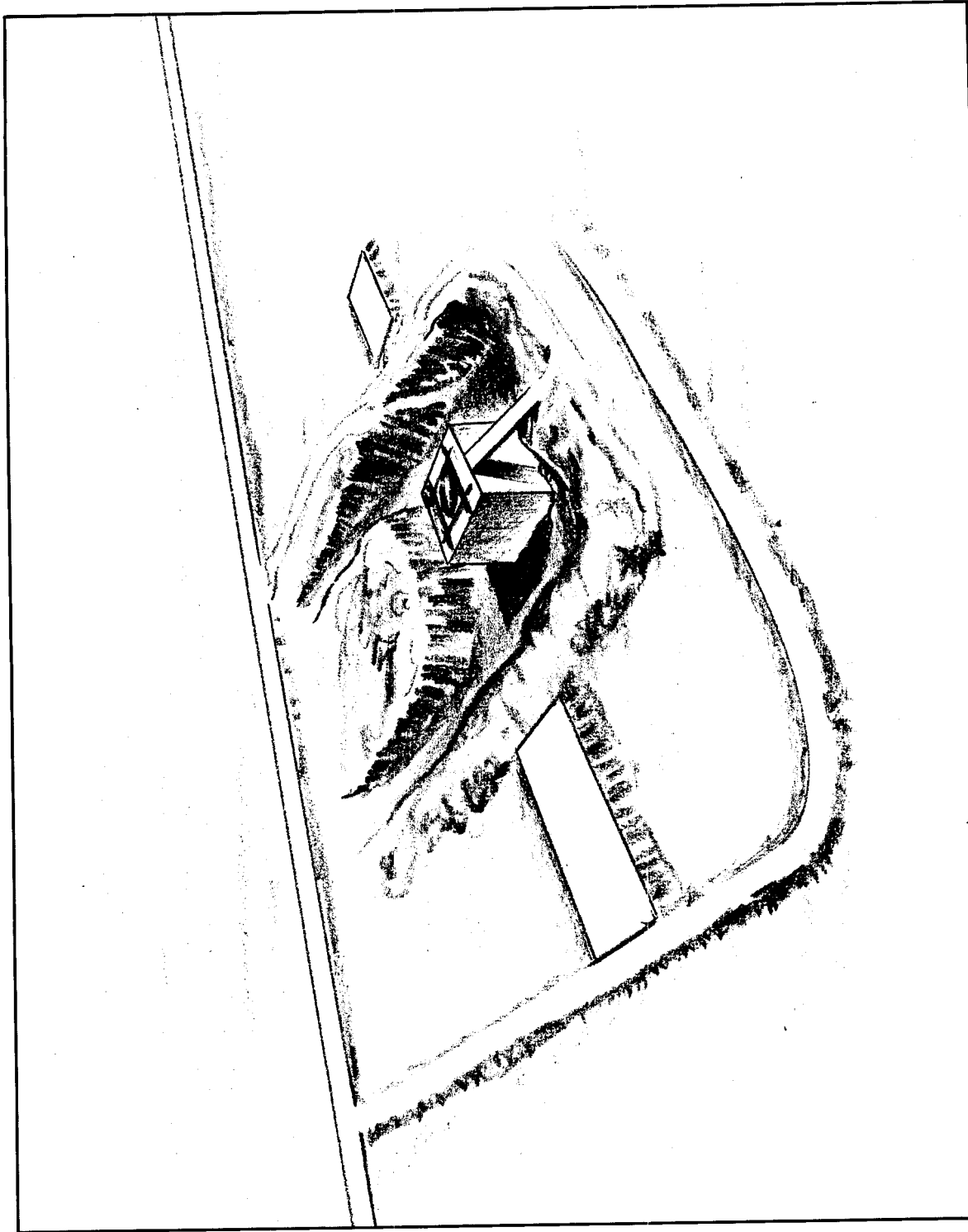


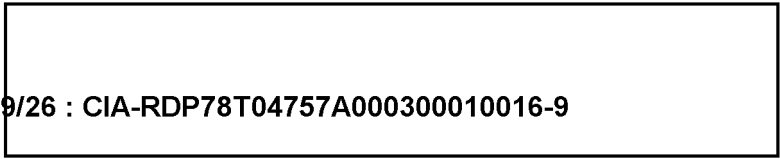
FIGURE 3. ARTIST'S CONCEPT OF TYPE III ICBM LAUNCH SITE.

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FIGURE 4. LAUNCH SITE B(2), UZHUR ICBM COMPLEX.

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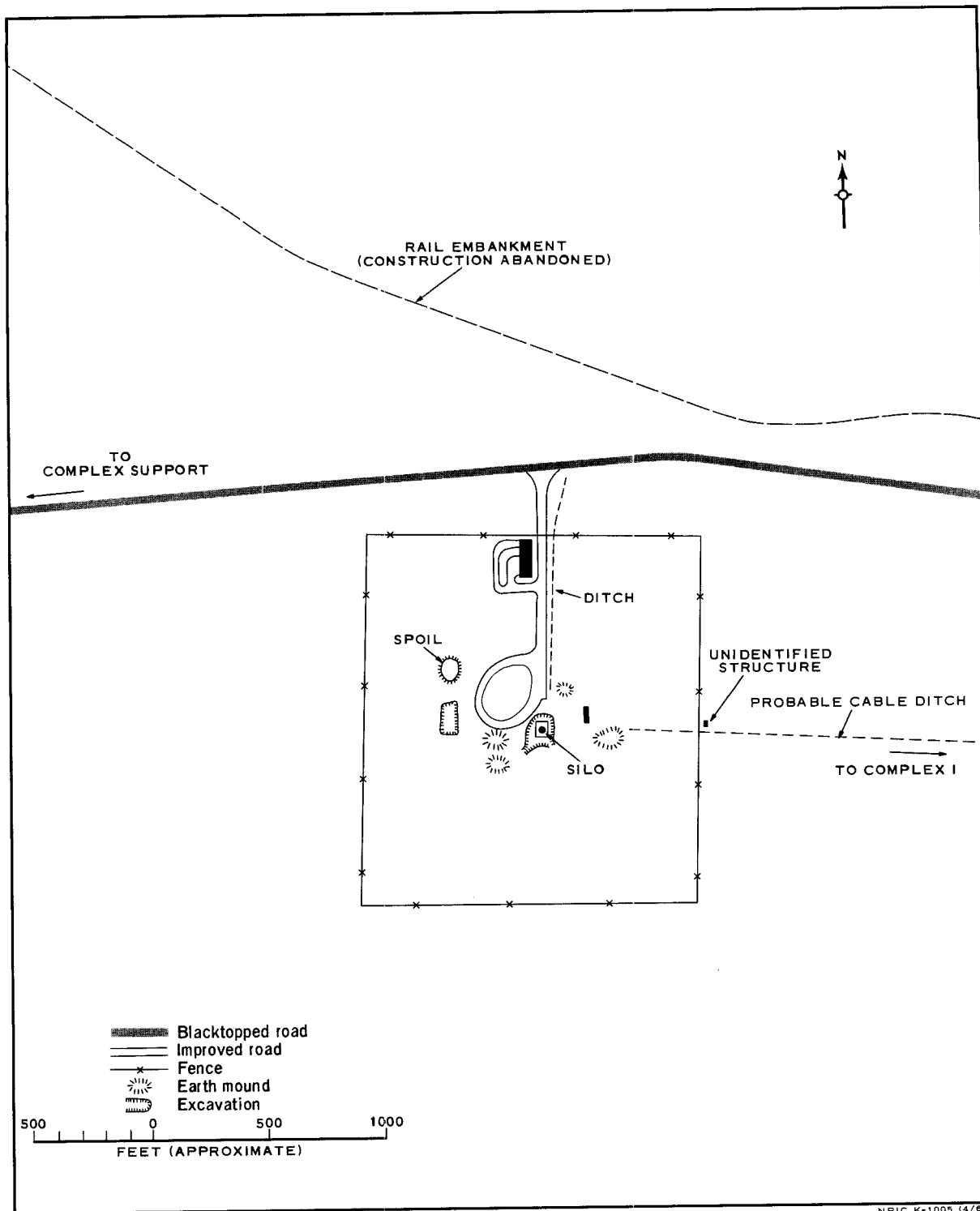


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FIGURE 5. LAUNCH SITE A3(15), TYURATAM.

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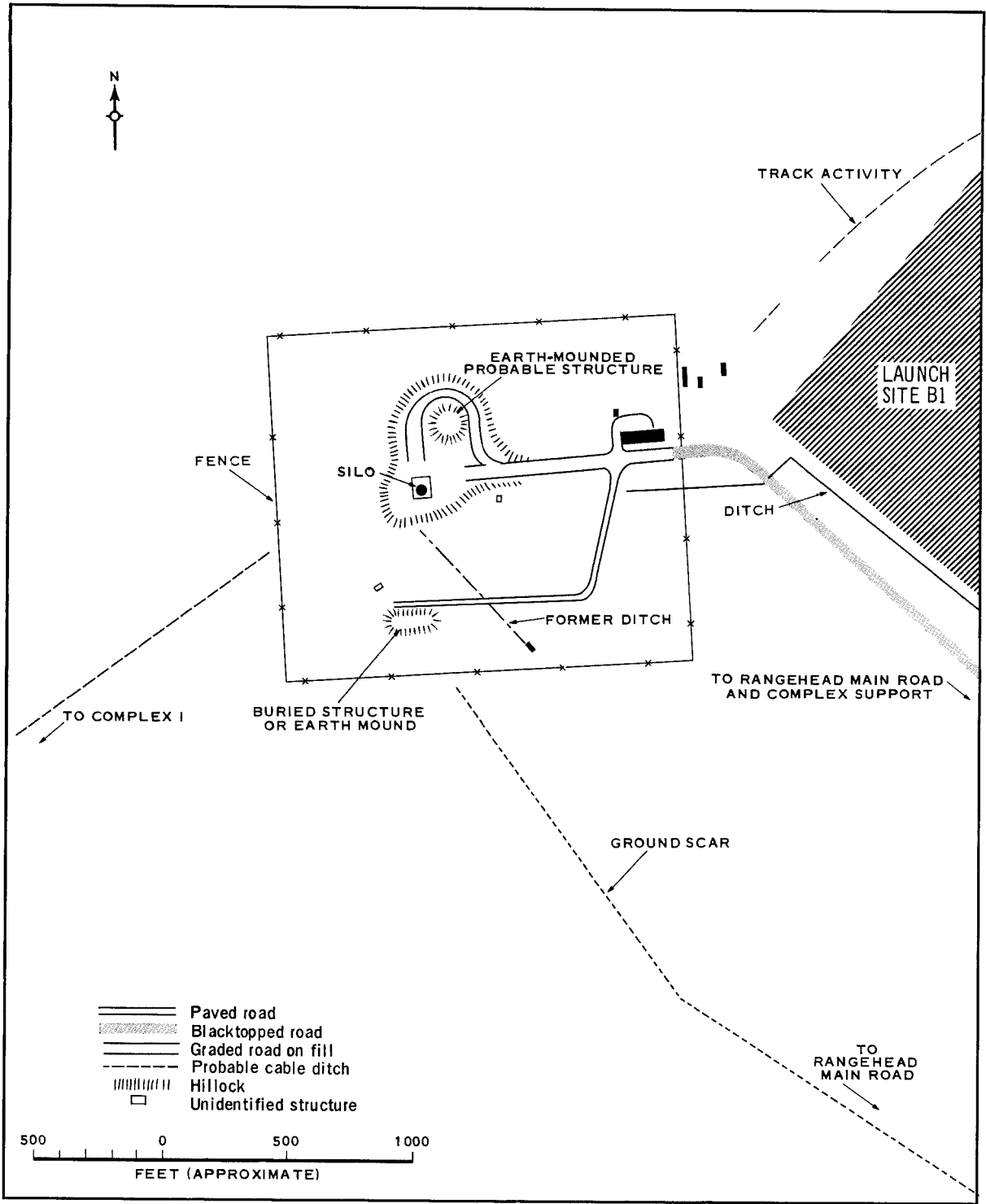


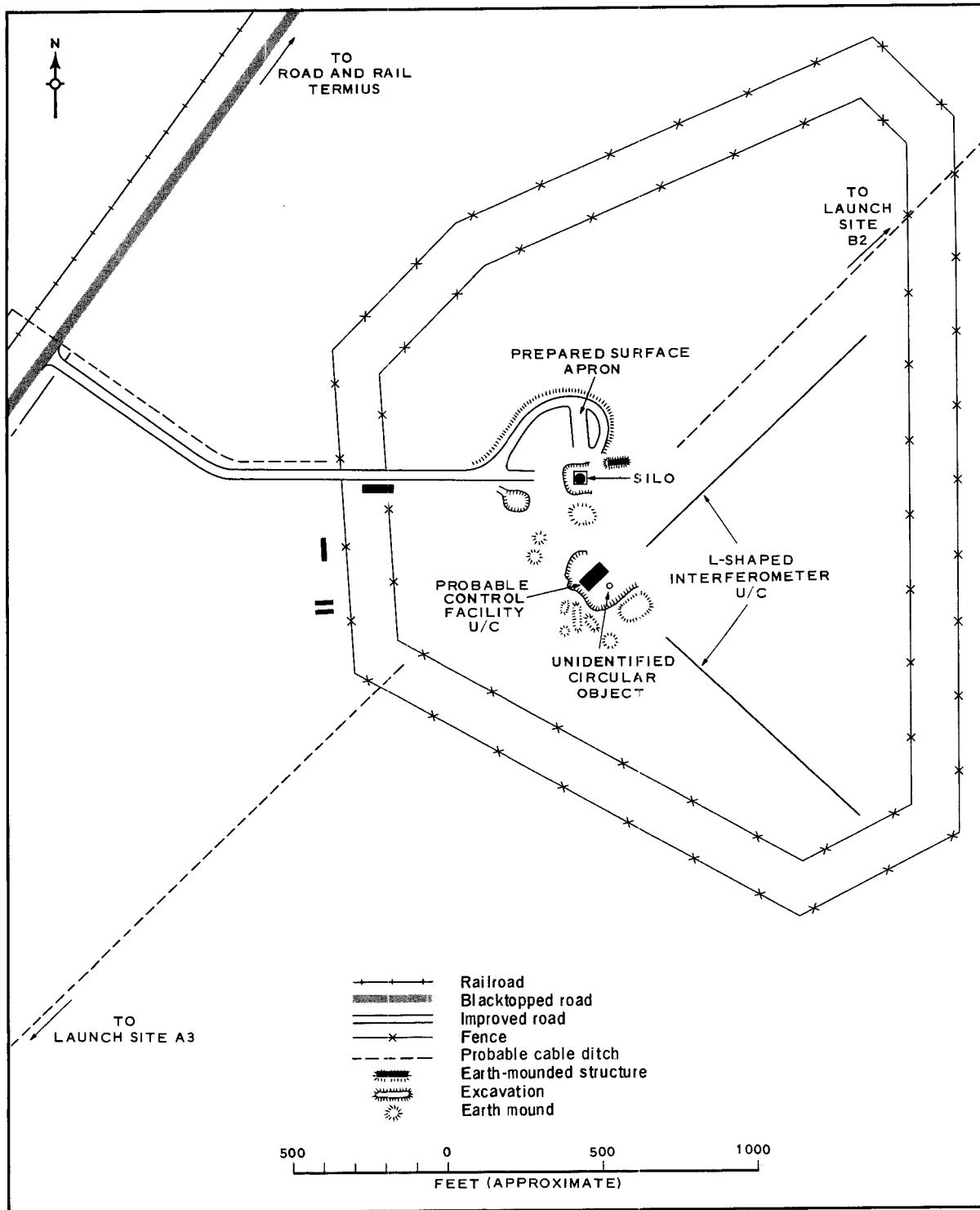
FIGURE 6. LAUNCH SITE B2(16), TYURATAM.

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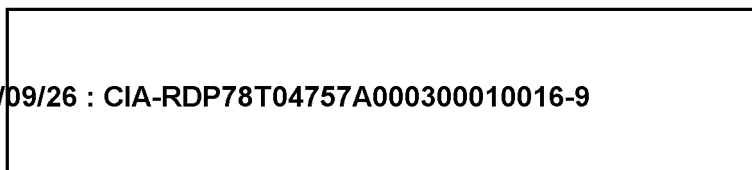
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FIGURE 7. LAUNCH COMPLEX I(14), TYURATAM.

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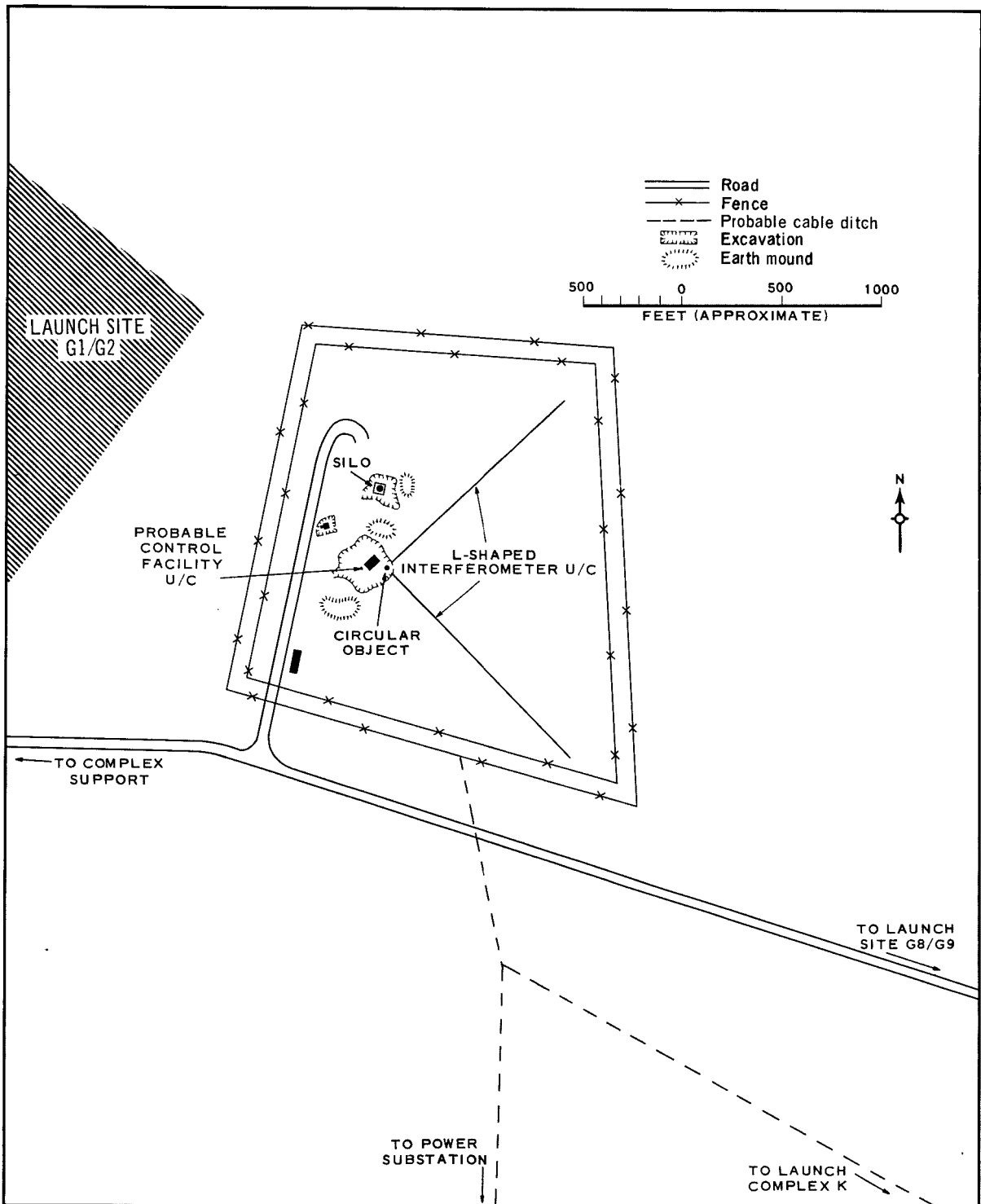


FIGURE 8. LAUNCH SITE G7(18), TYURATAM.

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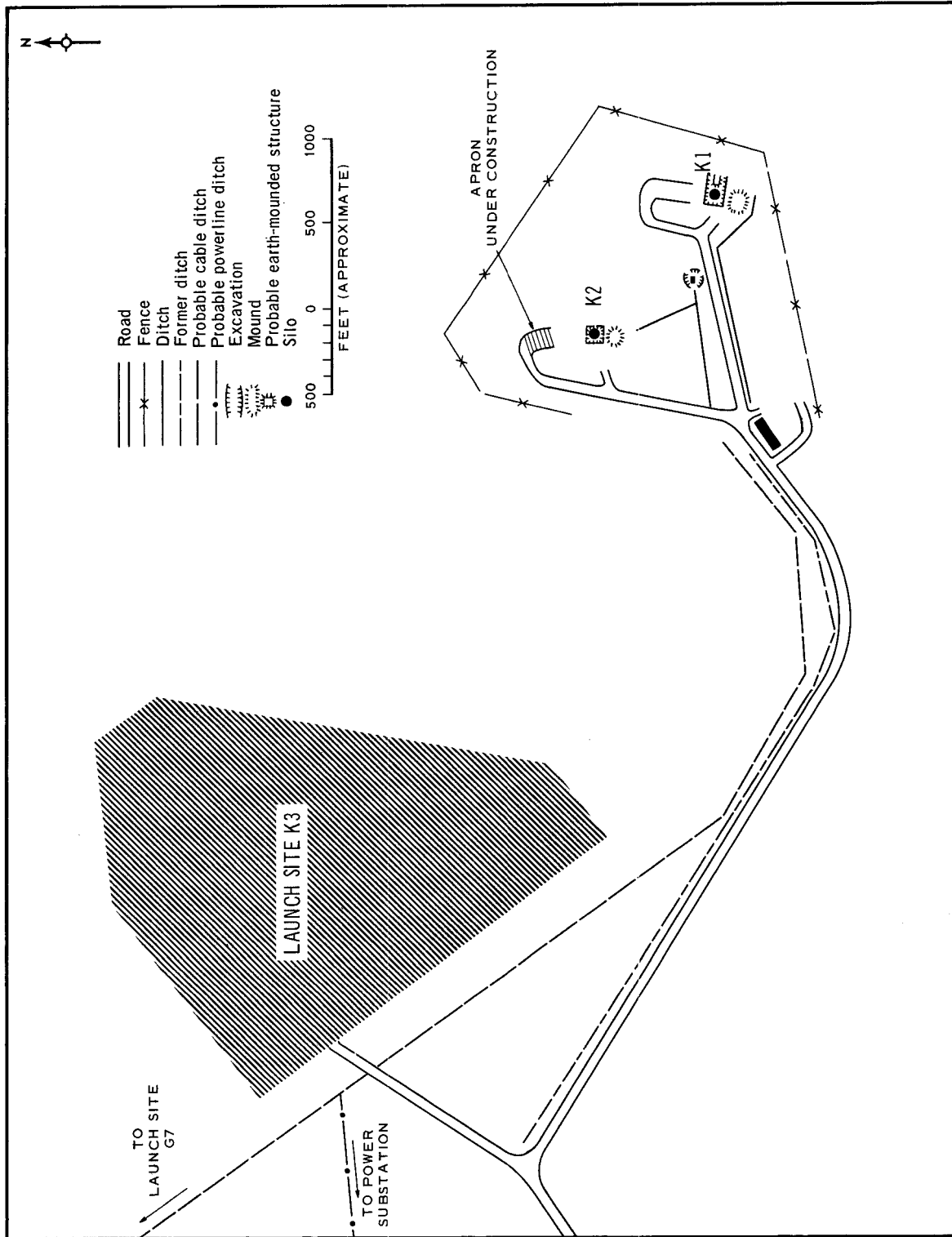
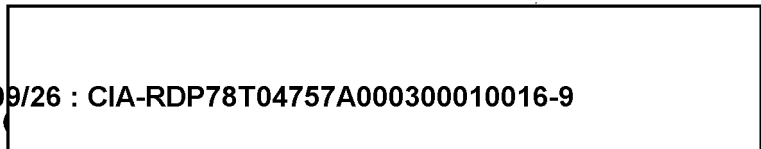


FIGURE 9. LAUNCH SITES K1 AND K2(13), TYURATAM.

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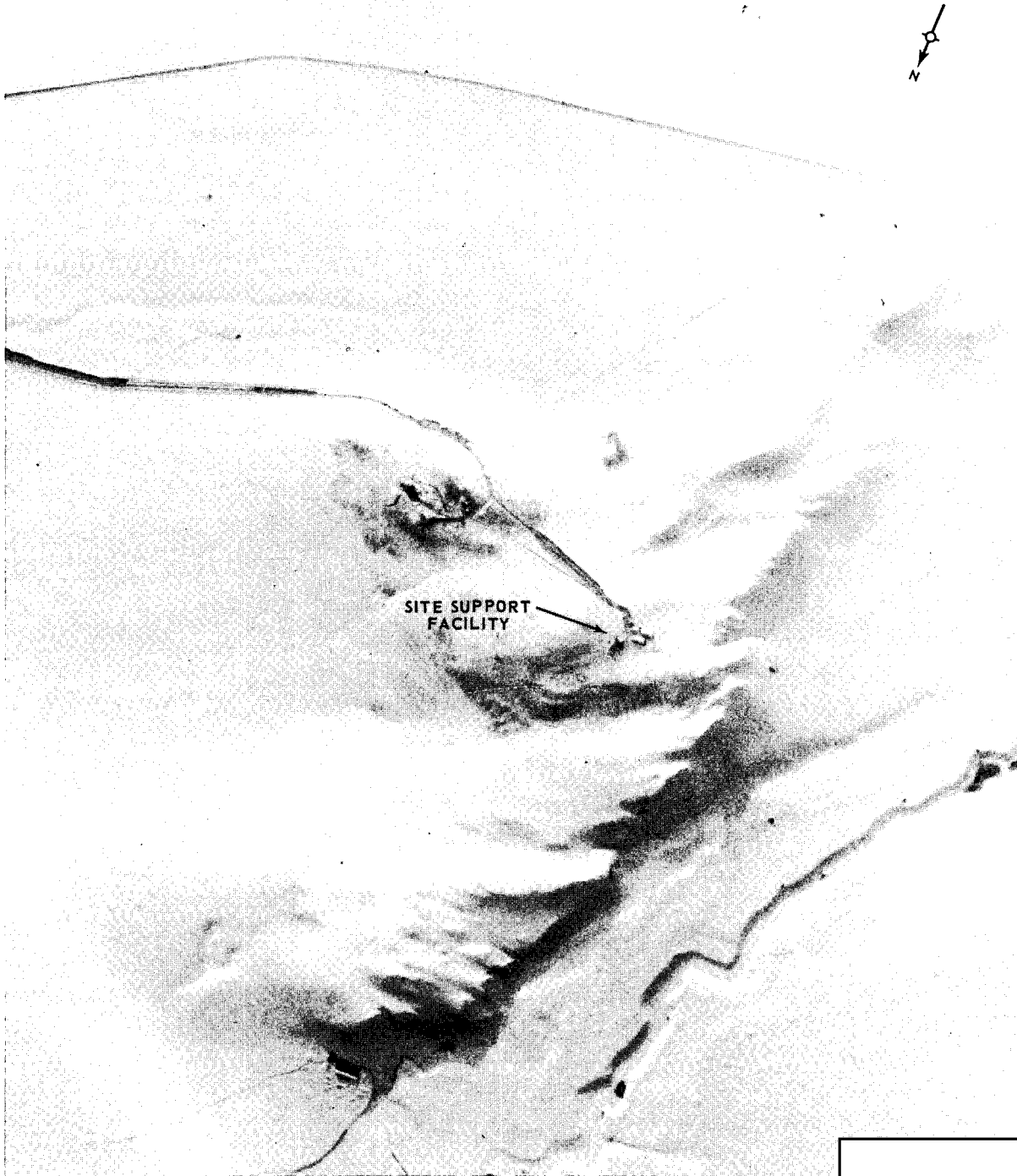


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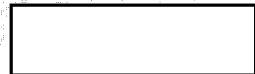
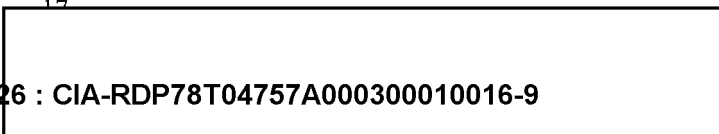


FIGURE 10. SITE SUPPORT FACILITY AT TYPE III C ICBM LAUNCH SITE.

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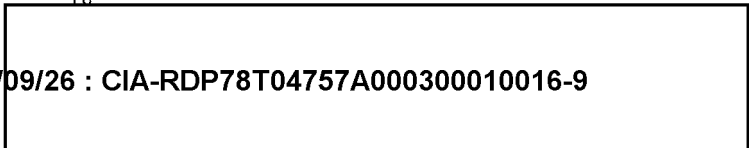


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FIGURE 11. SITE SUPPORT FACILITY AT TYPE IIIA ICBM LAUNCH SITE.

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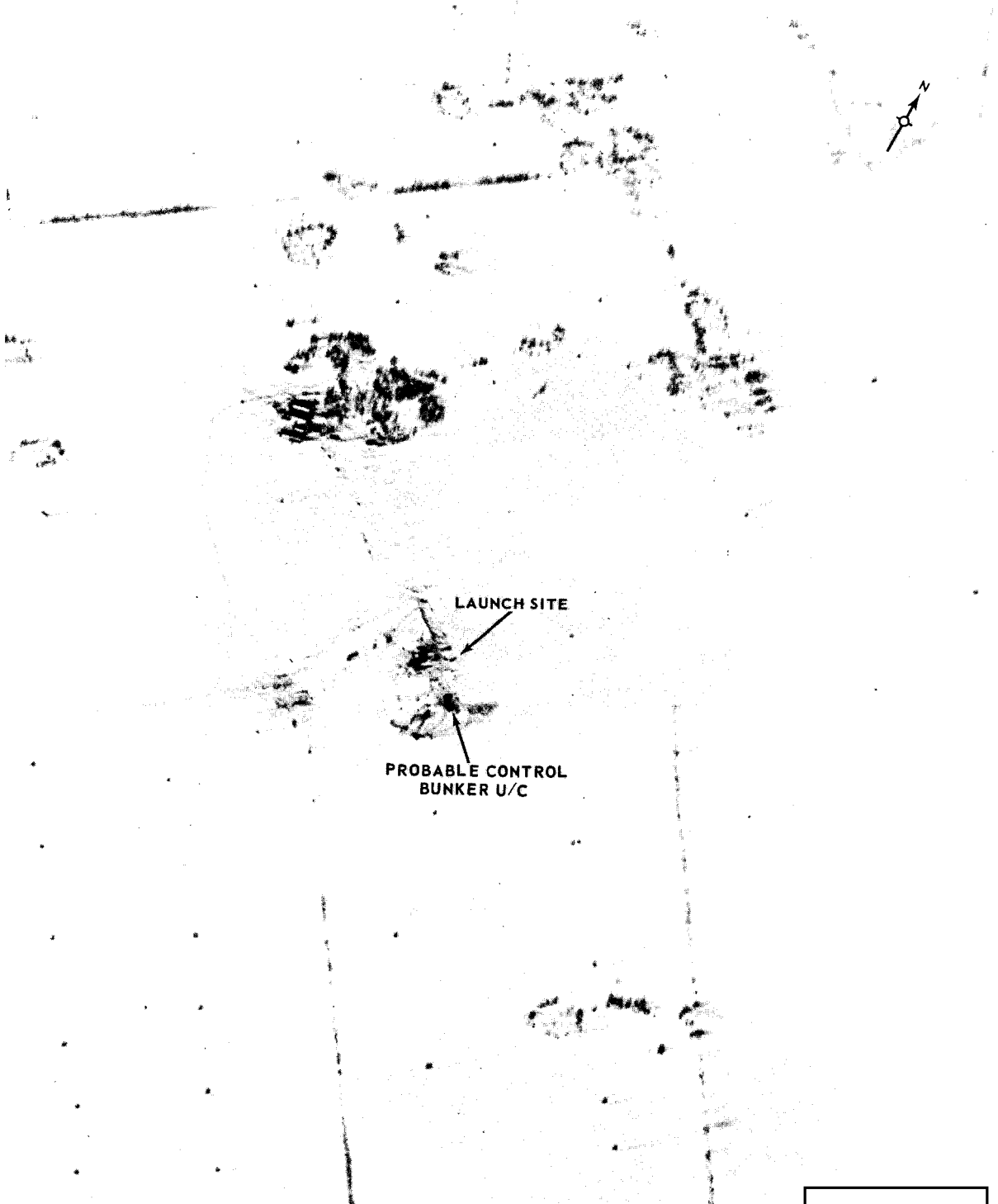
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FIGURE 12. PROBABLE CONTROL BUNKER UNDER CONSTRUCTION, LAUNCH SITE C(3), ALEYSK ICBM COMPLEX.

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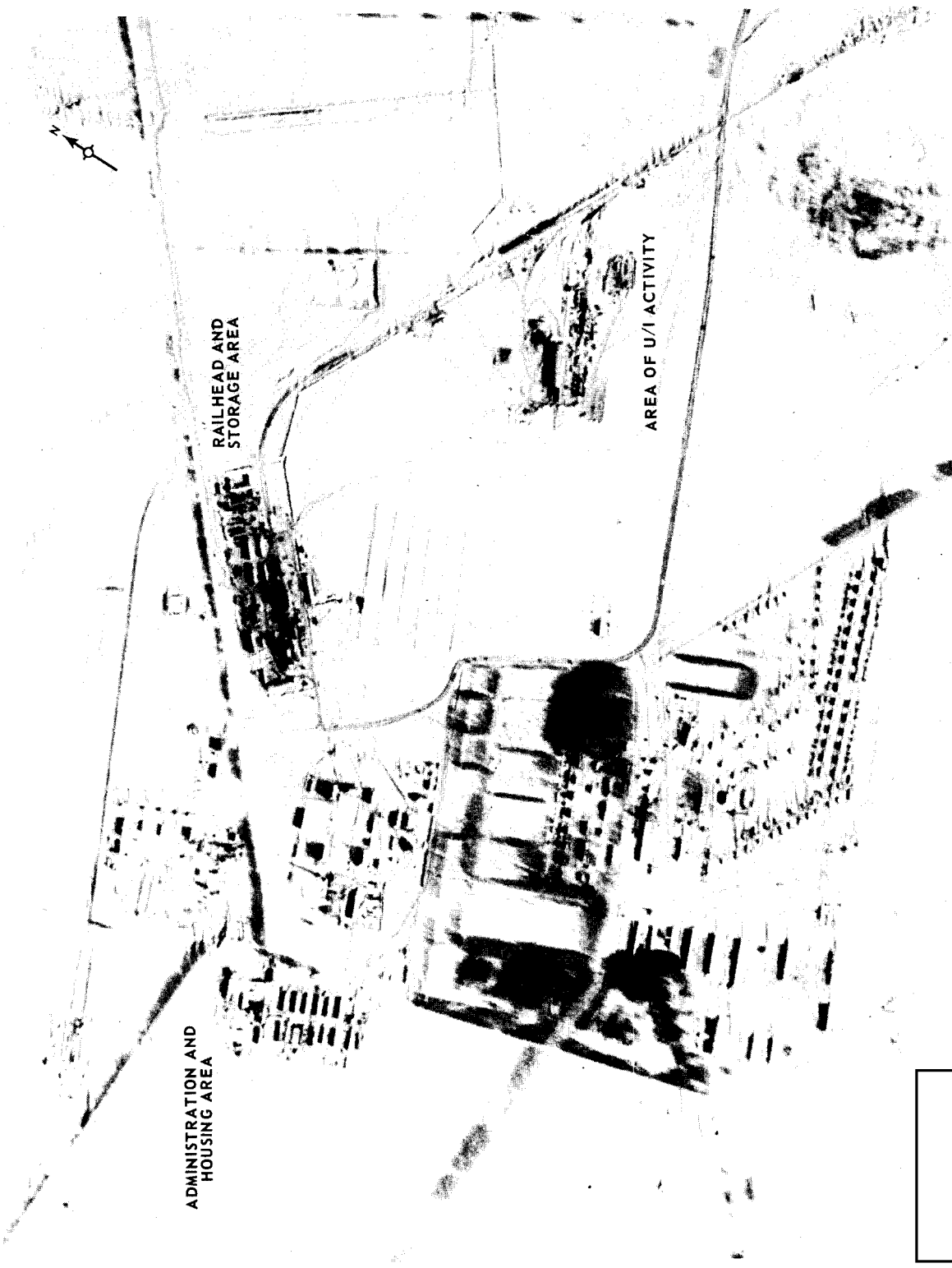
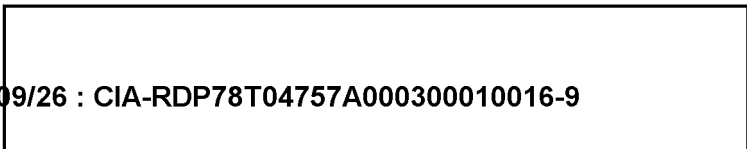


FIGURE 13. COMPLEX SUPPORT FACILITY, ALEYSK ICBM COMPLEX.



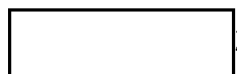
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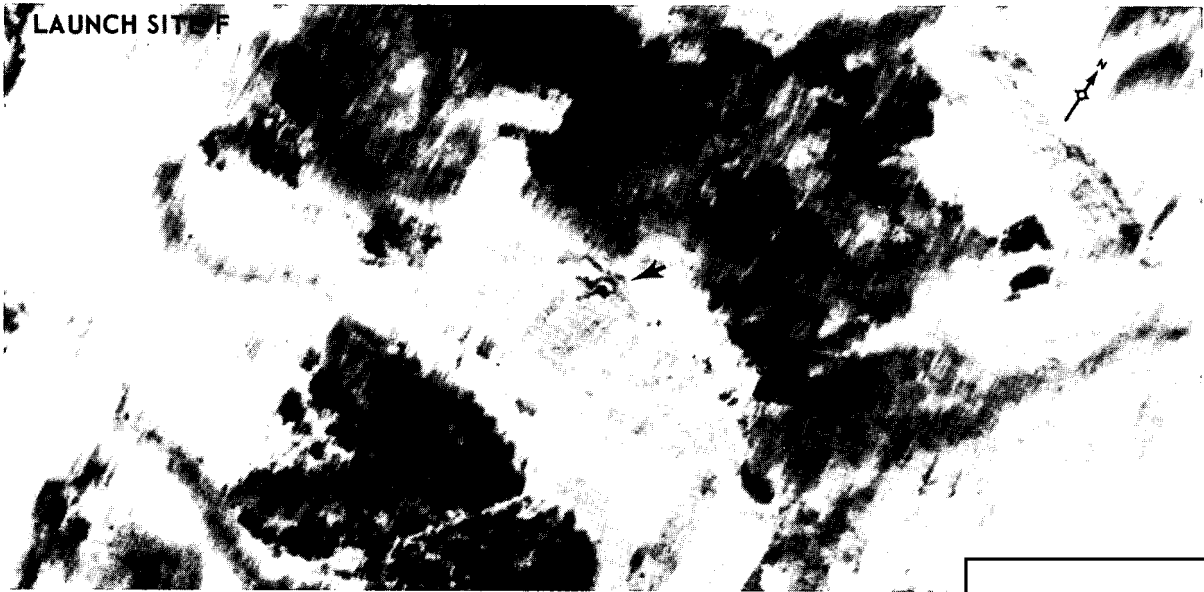
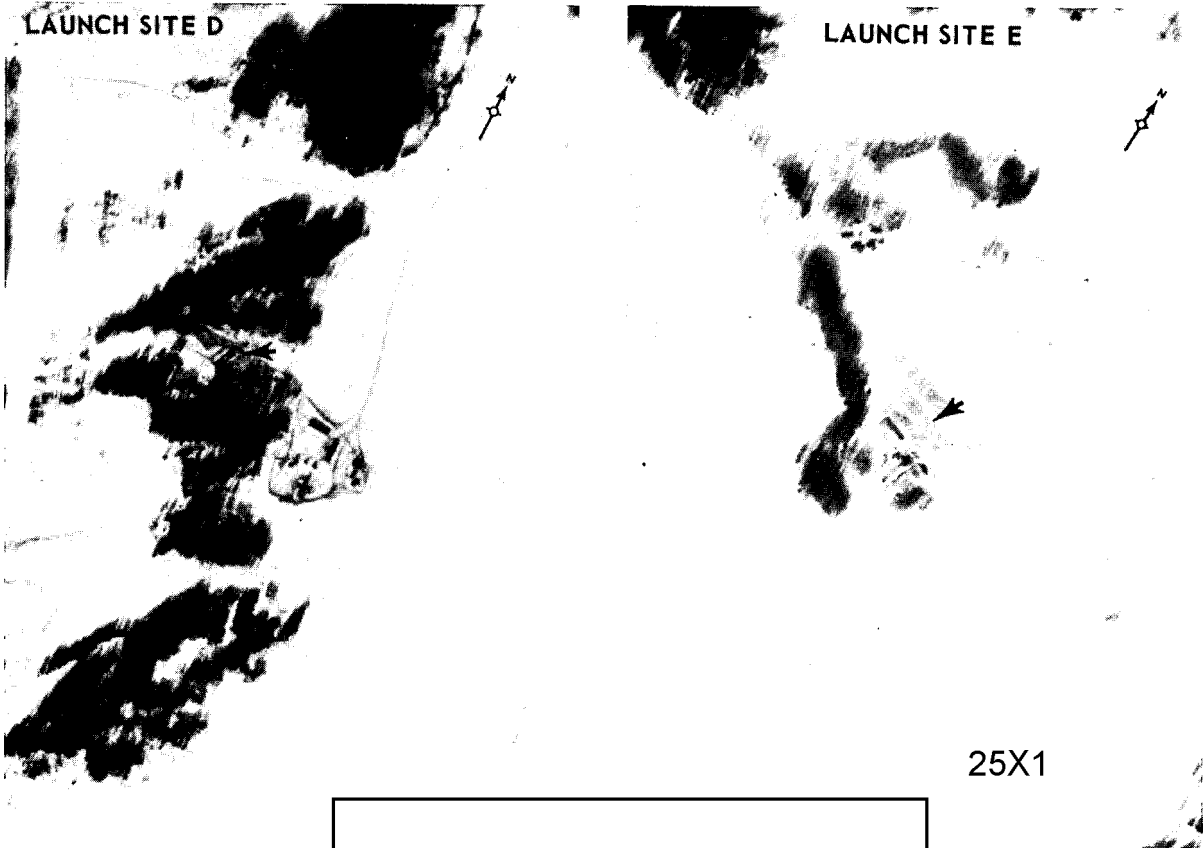
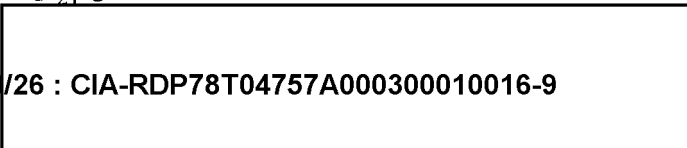


FIGURE 14. LAUNCH SITES D(4), E(5), AND F(6), KARTALY ICBM COMPLEX.



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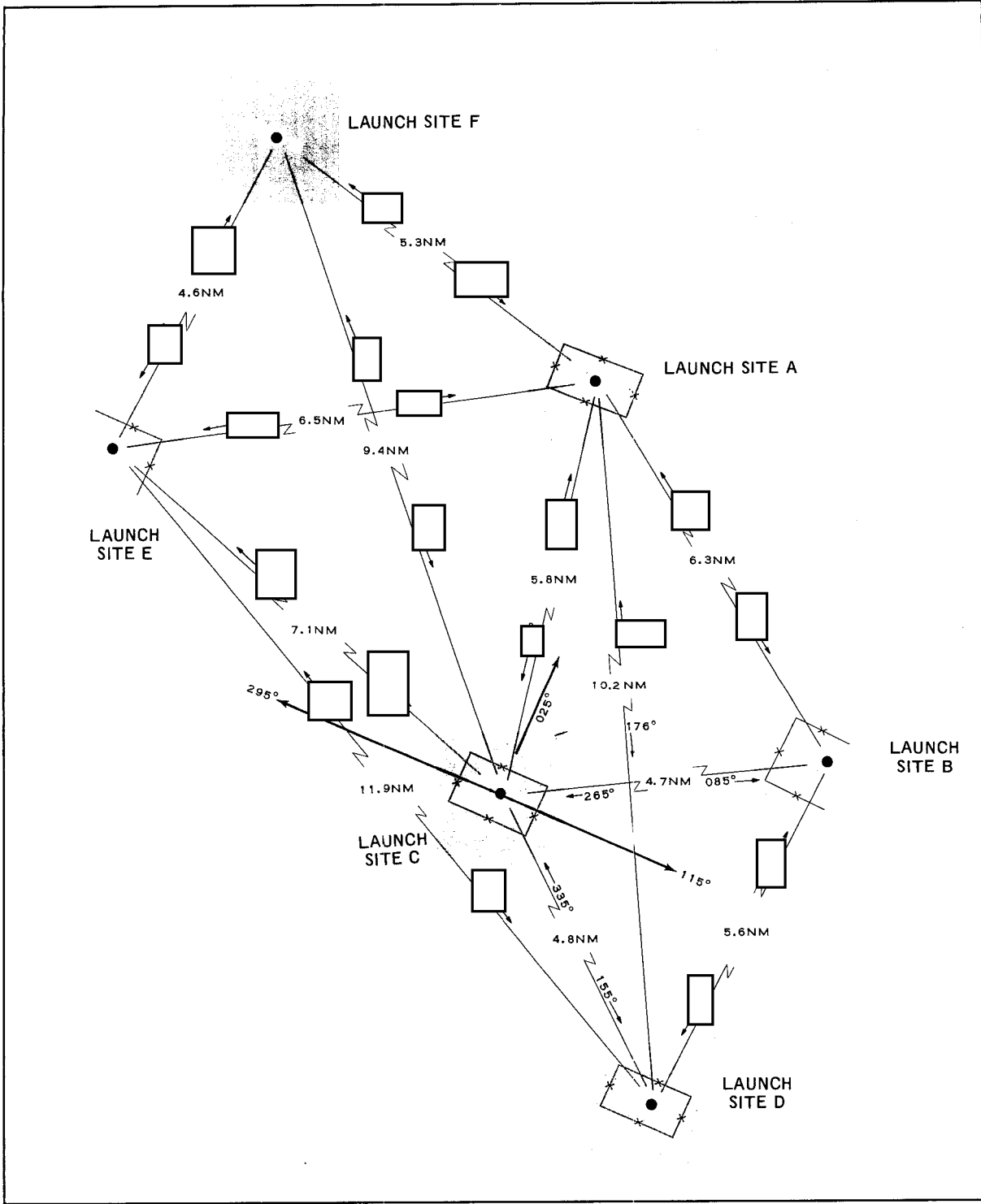
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FIGURE 15. SCHEMATIC LAYOUT, KARTALY ICBM COMPLEX.

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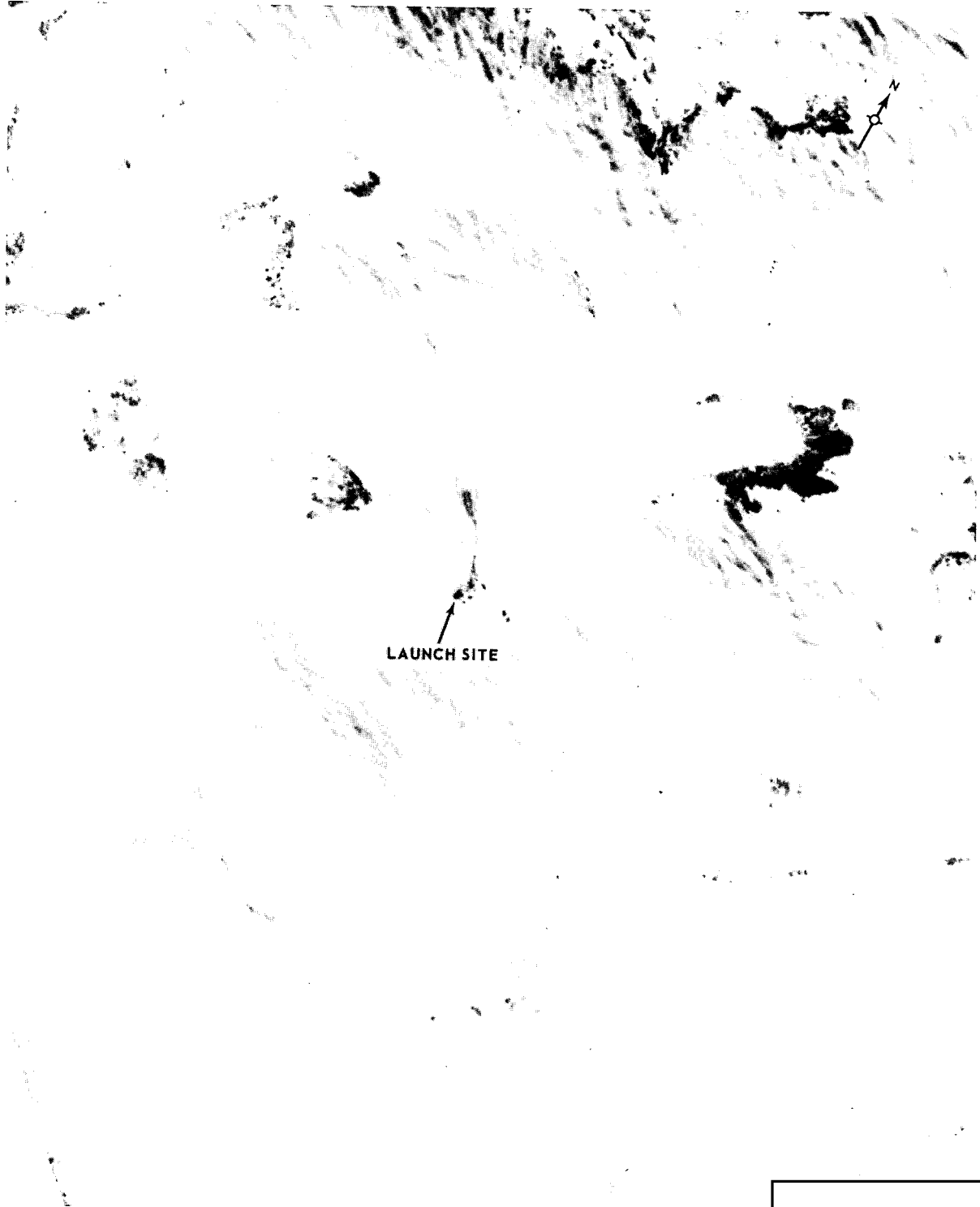
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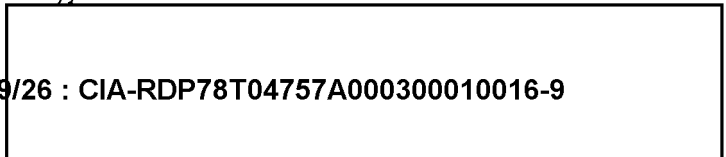


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FIGURE 16. LAUNCH SITE F(6), ZHANGIZ-TOBE ICBM COMPLEX.

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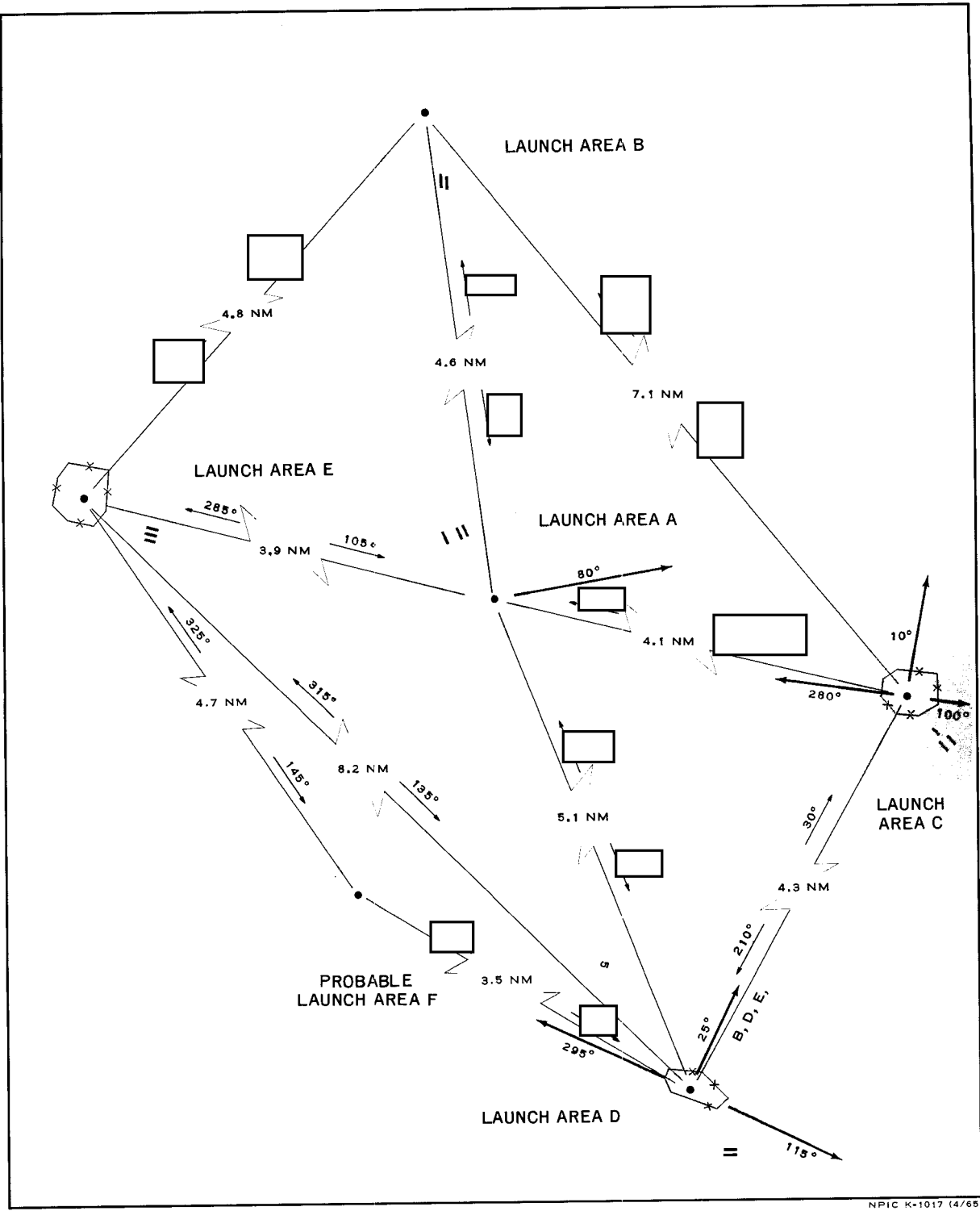
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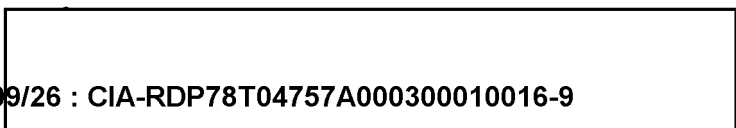


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FIGURE 17. SCHEMATIC LAYOUT, ZHANGIZ-TOBE ICBM COMPLEX.

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Type IIID Sites

GENERAL

We have identified a total of 60 confirmed, probable, and possible launch sites of this configuration in early-to-late construction stages at 1 new (Tatishchevo) and 3 of the original 18 ICBM complexes (Drovyannaya, Gladkaya, and Olovyannaya). The latter 3 complexes were all associated previously with the SS-7 missile system.

Earliest construction of the Type IIID site configuration began at the new Tatishchevo Complex about [redacted]. Additional deployment of this configuration followed at Olovyannaya and Gladkaya beginning about [redacted] and at Drovyannaya about a month later.

The rail-served Tatishchevo Complex consists of a complex support facility and a rail-to-road transfer point in addition to the launch sites. Construction of the complex support facility apparently began concurrently with that of the first launch sites. At the older complexes, the Type IIID sites are supported by the original complex support facility and rail-to-road transfer point, although additional support facilities have been added.

DEPLOYMENT PATTERN

The Type IIID sites appear to be deployed in launch groups of 10 silos each. The Tatishchevo and Olovyannaya Complexes each currently contain 2 launch groups; the Drovyannaya and Gladkaya Complexes each contain 1 launch group. Although we are not yet certain, it appears that control of each launch group will be exercised from a central facility co-located with 1 of the 10 launch sites. The site containing the control facility is in the center of a generally circular configuration, with the separation distance between adjacent launch sites ranging from 2.5 to 4 miles. Interconnecting cabling is evident between the sites in each launch group, and we expect that at complexes

where more than 1 group is deployed, launch control centers will be interconnected to provide maximum flexibility in the event that 1 control center and/or guidance facility is rendered inoperative.

[redacted] photography provides a fairly clear picture of the Type IIID construction program within a launch group. In general, all 10 launch silos and the control and support facilities are begun concurrently over a 3-month period. Ditches for interconnecting cables between the launch sites can also be identified early in the construction program. In the 2 instances where second launch groups have been initiated at 1 complex, a 5-month interval separates the start of the last silo in the first group and the start of the first silo in the second.

SITE CONFIGURATION

Construction of the silo begins with the preparation of a small, irregular, shallow excavation. Coring for the silo is then accomplished. The silo structure itself is circular, with an outer diameter of approximately 35 feet. The inner diameter of the silo is extremely difficult to measure on available photography, but ranges from [redacted]. We have been unable to identify any fueling or equipment facilities in the vicinity of the launch sites, although we cannot exclude the possibility that additional structures are present.

The probable control facility at each launch group consists of an underground structure located 400 to 600 feet from its adjacent launch silo. The size and configuration of the security fences at these sites, and their association with Launch Site K3(20) at Tyuratam, indicate that an L-shaped electronic facility will be constructed with a control building at its apex. An artist's concept of the central site at a Type IIID launch group is shown in Figure 18.

The most advanced Type IIID silo at Tati-

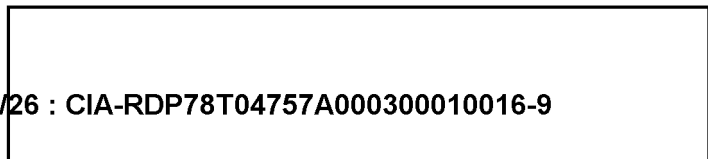
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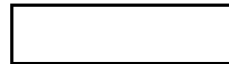


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shchevo is in a late stage of construction, with backfilling apparently completed and a possible silo cover in place adjacent to the silo. Considerable work remains to be accomplished at the control facility, however. At Olovyannaya Launch Group D, 4 silos appear to be backfilled. These silos are covered, but we are unable to determine whether these are silo covers or merely protective coverings.

TYURATAM PROTOTYPE

We believe that the prototype for deployed Type IIID sites, which was discovered recently within a previously identified secured area containing an L-shaped interferometer, is Launch Site K3(20) at Tyuratam. A line drawing and an artist's concept of this site are shown in Figures 19 and 20. The site can be negated in [redacted] and was in a late stage of construction by [redacted]. It consists of a single silo, circular in structure and apparently identical to the deployed Type IIID sites. It has an underground control facility located at the apex of the L-shaped interferometer. The control facility was backfilled when observed in [redacted]. Recent coverage, however, indicates that the backfill has since been removed.

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We also believe that Launch Site G8/G9(19) at Tyuratam may employ the same missile system as Launch Site K3(20). This site has been under construction during the same period as Launch Site K3(20), and each of its silos appears to be identical to those at Launch Site K3(20) and the Type IIID sites at deployed complexes (Figure 21). There is no guidance facility present at Launch Site G8/G9(19), and the overall site configuration differs in some respects from the others. We can neither confirm nor deny cabling connecting Launch Sites G8/G9(19) and K3(20).

CONSTRUCTION TIMING

Since it appears that Type IIID sites will be deployed in groups of 10, we estimate that

they will become operational in groups, although we do not exclude the possibility that fewer than 10 silos could have a somewhat earlier emergency capability.

The earliest Type IIID sites at deployed complexes have been under construction for less than a year and the "brick and mortar" phase of construction appears to be nearing completion. We believe that approximately 1 year is required for this phase of construction. We have noted that the 10 silos within each launch group are begun generally over a 3-month period, and probably require approximately 15 months for all to be completed. Adding a reasonable period for installation and checkout of equipment, the majority of the DWG believe that it will take a minimum of 18 to 21 months for each group to reach an operational status. One member believes that a minimum of 21 to 24 months construction time will be required for each group to be completed.

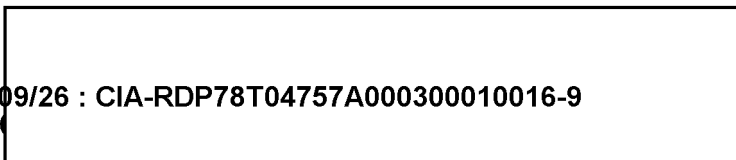
The following list depicts the majority estimate of starting dates for identified launch groups within each complex*. Estimated operational dates are included in Table 2 and are based on an 18- to 21-month construction period, beginning with the start of the first site in each group.

Complex/Group	Estimated Start
Drovyannaya	
Launch Group G(7-16)	
Gladkaya	
Launch Group F(7-13)	
Olovyannaya	
Launch Group D(4-13)	
Launch Group E(14-23)	
Tatishchevo	
Launch Group A(1-11)	
Launch Group B(12-21)	

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*Estimated starting dates represent the majority view of the DWG membership and may not correspond precisely to individual assessments by each member.

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LOGISTIC SUPPORT

Logistic support facilities at Tatishchevo, the only new complex identified with deployment of Type IIID sites, consist of a complex support facility and a rail-to-road transfer point (Figure 22). Both are still under construction and are therefore difficult to assess. In addition, it appears that the site support facility at nearby Bolshaya Kamenka, an abandoned probable IRBM site, is being utilized to support the construction effort at this complex. New construction at the Tatishchevo complex support facility appears somewhat less than that at the Type IIIC complex support facilities, but this may be misleading since it borders on, and may incorporate, an older facility of some size. The rail-to-road transfer point is in an early stage of construction and its final configuration is not yet apparent. Like similar facilities at other complexes, it is located between the complex support facility and the launch groups, indicating that missile components and associated equipment will move directly from the transfer point to the launch groups.

At the older complexes at which Type IIID site deployment has been identified, some support is probably being furnished from the established complex support facility and original rail-to-road transfer point. In addition, certain new construction appears related to deployment of the new single silos. At the Olovyannaya Complex, there has been a significant buildup of the auxiliary support facility near the older Launch Site C(3), and west of and between Launch Groups D(4-13) and E(14-23). Five large buildings have also been added to the rail-to-road transfer point since the summer of

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At the Gladkaya Complex, there has been an increase of facilities at the administration and housing area 8 nm northwest of the complex support facility, in an area adjacent to Launch Group F(7-13). This addition consists of 8 large

barracks-type buildings and 20 other structures of various sizes. At the Drovyanaya Complex, 14 new barracks-type buildings have been added to the housing area north of the complex support facility and across the road from a support-type facility. Three large rectangular buildings and a large T-shaped building have been added to this support-type area since



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Only 1 support facility has been identified at each of the deployed launch groups. It is at the launch site containing the control/support facility. Coverage of Launch Site D7(6) at the Olovyannaya Complex in shows this facility to consist of 2 adjacent areas. One area contains 7 barracks-type buildings, and the other a possible underground structure and a number of small buildings, 1 of which appears to be earth-mounded. There is no evidence of support facilities at the other 9 launch sites in each group.

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We are unable to determine, from a study of logistic facilities, the ultimate number of launch groups which can be supported at the Tatishchevo or older complexes.

DEVELOPMENTS AT DEPLOYED TYPE IIID COMPLEXES

Olovyannaya Complex

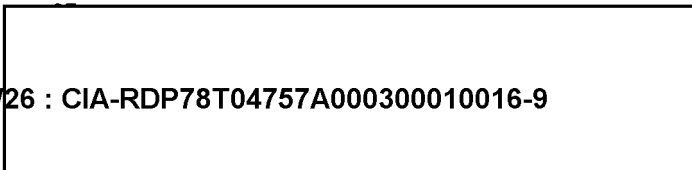
Coverage of single-silo launch sites at the Olovyannaya Complex on provides excellent high-resolution photography of the Type IIID configuration and deployment pattern, and serves as the basis for most of the judgments which we have made in this revision concerning this deployment program.

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Launch Group D(4-13), previously identified, consists of 10 confirmed launch sites, designated D1(4) through D10(13). Launch Sites D1(4) through D6(10) are arranged in a ring around Launch Site D7(6); Launch Sites D8(12), D9(13), and D10(11) form a segment of

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an outer ring on the northeast periphery of the primary ring. The orientation and approximate distances between sites are depicted in Figure 23.

The launch sites in Launch Group D(4-13) are generally alike and the differences observed can be attributed to varying construction stages (Figure 24). Each site has a level access to the silo, consisting of combinations of earth cut or fill depending on the nature of the local terrain. Most of these accesses form either a T or an L configuration, with the silo in the approximate center of one of the segments. The segment containing the silo, in each instance, is oriented on an azimuth of approximately 020 degrees. The silos are circular and have an inside diameter of approximately [redacted]. The outside diameter of the circular silo structures is approximately 35 feet. A small square, approximately 10 feet on a side, extends from the northwest side of several of the silos. One small building is associated with each site. The buildings are in various stages of construction but are all similar and will probably be alike when completed. Each building is approximately 85 by 35 feet and has an extension approximately 25 by 10 feet protruding from one end. A small shallow excavation is visible near each building.

the group, and it is possible that an additional control facility may be provided later in the construction program. Launch Site D7(6) also has associated support buildings which are not evident at the other 9 sites.

Probable cable ditches connect adjoining sites in Launch Group D(4-13). Although some of the ditching has been backfilled, most of it is still open. The ditches terminate near the launch sites, but connections to the silos are not yet visible. In most instances the cable ditches appear to be aligned so that the connection will be made on the northwest side of the silo.

Launch Group D(4-13), begun about [redacted] is generally in a midstage of construction. However, Launch Sites D1(4), D7(6), D8(12), and D10(11) are backfilled and have a low square or slightly rectangular cover over the silo, probably an environmental shelter rather than a silo cover. These 4 sites are probably in a late construction stage.

Launch Group E(14-23), newly identified on



sites range from an early stage of construction at Possible Sites E8(21), E9(22), and E10(23) to a midstage at the other 7 sites. All are generally alike and the differences observed can be attributed to varying stages of construction. The evidence indicates that Launch Group E(14-23), shown in Figure 25, will be similar in all respects to Launch Group D(4-13). The centrally located Launch Site E(17) is the only one with support facilities and a fence large enough to accommodate an L-shaped electronic facility. Fencelines have not been identified at all sites in the group, however, and the possibility of an additional electronic or control facility cannot be ruled out.

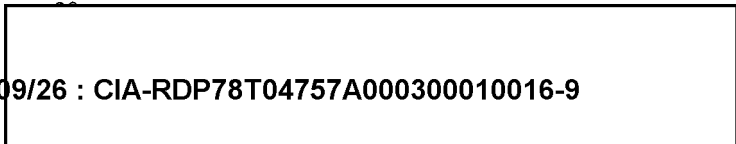
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Launch Sites E1(17), E2(14), E3(15), E4(16), E5(19), E6, and E7(20) have the characteristic earth fill or cut which provides a level access to the silo. The silos are located along one segment of a modified T- or L-shaped configuration; in each case the segment containing the silo is oriented on an azimuth of approximately 020 degrees, as is the case at Launch Group D(4-13). Possible Launch Sites E8(21), E9(22), and E10(23) do not as yet have firm signatures, but the characteristic excavations, ground scarring, and general appearance, reinforced by timing and location, indicate that they are launch sites in a very early construction stage. A schematic layout of Launch Group E (14-23) is shown in Figure 26.

Cable ditching is not yet apparent between the sites at Launch Group E (14-23), nor can we identify cable connections between Launch Groups D and E. We expect both to be discernible on future photography.

Tatishchevo Complex

The Tatishchevo Complex, newly identified [redacted] consists of a complex support facility, a rail-to-road transfer point, and 2 launch groups, designated A(1-11) and B(12-21). Each launch group contains 10 silos in the circular configuration previously identified at Olovyannaya. In addition, 3 areas of unidentified activity west of Launch Group B(12-21) lead us to suspect that a third launch group may be in a very early stage of construction.

Launch Group A(1-11) can be negated on [redacted] and construction of the first silos probably began shortly thereafter (Figure 27). Launch Site A1(1) is the center site and appears similar to Launch Sites D7(6) and E1(17) at Olovyannaya. This site (Figure 28) is probably further ad-

vanced than any identified to date, with a loop road pattern evident and a possible cover in place adjacent to the silo. A probable control facility is under construction in an excavation several hundred feet north of the silo, but the segments of the interferometer are not yet visible. Cable ditching radiates from this site toward the others in the group.

Launch Group B(12-21), in an early construction stage, can be negated on [redacted] with first signs of construction activity visible on [redacted]. All 10 sites were under construction by [redacted].

Drovyanaya Complex

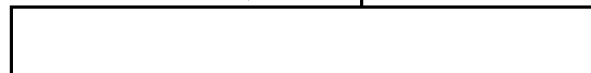
Continuing review of [redacted] revealed a probable Type IID launch group, designated Launch Group G(7-16), under construction at the Drovyanaya Complex (Figure 30). This group of sites can be negated



that the sites are in a midstage of construction.

Gladkaya Complex

A group of 9 single-silo sites and a suspect tenth site is newly identified on [redacted] at the Gladkaya Complex (Figure 31). This group, designated Launch Group F(7-13), can be negated on [redacted]



silos in the group were begun in [redacted] and that all were underway by [redacted]. The center site, Launch Site F1(7), is the only launch facility to have reached a midstage of construction. Cable scars radiate from this site to the others in the group.

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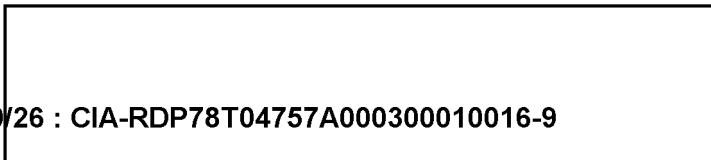
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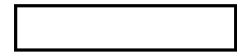
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Perm Complex

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A possible Type IID single-silo launch group, designated Possible Launch Group G, is identified on [redacted] at the Perm Complex (Figure 32). The group currently consists of 6 possible launch sites and 2 areas of suspect activity. Possible cable

ditching connects several of the areas of activity, all of which are spaced from 2.5 to 4 nm apart. Negation dates for the 6 launch sites range from [redacted]

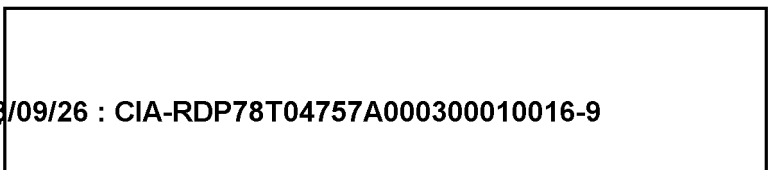
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We believe, however, that if this is a Type IID launch group, it was begun during late



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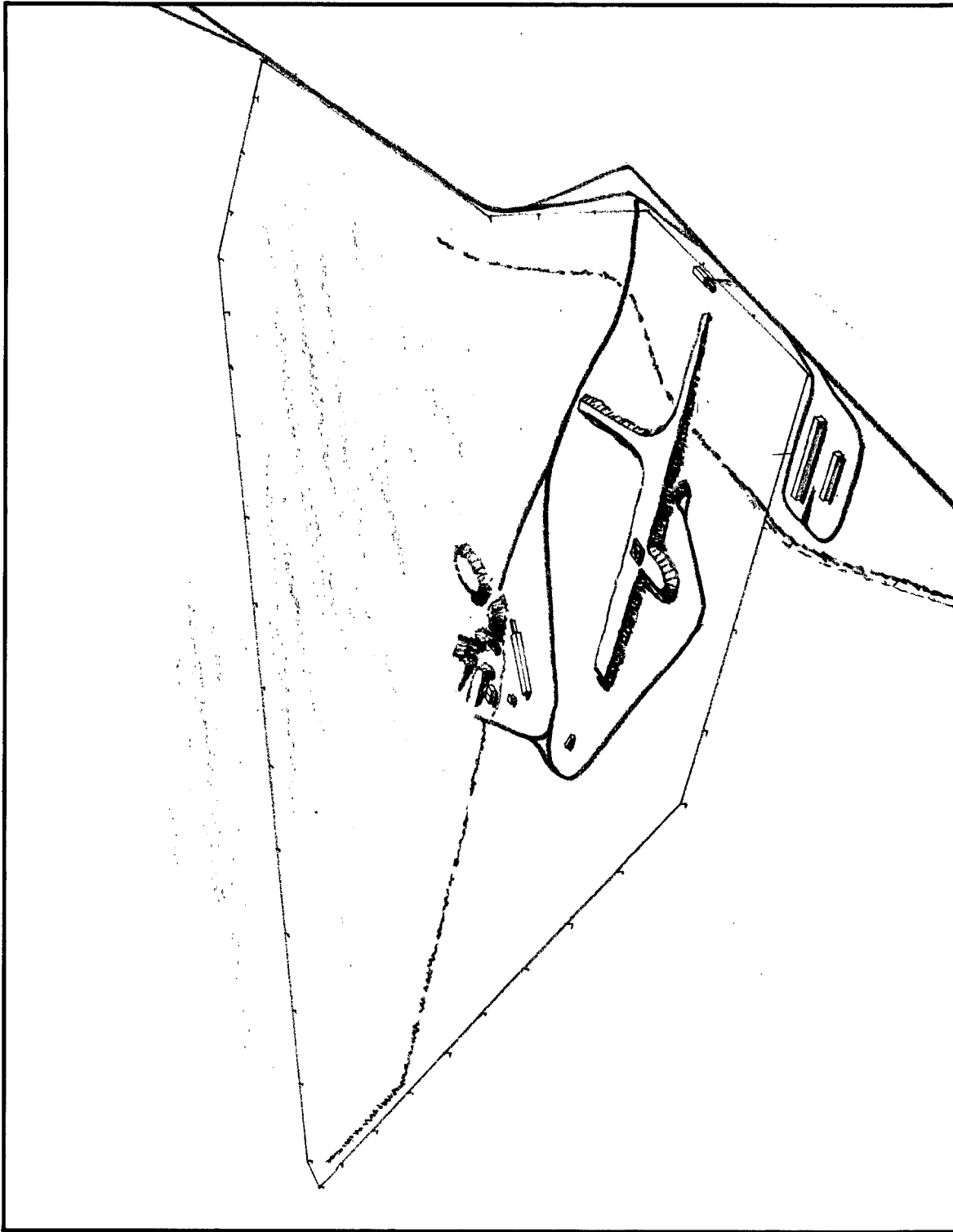


FIGURE 18. ARTIST'S CONCEPT OF CENTRAL LAUNCH SITE, TYPE IIID ICBM LAUNCH GROUP.

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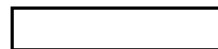
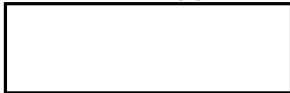
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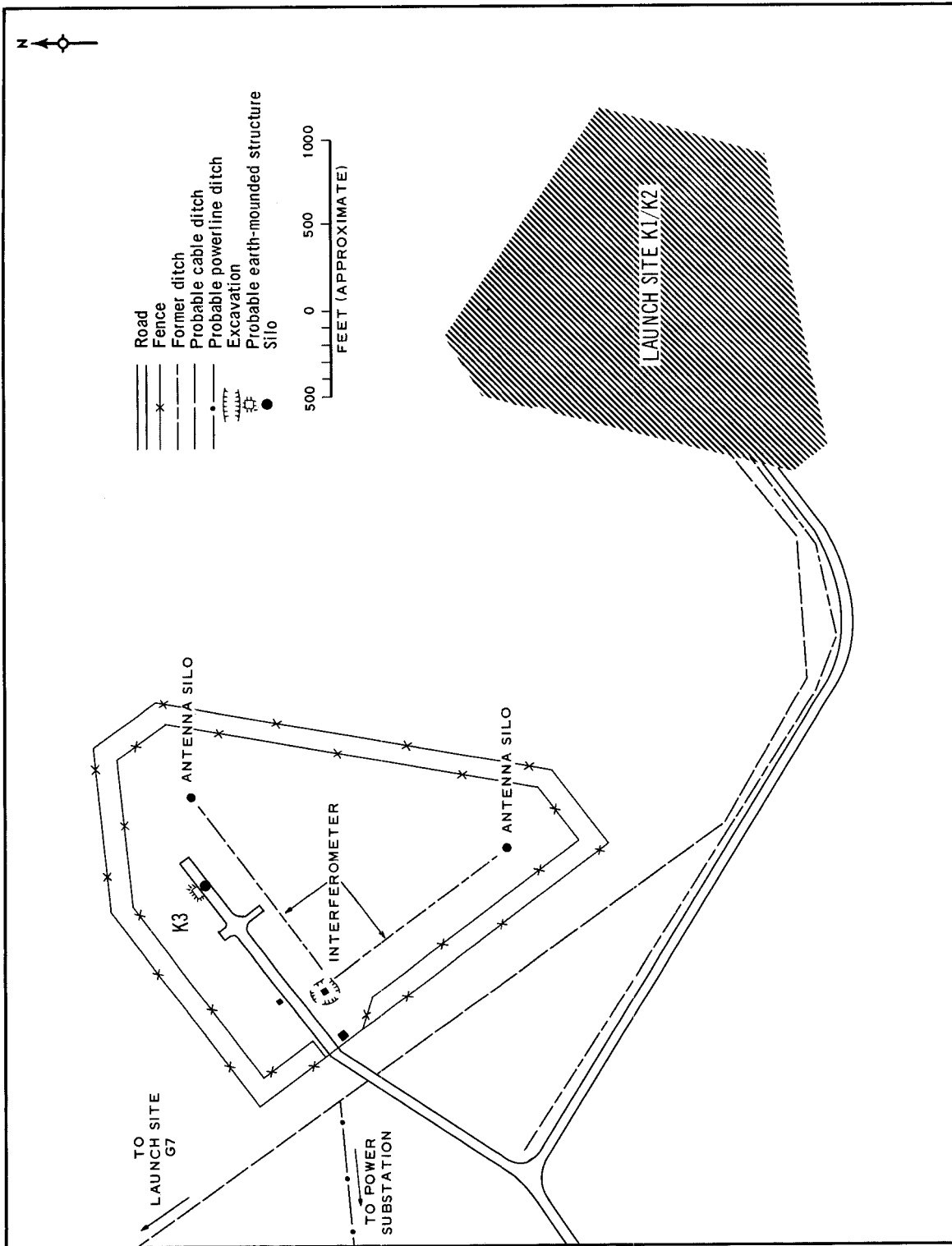
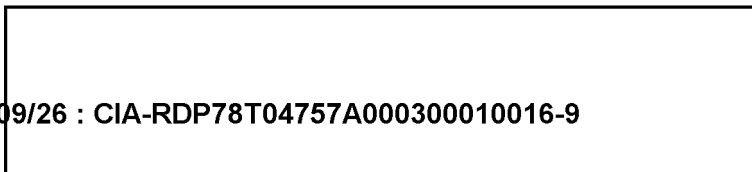


FIGURE 19. LAUNCH SITE K3(20), TYURATAM.

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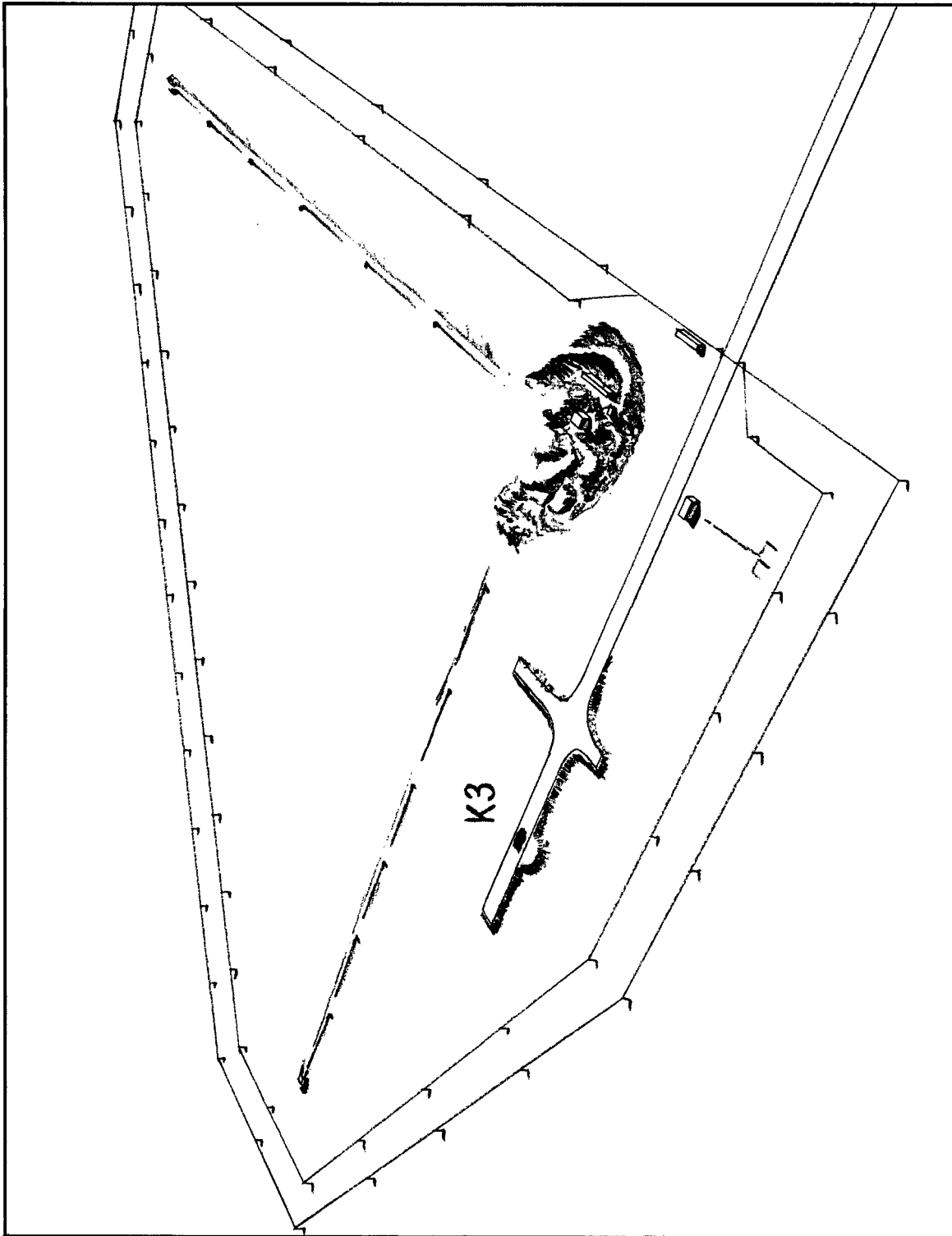
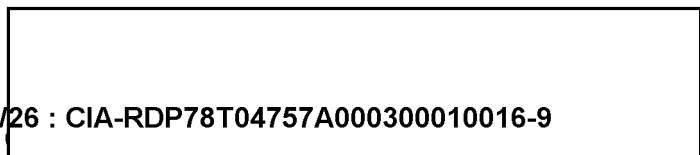


FIGURE 20. ARTIST'S CONCEPT OF LAUNCH SITE K3(20), TYURATAM.

NPIC K-1020 (4/65)



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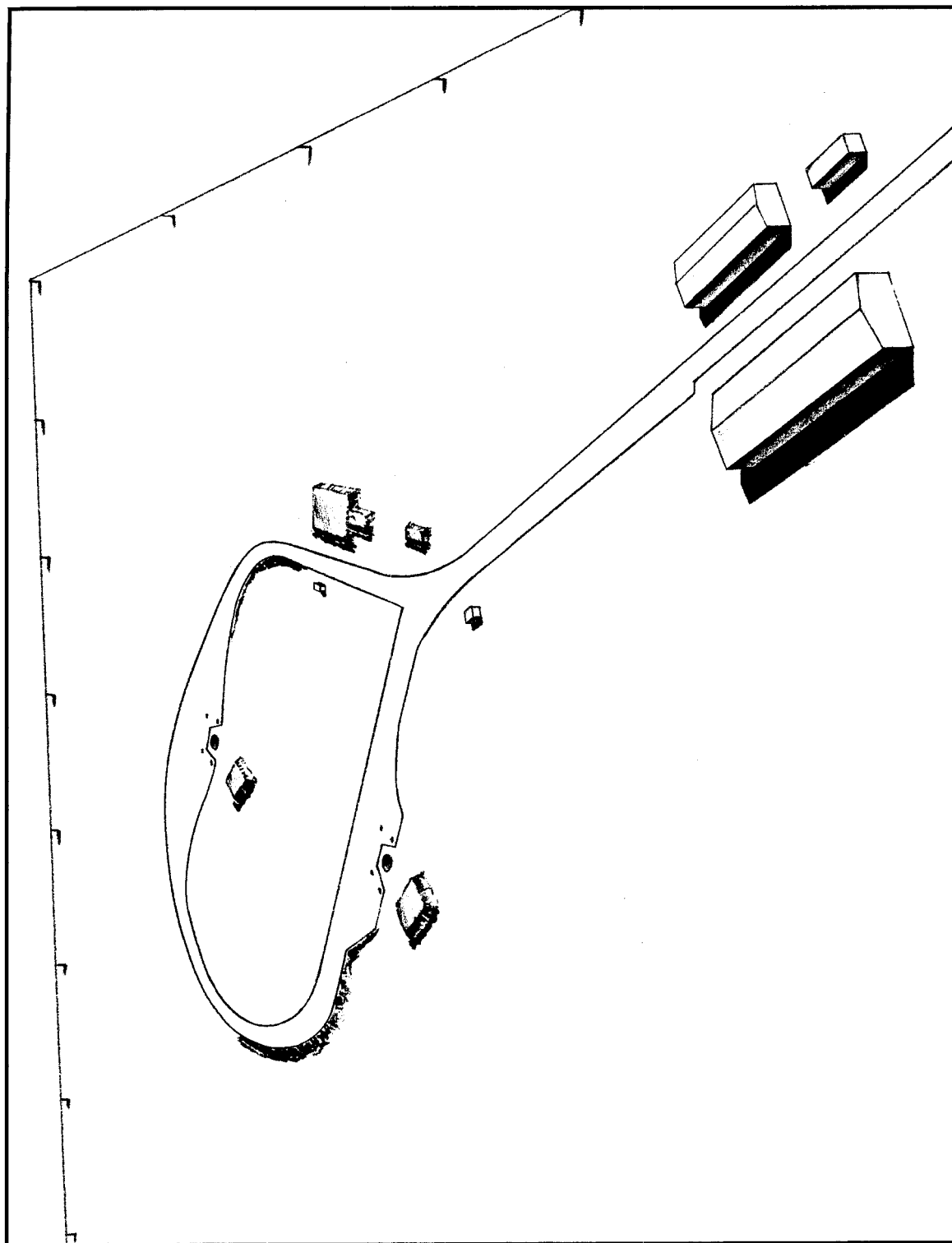


FIGURE 21. ARTIST'S CONCEPT OF LAUNCH SITE G8/G9(19), TYURATAM.

NPIC K-1021 (4/68)

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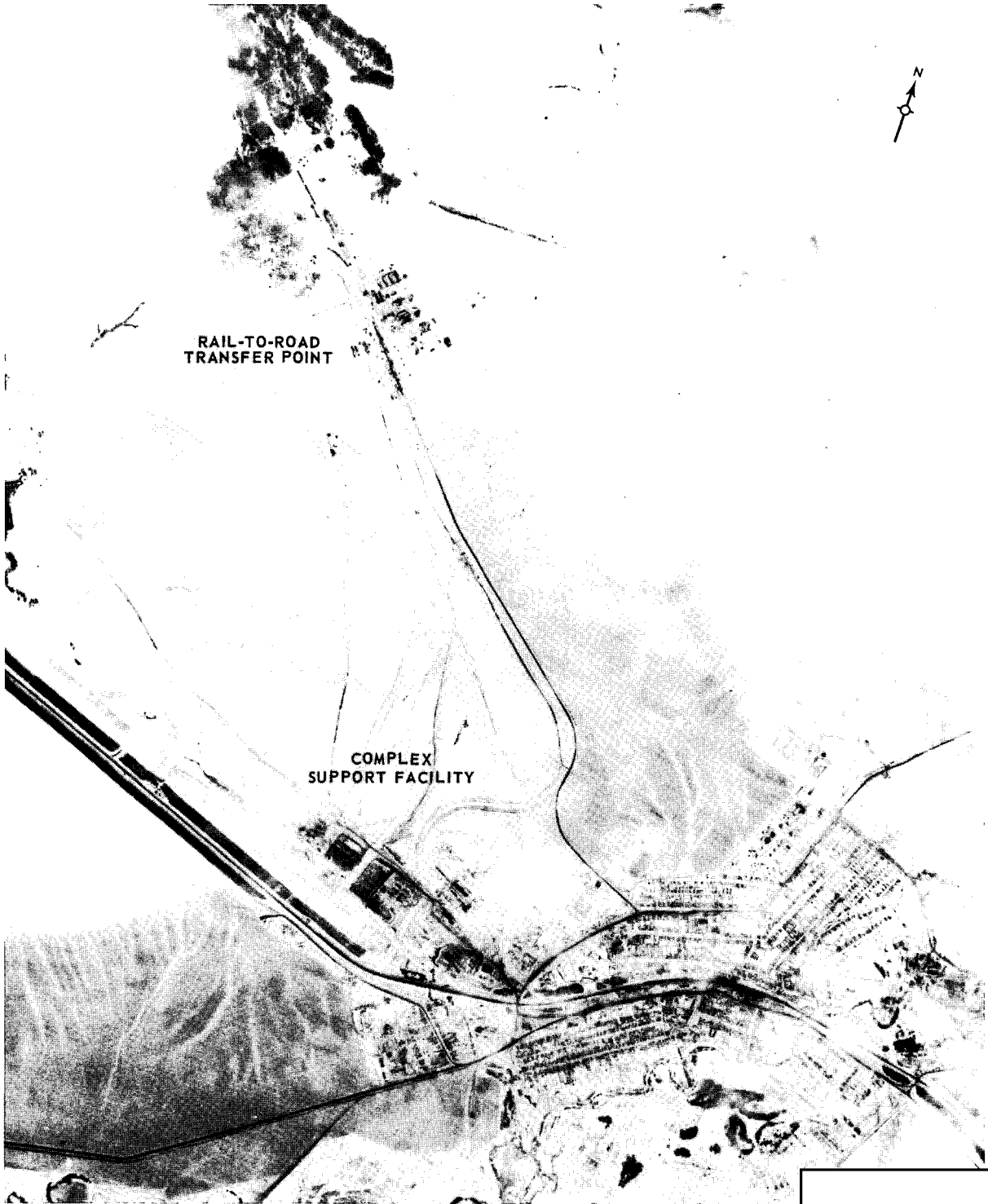
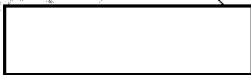
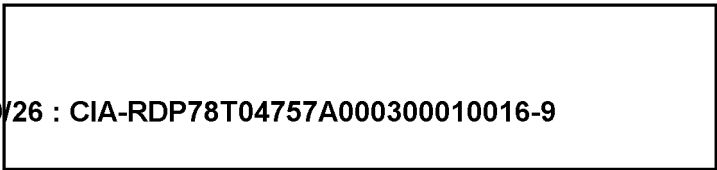


FIGURE 22. COMPLEX SUPPORT FACILITY AND RAIL-TO-ROAD TRANSFER POINT, TATISCHEVO TCBM COMPLEX.



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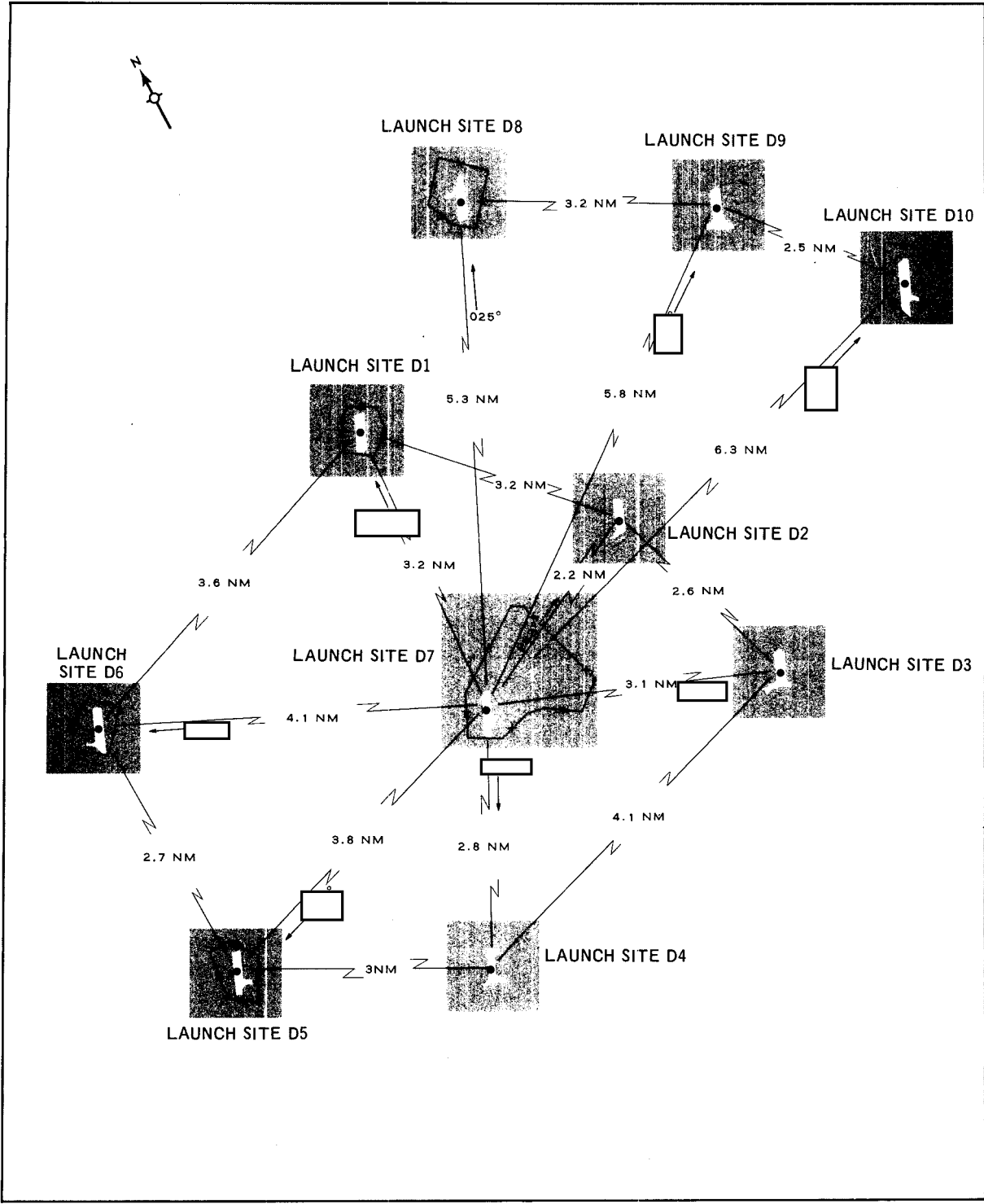
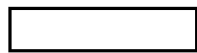
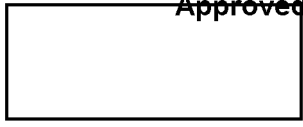
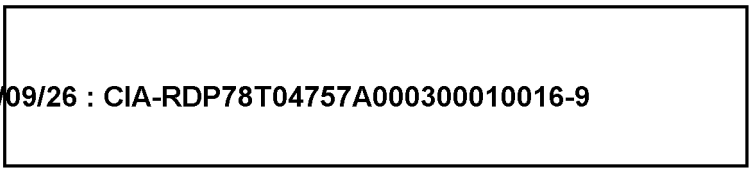


FIGURE 23. SCHEMATIC LAYOUT, LAUNCH GROUP D(4-13), OLOVYANNAYA ICBM COMPLEX.

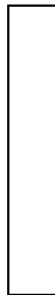
NPIC K-1023 (4/65)



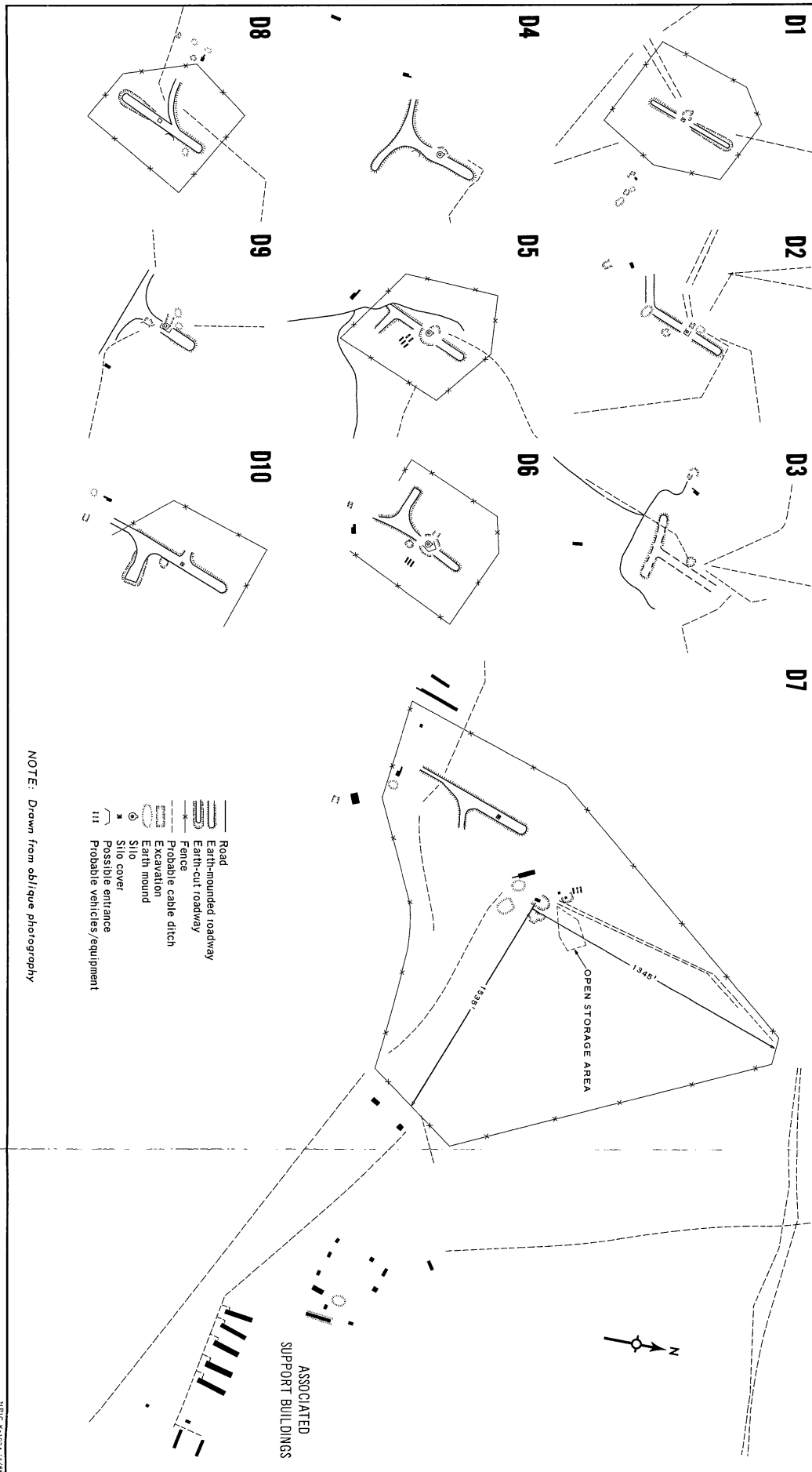
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NOTE: Drawn from oblique photography

FIGURE 24. LAUNCH GROUP D14-113, OLOVYANNAYA ICBM COMPLEX.

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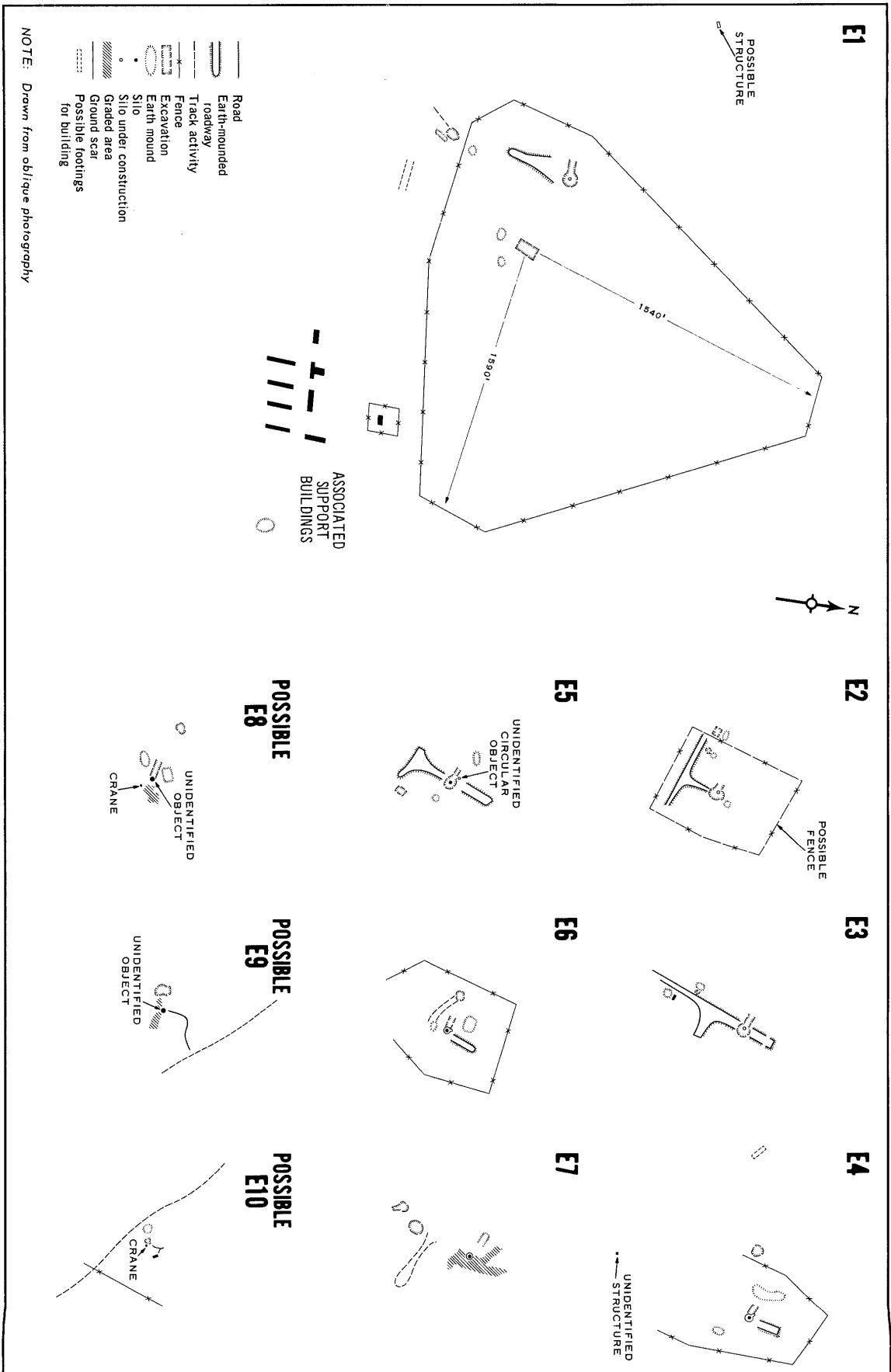


FIGURE 25. LAUNCH GROUP E(1423), OLOVYANNAYA ICBM COMPLEX.

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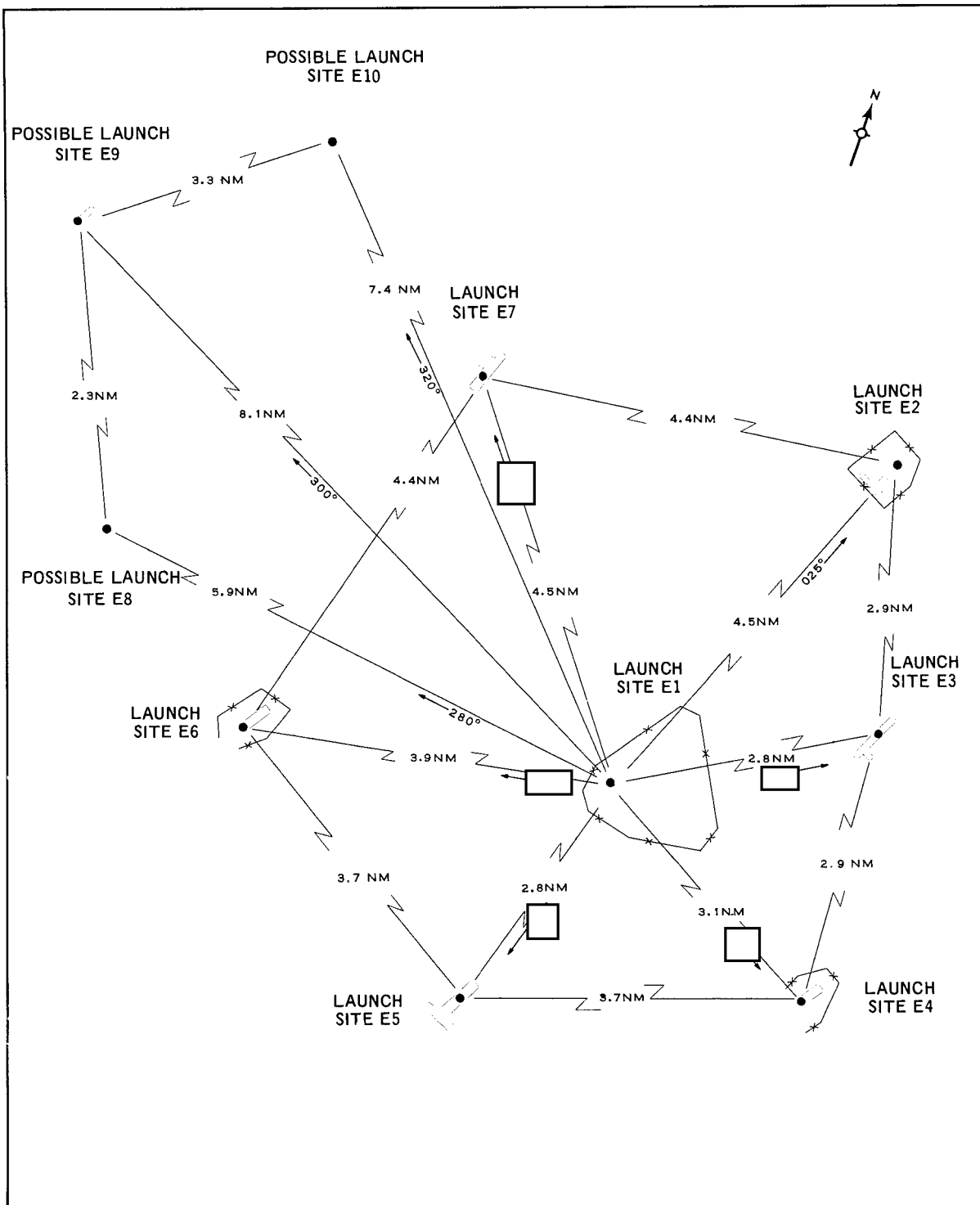


FIGURE 26. SCHEMATIC LAYOUT, LAUNCH GROUP E(14-23), OLOVYANNAYA ICBM COMPLEX.

NPIC K-1026 (4/65)

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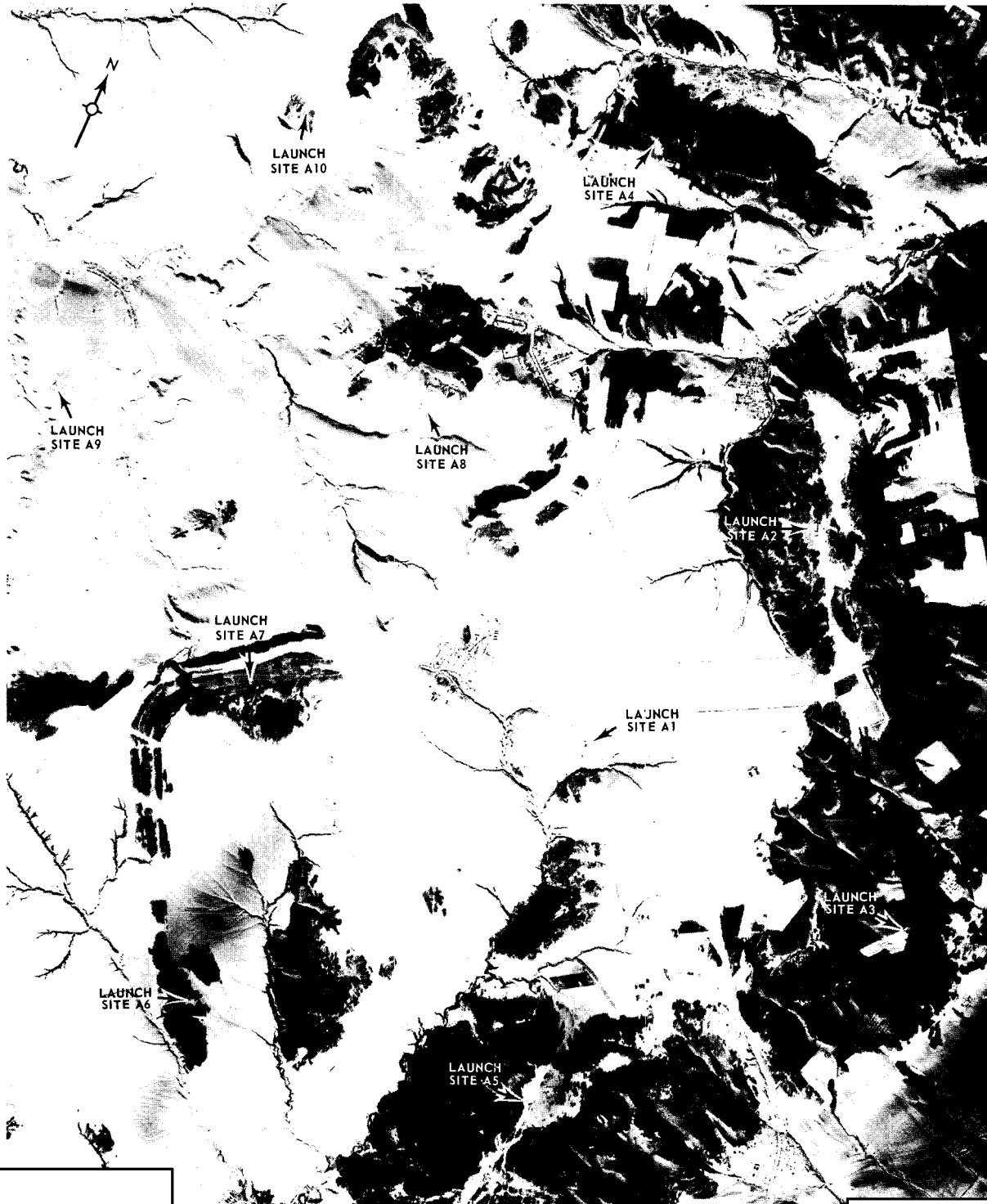
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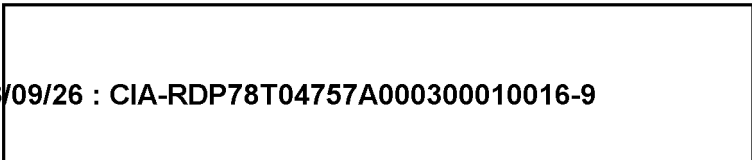


FIGURE 27. LAUNCH GROUP A(1-11), TATISHEVO ICBM COMPLEX.

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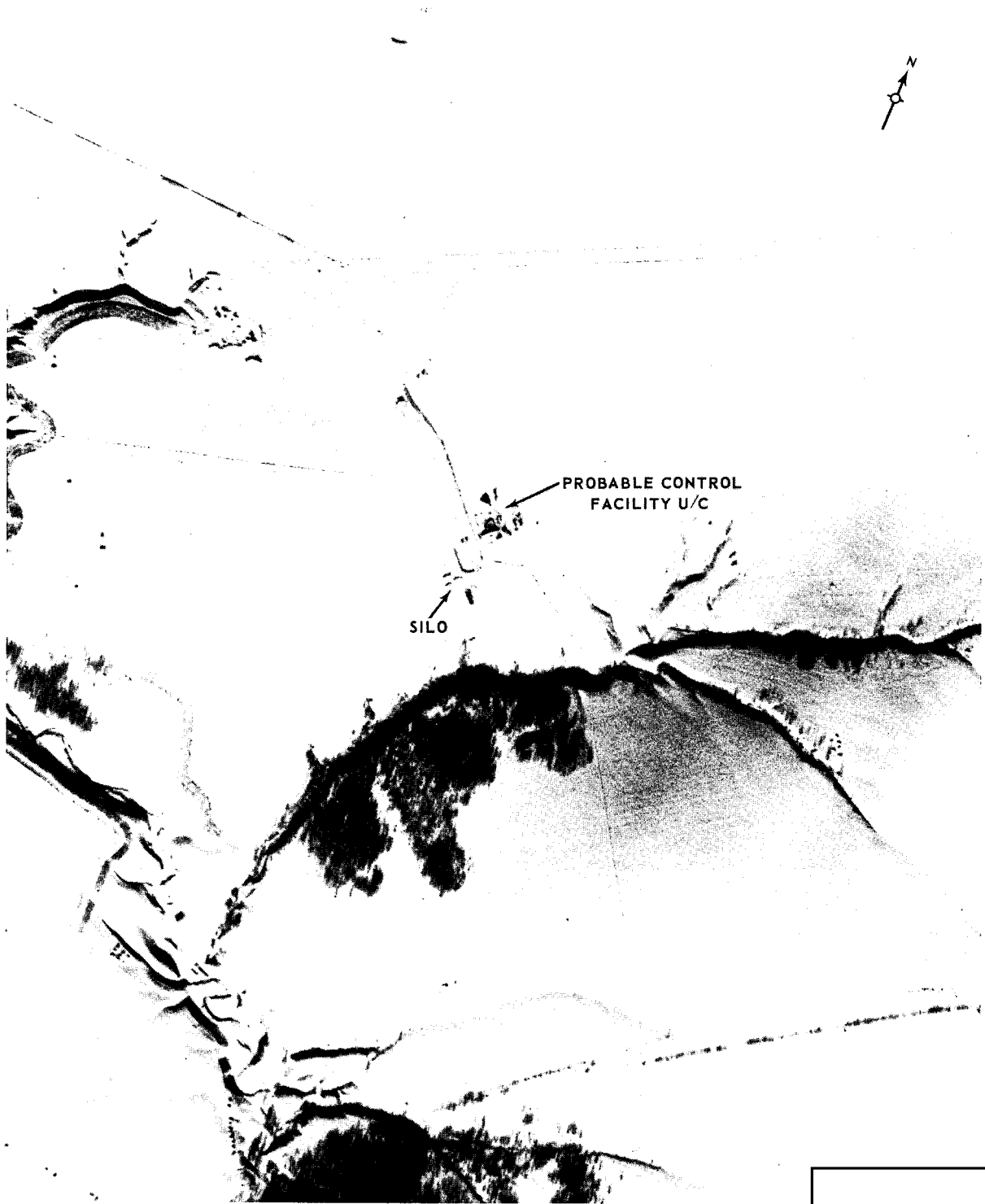
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FIGURE 28. LAUNCH SITE A1(1), LAUNCH GROUP A, TATISHCHEVO ICBM COMPLEX.

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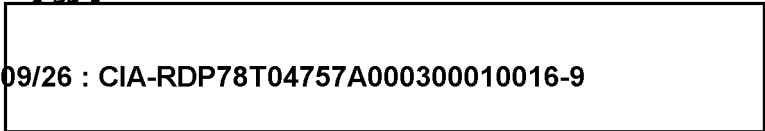


FIGURE 29. LAUNCH GROUP B(12-21), TATISHEVO ICBM COMPLEX.

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FIGURE 30. LAUNCH GROUP G(7-16), DROVYANAYA ICBM COMPLEX.



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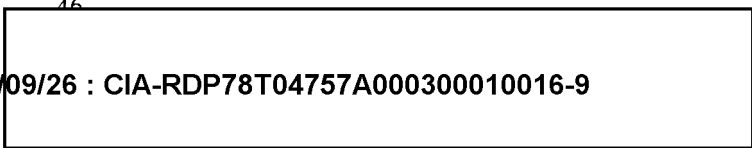
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FIGURE 31. LAUNCH GROUP F(7-13), GLADKAYA ICBM COMPLEX.

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FIGURE 32. POSSIBLE LAUNCH GROUP G, PERM ICBM COMPLEX.

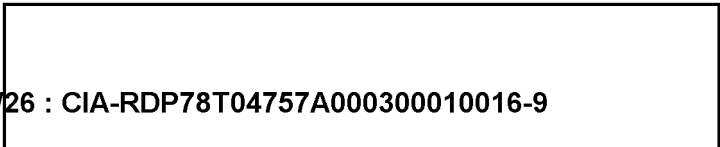


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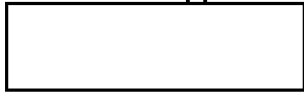
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Associated Missile Systems

We have examined all available evidence in an attempt to determine specifically the missile systems associated with the 2 types of single-silo configurations identified at Tyuratam and currently under construction at deployed sites. Our analysis included detailed study of both types of sites at the rangehead and in the field, assessment of the flight test programs of the SS-9 and SS-10, examination of new launch facilities (other than single-silo types) at Tyuratam, and the time relationship between flight test programs and site construction. The result of this analysis shows that present evidence is insufficient to permit a definite assignment of missile systems to single silos.

PACE AND EXTENT OF ICBM DEPLOYMENT

It is apparent that the Soviets have designed their single-silo deployment program to increase significantly the total number of operational ICBM launchers and reduce site vulnerability through dispersion and hardening. It is still too early to determine whether the Soviets intend to increase the credibility of their deterrent force by the addition of a significant, but relatively limited, number of launchers in a comparatively short period of time; whether the rate and pace of new construction noted in [redacted] will continue for the next several years; or whether the single-silo deployment program is designed to eventually match the US in numbers. This judgment cannot be made with any degree of confidence until we can identify the missile systems to be deployed in single silos, determine with greater confidence the number currently under construction, and observe the rate of construction starts subsequent to completion of the silos begun during [redacted]. Succeeding paragraphs present our analysis of existing evidence relating to the pace and extent

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of the single-silo deployment program.

Construction of all of the nearly 100 identified launchers which are currently under construction at deployed complexes (including 4 probable soft pads at Plesetsk) was probably initiated during calendar year [redacted] and there are probably other sites begun prior to [redacted] which have not yet been detected. The nearly 100 identified construction starts exceed by some 10 launchers the previous high total for a single year achieved [redacted].

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In terms of sustained construction activity, the total of almost 100 launchers concurrently under construction does not approach the previous high of 140 launchers achieved in mid-[redacted]. This could be significant in light of the gap in site construction starts which occurred during the last several months of [redacted] and the obvious availability of construction crews and equipment from halted ICBM, IRBM, and MRBM programs. Furthermore, construction activity in the field is proceeding at a sustained but deliberate pace, particularly at the Type IIC complexes.

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In summary, while the current ICBM deployment program is characterized by a launcher deployment rate somewhat higher than that of previous years, it appears to be less than a maximum effort and is progressing at a sustained but deliberate pace. We expect that construction of new sites at identified complexes will continue and that additional complexes will be constructed to accommodate deployment of third and possibly fourth generation missile systems.

STATUS OF OLDER SYSTEMS

General

In light of the significant deployment of single-silo configurations at both old and new ICBM complexes, we have examined sites as-

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[Redacted]

[Redacted]

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sociated with first and second generation ICBM systems for evidence of change or modification which might indicate a change in operational status. In particular, we searched for evidence that sites employing older systems are being deactivated or modified to accept newer missiles currently under development. A summary of our findings is presented in succeeding paragraphs.

SS-6 Sites

The SS-6 missile continues to be deployed at only 4 launchers at the Plesetsk Complex. These sites are active and there is no evidence of construction activity which might indicate replacement of the SS-6 system at this complex with a follow-on system.

We cannot identify any ICBM system currently operational or under flight test which might be compatible with SS-6 launch facilities. If retrofit were intended for these launchers, we would expect to see such retrofit preceded by firing of the new system from SS-6 facilities at Tyuratam. No such firings have been detected. We expect, however, that the SS-6 system will be phased out of the inventory when a more sophisticated system with equivalent or greater payload capacity becomes operational.

SS-7 Sites

CURRENT STATUS

Construction starts for SS-7 soft and hard sites terminated in [Redacted] Furthermore, 1 soft site and 4 hard sites, ranging in construction status from early to midstage, were abandoned in [Redacted] One hard site, Yedrovo Launch Site H(9), belonged to the original group of 15 Type IIIA sites begun prior to [Redacted] Begun about [Redacted] this site was abandoned about [Redacted] after having reached a mid-stage of construction. The other 3 abandoned hard sites, Gladkaya Launch Sites C(4) and

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E(6) and Kostroma Launch Site H(8), belong to the second group of 12 Type IIIA sites begun during the period [Redacted] All 3 were abandoned early in [Redacted] concurrent with the initiation of construction of the first single-silo sites. Construction of the abandoned Launch Site G(7) at Teykovo, a Type IID soft site, ceased in fall [Redacted] while the site was in a very early construction stage.

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We have still been unable to detect any significant difference between the first and second groups of Type IIIA hard sites deployed in the field. Seven of the 9 sites remaining in the second group of 12 have [Redacted]

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[Redacted] instead of from 0.5 to 1.5 nm from the launch facility, as is the case of all other sites in the 2 groups. This feature, however, is probably related to improved handling procedures rather than a new or modified missile system.

In previous revisions we have surmised that the second group of Type IIIA hard sites may be intended for the SS-9 rather than the SS-7. We based this postulation primarily on test range evidence associating Launch Site D2(9) at Tyuratam with the SS-9 missile system, since we could see no significant external differences between the 2 groups of Type IIIA sites in the field, or between Launch Sites D1(4) and D2(9) at the rangehead. We had expected that the L-shaped guidance facility associated with Launch Site D2(9) at Tyuratam would also appear in the field. To date, we have been able to identify a possible electronic facility at only 1 site, Launch Site B(2) at Olovyannaya. This suspect area consists of an L-shaped ground scar approximately 1,700 by 1,300 feet, located to the rear of the launch site (Figure 33). It can be negated in [Redacted] No construction activity is visible in the scarred area, and we cannot confirm or deny its association with

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[Redacted]

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guidance at this time. We are particularly reluctant to make an early judgment in this respect for 2 reasons: similar scars cannot be identified at any of the other 8 sites in this category; and an L-shaped ground scar has existed for some time at Launch Site B(2) at Shadrinsk (Figure 34), an early Type IIIA site begun late [redacted] and completed about [redacted]

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We do not believe that the scar at Shadrinsk is related to a ground-based guidance facility.

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If the sites in the second group of Type IIIA hard sites are not provided a ground-based guidance facility, the obvious conclusion is that the associated missile system utilizes all-inertial guidance. The SS-7 missile utilizes an all-inertial guidance scheme and no guidance facilities have been observed at sites firmly associated with this system. While flight tests of the newer SS-9 missile indicate that it uses a radio-guidance link, we believe that it, like the SS-7, can be flown in an all-inertial mode without the requirement for a ground-based guidance link. In summary, while we are unable to determine firmly whether the later group of Type IIIA sites is for the SS-9, we believe that this is the most likely possibility.

Total deployment of site configurations identified with the SS-7 missile system consists of 64 soft sites (128 launchers) and 23 hard sites (69 silos) distributed among 15 complexes. All are currently operational. The later group of 9 Type IIIA hard sites was constructed in from 17 to 20 months, a significant decrease in construction time over the first group of 14, which required an average of 22 to 24 months to build.

RETROFIT

We can find no evidence that SS-7 sites are being modified to accept a new missile system. There is no evidence that [redacted]

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at some

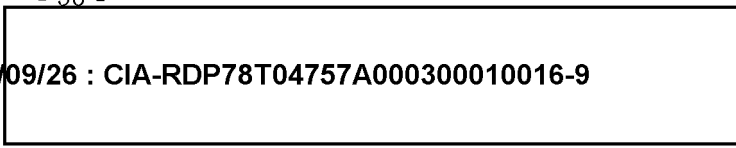
early soft sites are being replaced with facilities identical to those associated with later versions. We believe that this change is related to retrofit of early SS-7 warheads/nosecones with later variations.

We believe, however, that the SS-9 missile can be accommodated in launch facilities at deployed complexes currently associated with the SS-7. A variety of evidence indicates that the SS-9 has been fired from SS-7 facilities at Tyuratam. We cannot determine, however, the extent of modifications required to permit compatibility of the 2 systems.

The best photographic evidence that SS-7 sites were being retrofitted for the SS-9 would be the construction of ground-based guidance facilities similar to the L's at Launch Sites D2(9) and H(8) at Tyuratam. No evidence of such facilities can be identified on available photography. However, we cannot exclude the possibility that the SS-9 will be deployed in an all-inertial mode with no requirement for ground-based guidance.

We believe that our chances of detecting retrofit of the SS-9 missile at Type IIA and IIB soft sites would be better than at the later Type IID version, or at the Type IIIA hard sites. We base this belief on the fact that the SS-9 utilizes nitrogen tetroxide as an oxidizer. N₂O₄ is temperature-sensitive and requires storage facilities offering environmental protection. We have firm evidence that Type IIA and IIB soft sites, unlike the other 2 deployment configurations, utilize mobile propellant-loading equipment. Thus we would expect to see installation of fuel storage facilities in the immediate launch pad area in conjunction with any retrofit program.

We believe that Type IID soft sites and Type IIIA hard sites can be retrofitted for an SS-9 employing all-inertial guidance without detection based on outward change or modifica-



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tion of site facilities. Such modification did take place at Launch Site C(3) and D1(4) at Tyuratam without photographic evidence of change.

While we recognize the possibility that some SS-7 launchers may be retrofitted with the SS-9, we do not expect to see such a program occur at an early date. We base this judgment on the continued utility of the SS-7 system against many ICBM targets, the relatively large number of these missiles estimated to be in the inventory, and the apparent intent of the Soviets to accomplish a significant increase in the total number of operational launchers.

SS-8 Sites

CURRENT STATUS

Construction starts for SS-8 sites, both soft and hard, ceased in the summer [redacted] Four soft and 2 hard sites, all in early stages of construction, were abandoned and the Gladkaya Complex was converted to the SS-7 system beginning in [redacted] The SS-8 system is currently deployed in 7 soft and 3 hard sites at 4 complexes in the USSR. The 23 launchers associated with this system are all operational.

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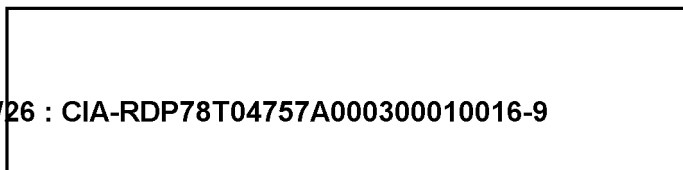
RETROFIT

We can detect no activity at deployed SS-8 sites indicative of retrofit with a newer system. As is the case for the SS-6, we would expect retrofit of SS-8 test facilities and firings of the new system from these launchers Tyuratam to precede changes at deployed sites. There is evidence that a rail spur is being constructed to service Launch Site E(6) at Tyuratam. It is too early to determine, however, whether rail service to this facility is associated with a new missile system. In any event, no firings of missiles other than the SS-8 have been detected from Launch Sites E(6) and F(5) at the test center.

There is no evidence that the SS-10 has been fired from facilities other than Launch Site G1/G2(7) at Tyuratam, nor do we know the missile size or characteristics with any degree of confidence. Therefore we cannot determine the possibility of employment of this system at existing SS-8 sites.

However, we believe that SS-8 missiles at deployed sites may be phased out during the next several years, because maintenance of the few sites deployed will become less desirable as more sophisticated missile systems become operational.

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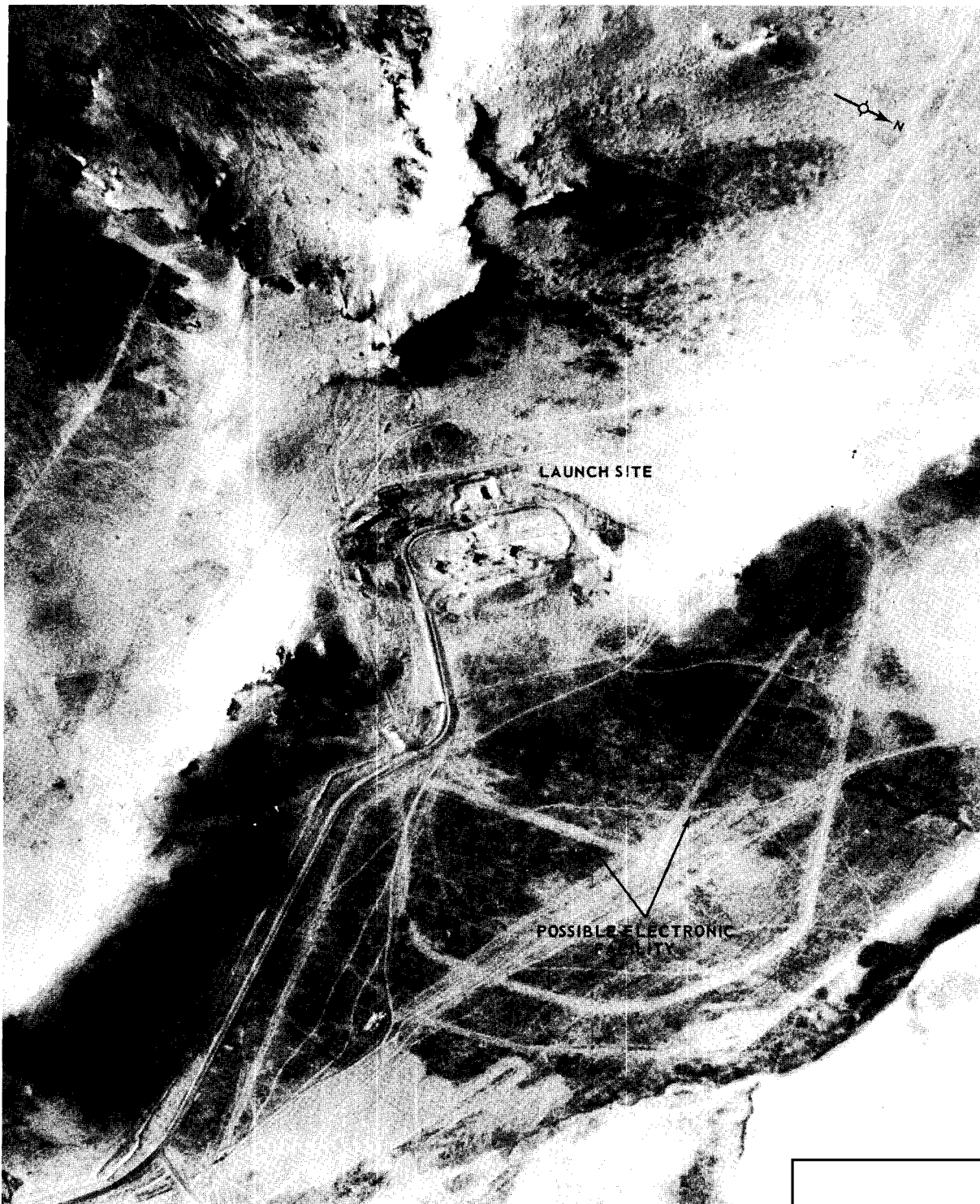
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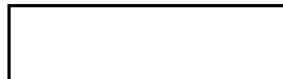


FIGURE 33. POSSIBLE ELECTRONIC FACILITY, LAUNCH SITE B(2), OLOVYANNAYA ICBM COMPLEX.

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TOP SECRET

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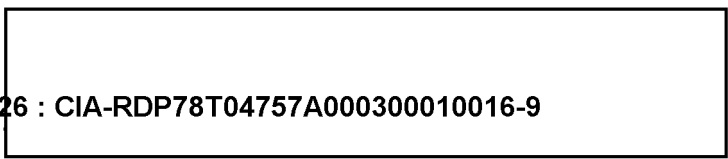


FIGURE 34. L-SHAPED GROUND SCAR, LAUNCH SITE B(2), SHADRINSK ICBM COMPLEX.

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TYURATAM MISSILE TEST CENTER

Test Range Facilities

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Tyuratam is covered by poor-to-fair quality photography on

25X1

Highlight of this coverage is the discovery of Launch Site K3(20), a Type IIID single silo located near the previously identified interferometer at Complex K(13).

No significant change is visible at the 3 launch sites at Launch Complex A. A line drawing of Launch Site A3(15) is depicted in Figure 5.

No significant change has occurred at Launch Site B1(2). At Launch Site B2(16), no change in the silo can be discerned (Figure 6), but a 150-foot-long building has been constructed near the terminus of a road first identified on

25X1

At Launch Site B3(17), a dome-like object approximately 50 feet in diameter is located in the center of the pad. No other change is apparent at this facility since

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An artist's concept of Launch Site B3(17) is shown in Figure 35.

No apparent changes in facilities can be discerned at Launch Complexes C(3), D(4), E(6), and F(5) since our last revision.

No change or significant activity is apparent at Launch Site G1/G2(7). An artist's concept of this launch facility is shown in Figure 36.

25X1

shows a rail car approximately 100 feet long on the rail spur serving Pad G4 at Launch Site G3/G4(11). In addition, there are 4 rail cars, each approximately 40 feet long, on the rail spur leading east of Pad G4. An artist's concept of the site is shown in Figure 37.

25X1

both show the single gantry at Launch Site G5/G6(12) on Pad G6. The quality of the photography precludes a determination of whether or not a missile is in the gantry.

25X1

there is a vehicle on the pad near the gantry and 2 vehicles, each about 45 feet in length, are in front of the earth-mounded building on the right side of the center road. A line drawing and an artist's concept of this launch facility are shown in Figures 38 and 39. Construction continues at Launch Site G7(18), shown in Figure 8. The silo extends upward from the base of the excavation but is probably not up to ground level. The ditching is still open along the segments of the L-shaped electronic facility and the probable control bunker near the vertex of the L has not yet been backfilled. At Launch Site G8/G9(19), shows activity at both aprons surrounding the silos, and both silos may be open. The site apparently remains in a late stage of construction. An artist's concept of this launch facility is shown in Figure 21.

25X1

No apparent activity or change in facilities is visible at Launch Complex H(8) since our last revision.

shows that construction at the single-silo launch site is continuing at Launch Complex I(14), but darkness precludes detailed interpretation. A line drawing of this site is depicted in Figure 7.

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Launch Complex J is covered on

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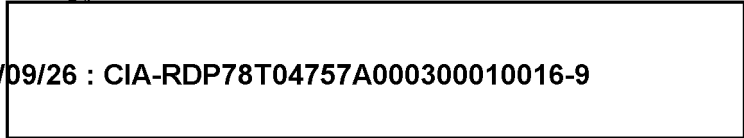
This photography (Figure 40) shows that the focal point of activity is the large excavation first visible on

25X1

The excavation is 2.9 nm north-northwest of Launch Site A1(1) and is the first firm indication of the location of a future launch position. The excavation is now hexagonal in shape with 2 earth cuts leading into the pit. There appear to be at least 3 levels within the excavation, but the bottom is obscured by darkness. The distance across the lowest level measures approximately 260 feet. Construction continues

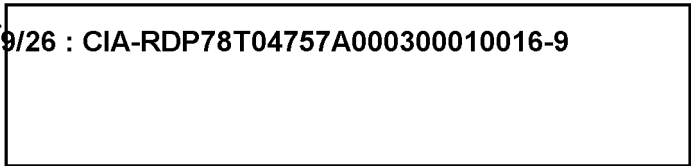
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on the massive 800- by 615-foot building east of the support facility. The low section, approximately 230 feet wide, is now completely roofed and roofing has started on the higher section. The rail embankment parallel to the main road has been extended to the point where the road curves toward the large excavation.

shown in Figures 19 and 20. Construction continues at Launch Sites K1 and K2(13), which are depicted in Figure 9. Both silos extend upward from the base of their respective excavations, but neither appears to be up to ground level. Both have ramps extending across the excavations to the silos. Back-filling is not apparent and ditching, first identified

25X1

and comparative review of previous coverage of Launch Complex K(13) revealed a newly identified single silo in a late stage of construction within the secured area containing the L-shaped electronic facility. This silo and its associated interferometer have been designated Launch Site K3(20). The silo can first be identified under construction on

and reported in our 16th Revision, is visible leading from these sites to Launch Site G7(18).

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Test Range Activity

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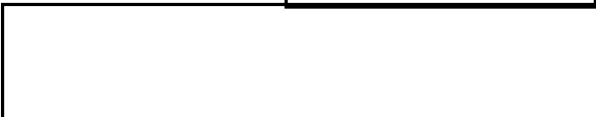


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operations were noted at the Tyuratam Missile Test Range. an SS-7 missile was launched to the Kamchatka Impact Area, and on 30 January an SS-9 was fired 7,000 nm to a preannounced extended impact area in the Central Pacific. In addition, on an SS-9 missile experienced an early in-flight failure during an operation involving the extended-range Pacific Impact Area. Canceled ICBM operations

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imagery and construction techniques appear the same as the silos at Launch Site G8/G9 (19), but the site signature is not the same. It closely resembles the center sites at Type IIID launch groups at the Tatishchevo and Olovyannaya Complexes. A line drawing and an artist's concept of this launch facility are

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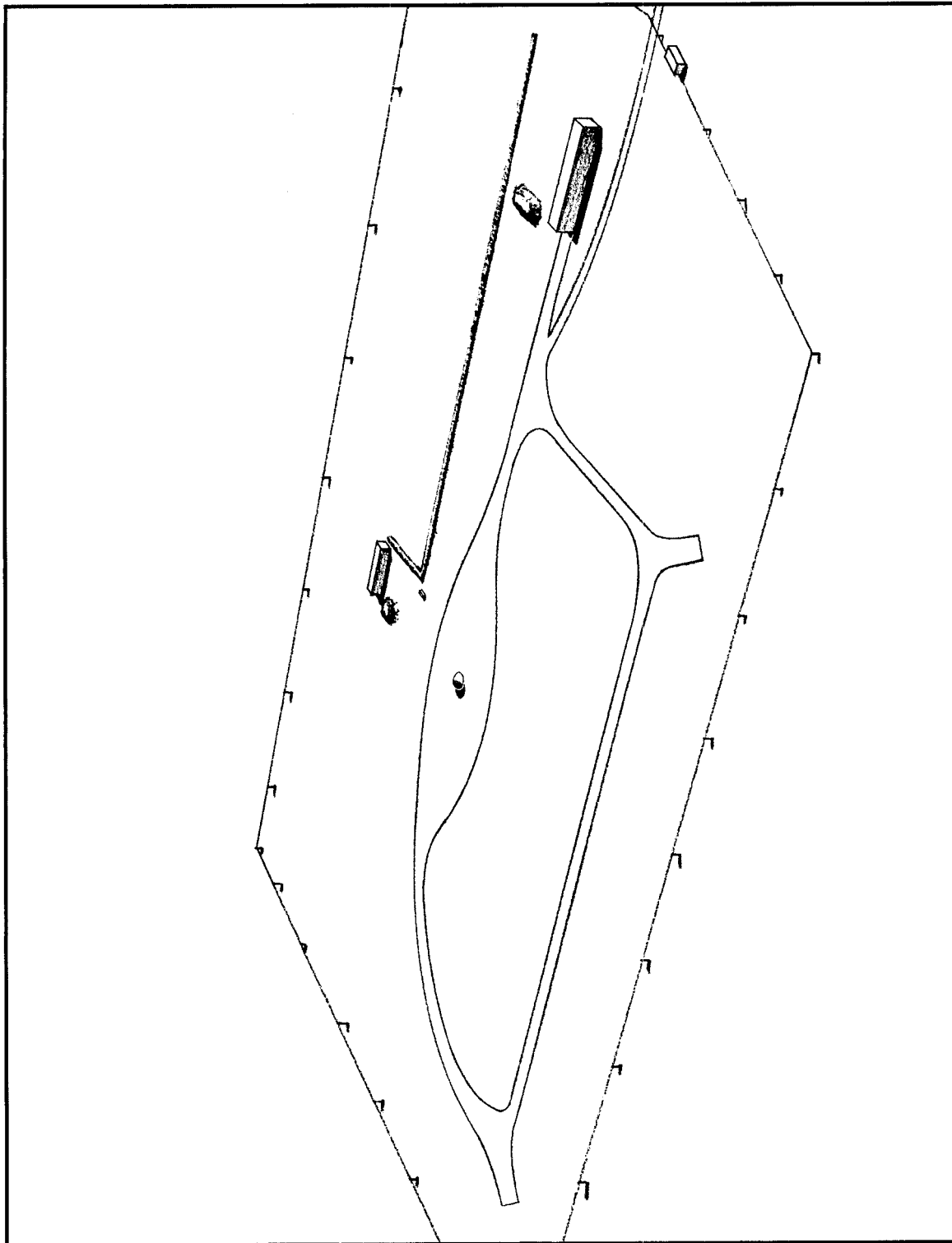


FIGURE 35. ARTIST'S CONCEPT OF LAUNCH SITE B3(17), TYURATAM.

NPIC K-1035 (4/85)

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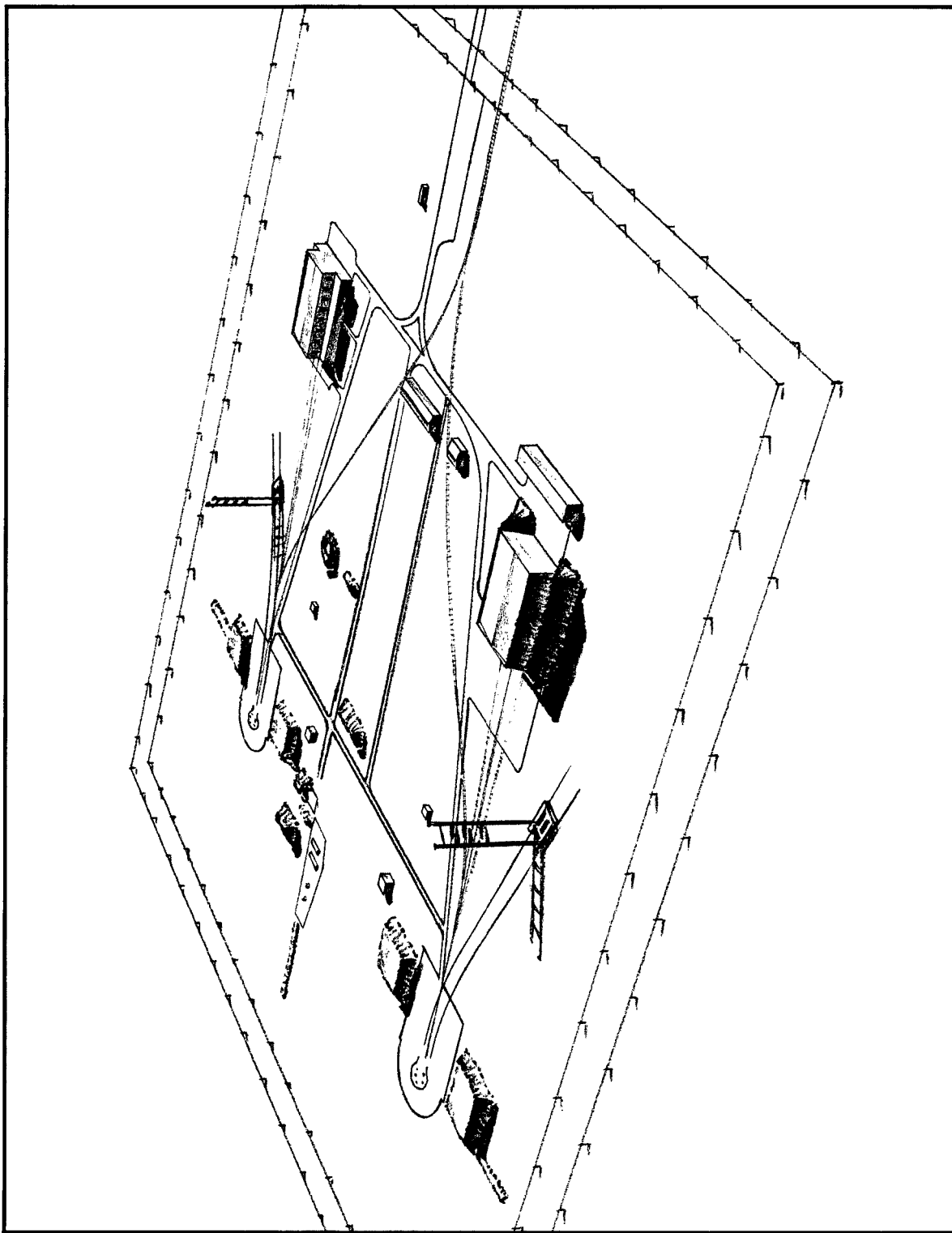


FIGURE 36. ARTIST'S CONCEPT OF LAUNCH SITE G1/G2(7), TYURATAM.

NPIC K-1088 (4/85)

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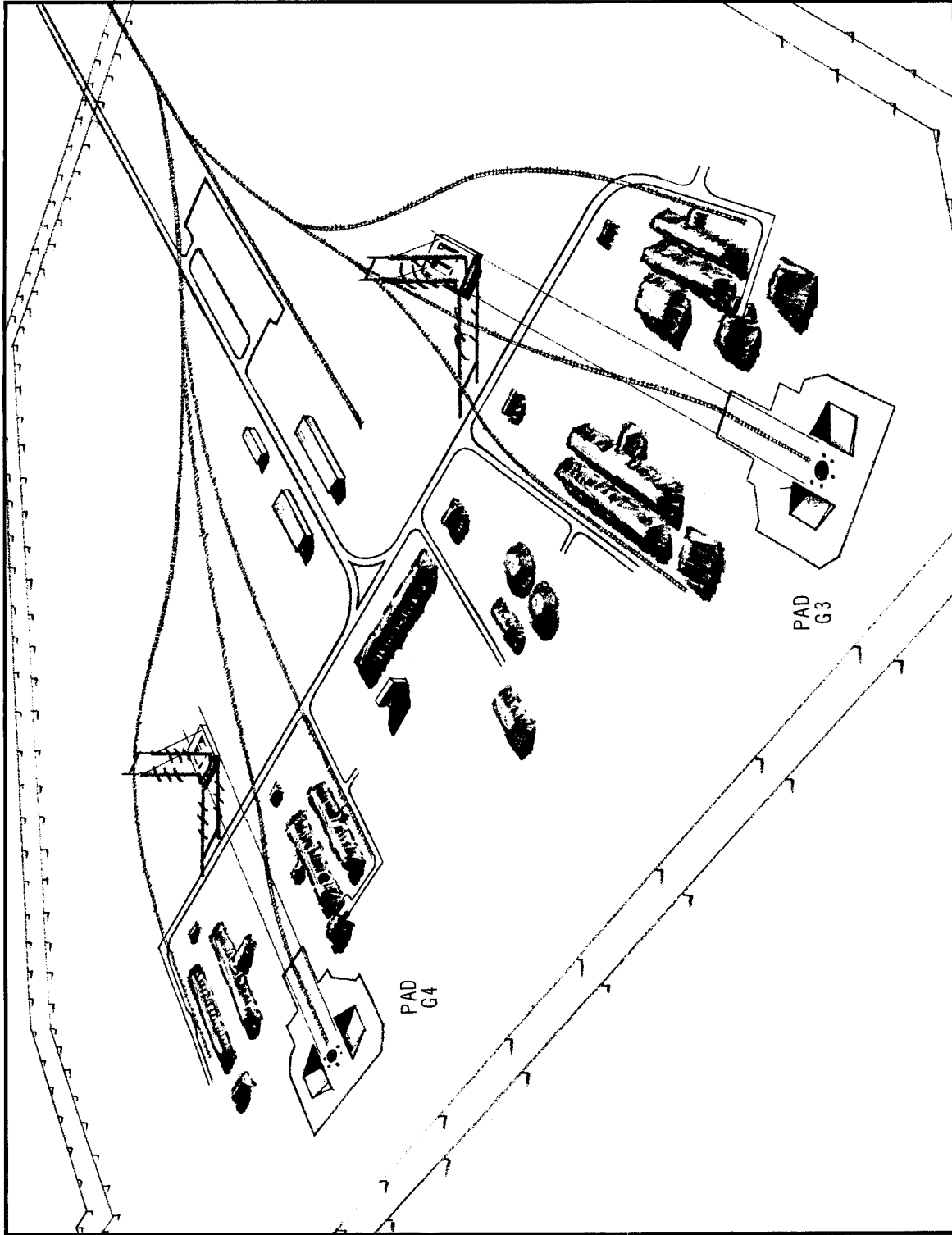
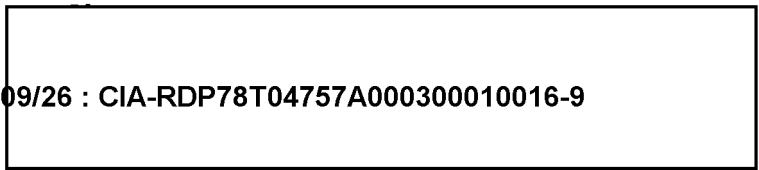


FIGURE 37. ARTIST'S CONCEPT OF LAUNCH SITE G3/G4(11), TYURATAM.

NPIC K-1037 (4/85)

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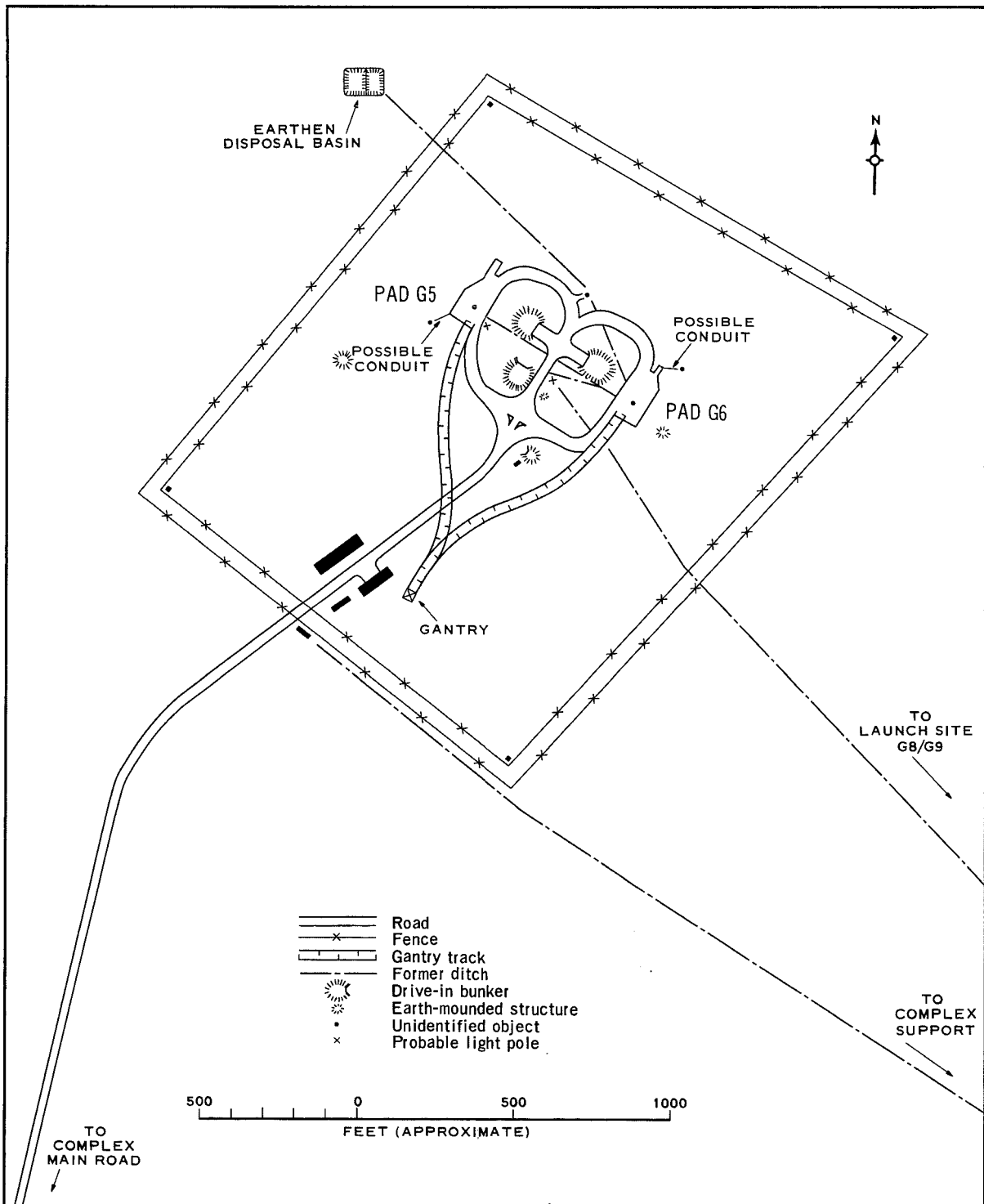
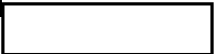
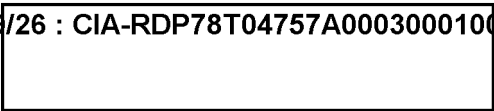
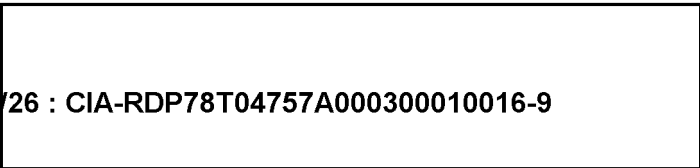


FIGURE 38. LAUNCH SITE G5/G6(12), TYURATAM.

NPIC K-1038 (4/65)



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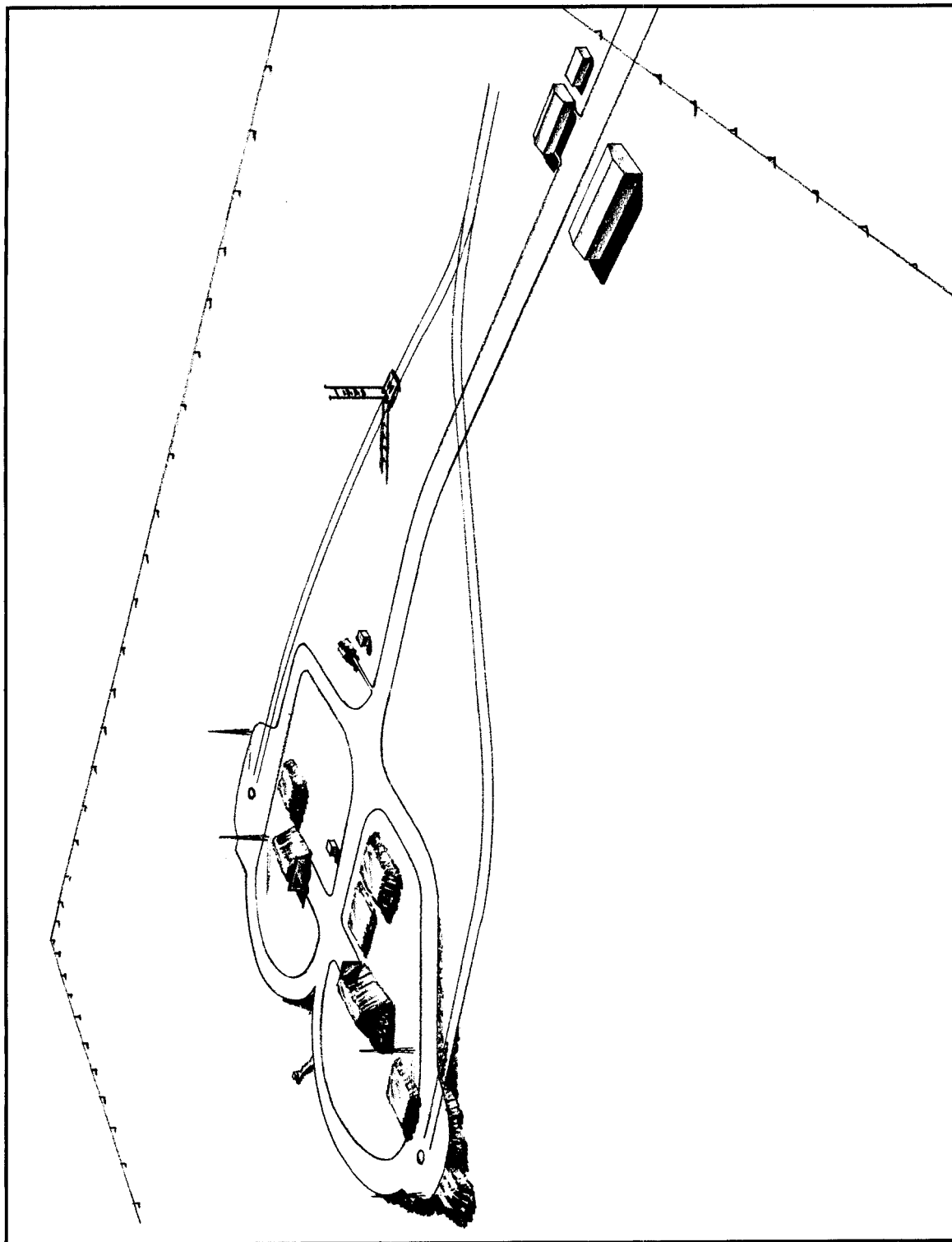
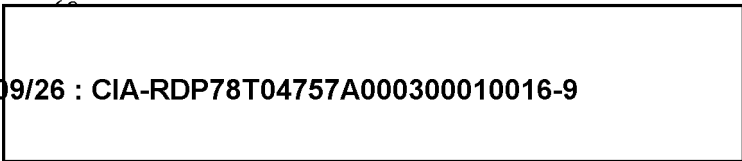


FIGURE 39. ARTIST'S CONCEPT OF LAUNCH SITE G5/G6(12), TYURATAM.

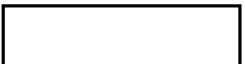
NPTIC K-1038 (4/85)

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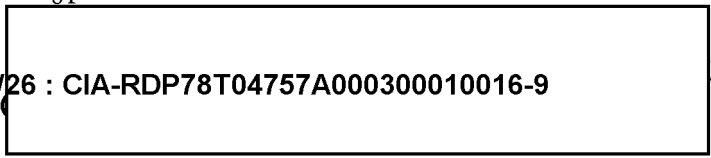


FIGURE 40. LAUNCH COMPLEX J, TYURATAM.



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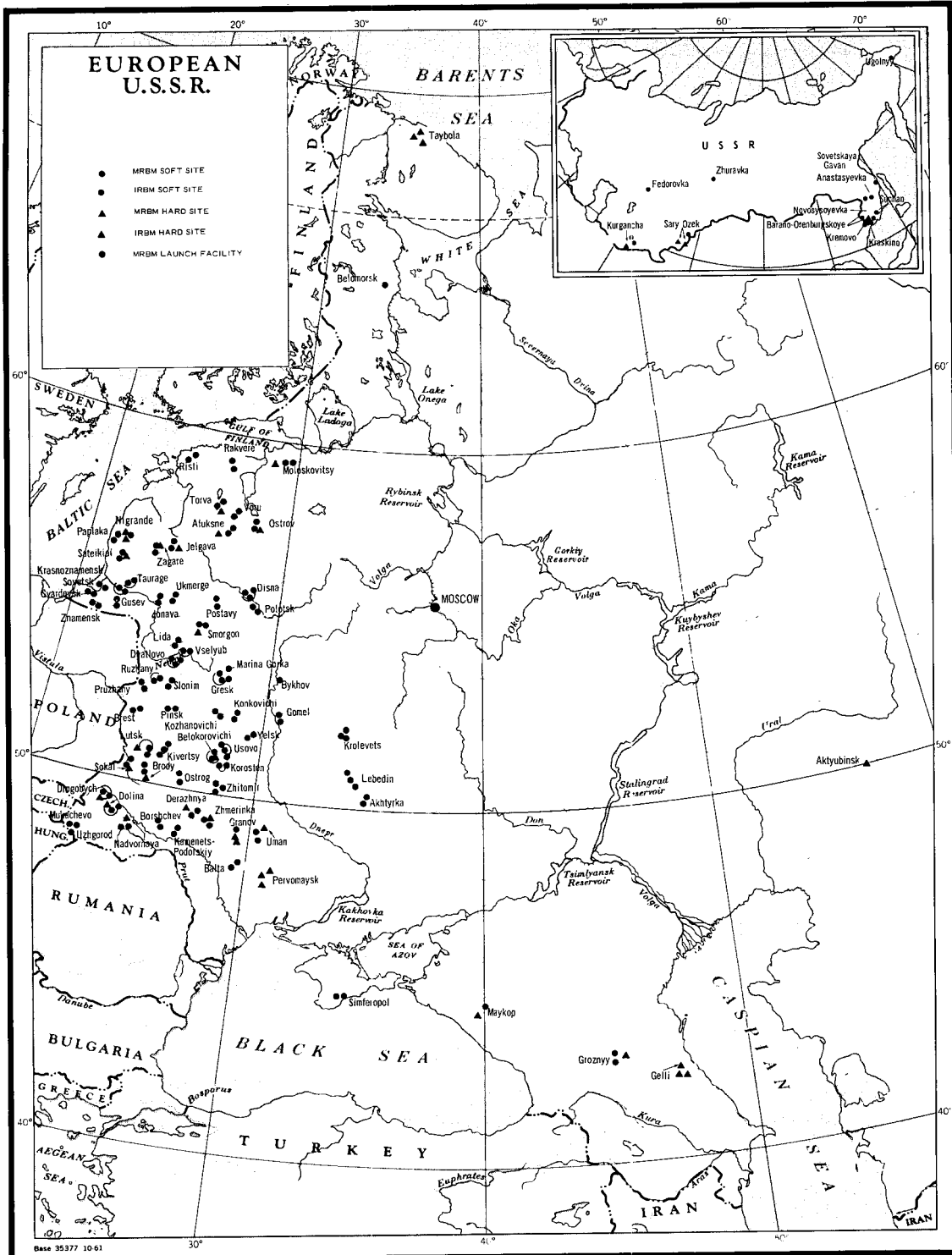
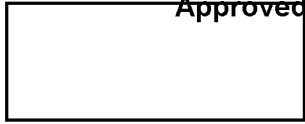


FIGURE 41. DEPLOYMENT OF SOVIET IRBM/MRBM COMPLEXES.

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SOVIET IRBM/MRBM DEPLOYMENT

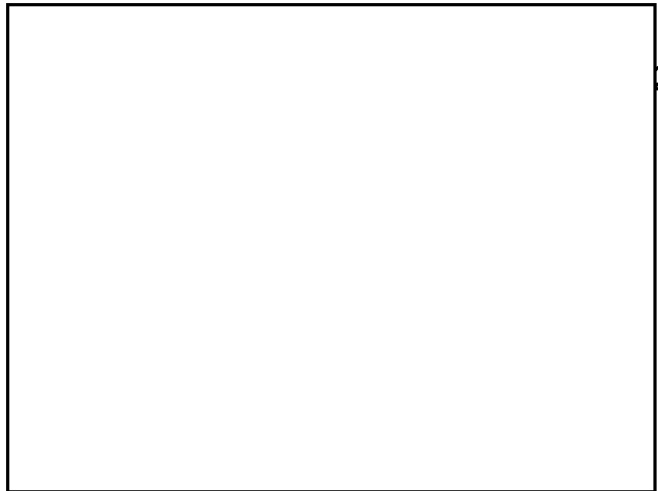


photography is the first good coverage obtained. As a result of this evidence, we are dropping 2 launchers from the IRBM inventory and are currently reviewing available photography of other IRBM/MRBM soft launch sites to determine their current operational status.

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MRBM DEPLOYMENT Current Deployment

The Soviet MRBM force currently consists of 157 sites containing 628 launchers, including 84 in a hard configuration. All are operational. These figures represent an overall reduction of 4 launchers from those carried in our 16th Revision and reflect the inactivation of a soft site at Rozhdestvenka.



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IRBM DEPLOYMENT Current Force Level

The Soviet IRBM force currently consists of 33 sites containing a total of 112 launchers, including 54 in a hard configuration.* Of these launchers, 109, including 51 silos, are estimated to be operational. These figures represent an overall reduction of 2 soft launchers from those carried in our 16th Revision. This reduction is explained in succeeding paragraphs.

Bereza IRBM Launch Site

Good quality coverage of the Krolevets IRBM Complex on [redacted] revealed that only 2 pads at the Bereza Launch Site are complete and operational (Figure 43). Only 2 missile-ready buildings and 1 control bunker are visible compared to 4 and 2, respectively, at a normal Type III site. This site, first covered on [redacted] is in a heavily wooded area and the

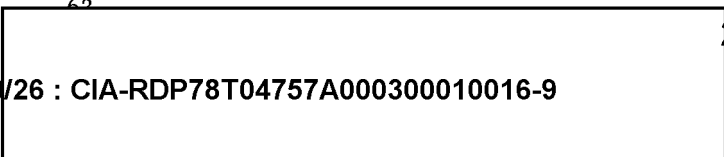
Fixed Field Sites

One additional fixed field site has been identified on [redacted] photography since our 16th Revision, bringing the total identified to date to 72. A list of these sites is given in Table 6. The new site (Figure 46) is associated with the Akhtyrka MRBM Complex and has 4 launch positions. It was present on [redacted] but cannot be negated.

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*One member currently carries 35 sites; Novosysoyevka 3 and Karakhobda are not considered abandoned.



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SITES WITHOUT SUPPORT FACILITIES

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[Redacted] reveals that the Rozhdestvenka MRBM soft site has probably been inactivated and we are dropping it from our tables. The site appears inactive on this [Redacted] photography, and no snow removal is apparent (Figure 47). All structures at the site appear unused and irregular in outline, and the missile-ready building to the rear of the northernmost pad is either badly deteriorated or has been partly removed. Three buildings have been removed since [Redacted]. Some 60 tent bases are visible approximately 1,000 feet west of the technical section and numerous personnel and vehicle revetments can be identified in wooded areas surrounding the site. We believe this activity is associated with troop training for units stationed at the extensive military installations in and near Iman.

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The Rozhdestvenka site was 1 of 9 singly deployed IRBM/MRBM soft sites, mostly constructed [Redacted] which were uniquely lacking the usual administration and housing facilities. In addition to Rozhdestvenka, this group included IRBM sites at Bayram-Ali, Ramoye, Traktovyy, and Zhuravka; and MRBM launch facilities at Kraskino, Marina Gorka, Sledyuki, and Uzhgorod. In our 16th Revision we noted that the Bayram-Ali site had been abandoned and that dismantling operations might be underway at Traktovyy and Zhuravka. Since that time we have observed only Rozhdestvenka and Zhuravka. At the latter, no further dismantling can be observed but we cannot determine the current operational status of the site. Pending further coverage, we are

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continuing to carry the remaining 7 sites as part of the operational inventory.

**KAPUSTIN YAR MISSILE TEST CENTER
Test Range Facilities**

The Kapustin Yar Missile Test Center is covered by clear photography on [Redacted]. [Redacted] The highlight of the coverage--in fact the only significant development since the 16th Revision--is the identification of Launch Complex H, a new surface-to-surface launch facility, approximately 2.5nm north-northeast of Launch Complex E. The new facility is still under construction (Figure 48) and consists of a fenced, road-served, launch area approximately 735 by 620 feet, containing 2 soft launch pads and a probable control bunker. Pad separation is about 495 feet and site orientation is on an azimuth of approximately [Redacted].

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The probable control bunker is identifiable in an early construction stage on [Redacted] in [Redacted]. One pad was newly under construction on [Redacted] and the other was probably begun shortly thereafter. We cannot determine the purpose of this launch facility at the present time.

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Test Range Activity

During the period covered by this revision there were firings of probable SS-4 vehicles to the G area of the Kapustin Yar Missile Test Range on [Redacted] and 2 firings of probable SS-4 missiles to the G area [Redacted]. On the 8th, 19th, [Redacted] there were probable SS-5 firings to the 2,000-nm impact area.

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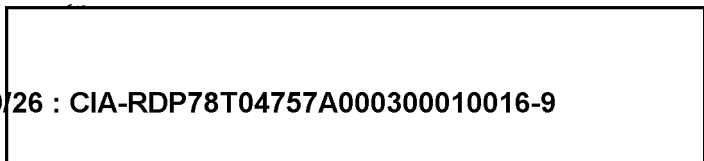
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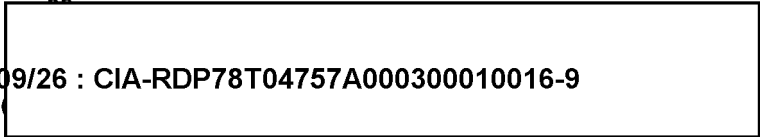
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FIGURE 43. BEREZA IRBM LAUNCH SITE.

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FIGURE 44. NOSECONE VANS AT ANASTASYEVKA LAUNCH SITE 2.

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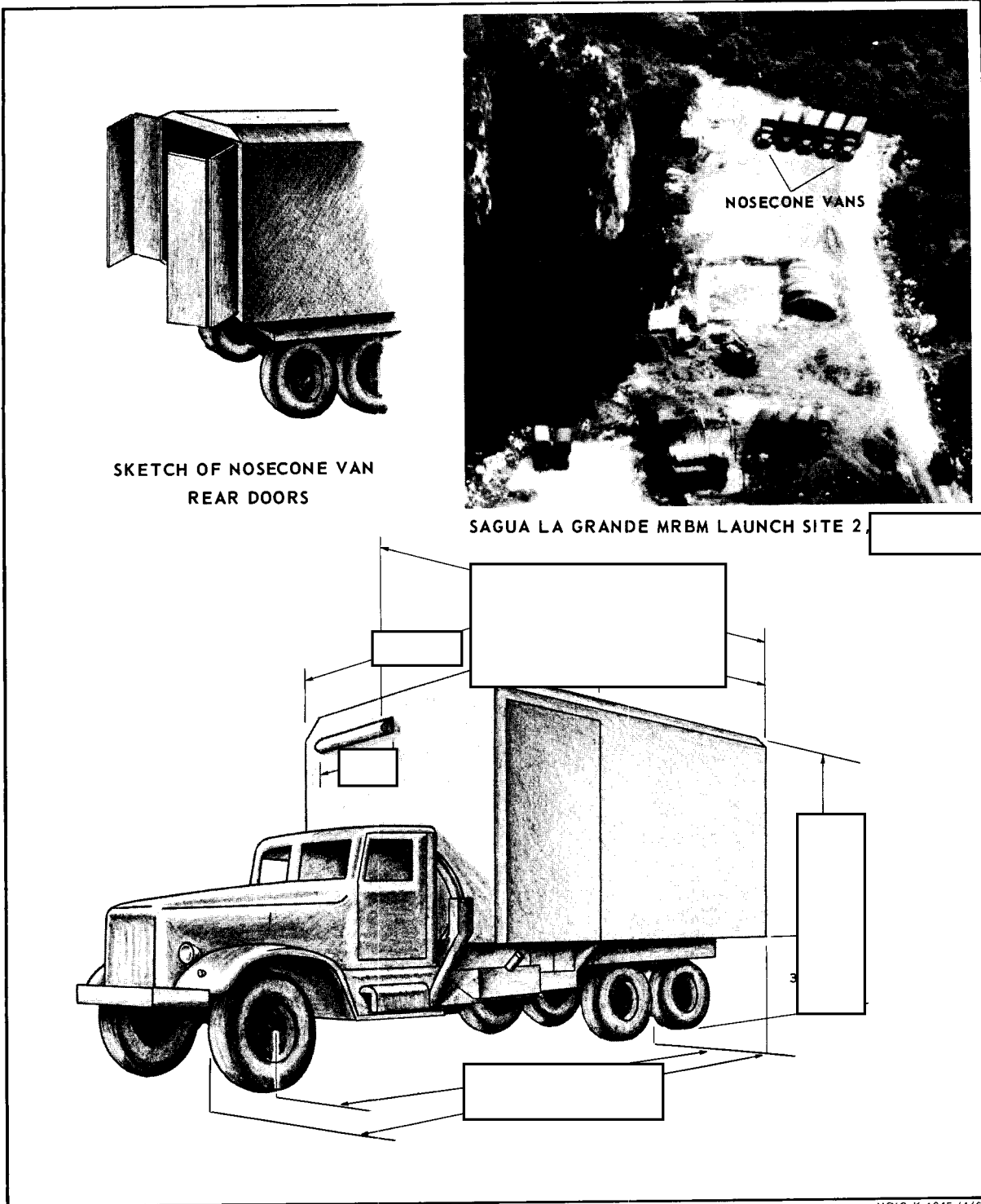
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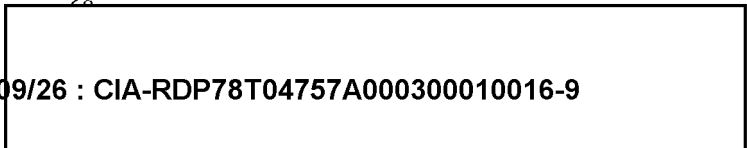
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FIGURE 45. SOVIET NOSECONE VANS AT MRBM LAUNCH SITE IN CUBA.

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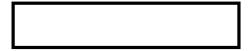


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FIGURE 46. AKHTYRKA FIXED FIELD SITE, AKHTYRKA MRBM COMPLEX.

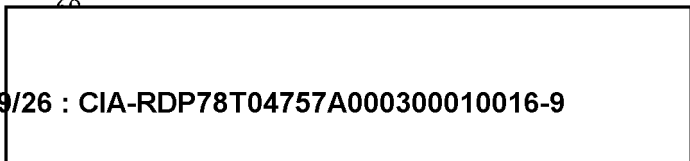


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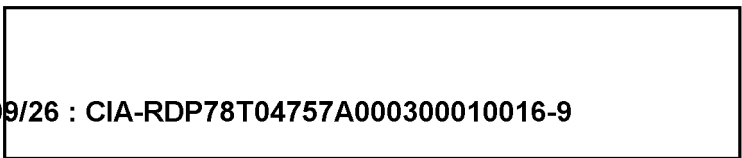
FIGURE 47. ROZHDESTVENKA MRBM LAUNCH SITE.

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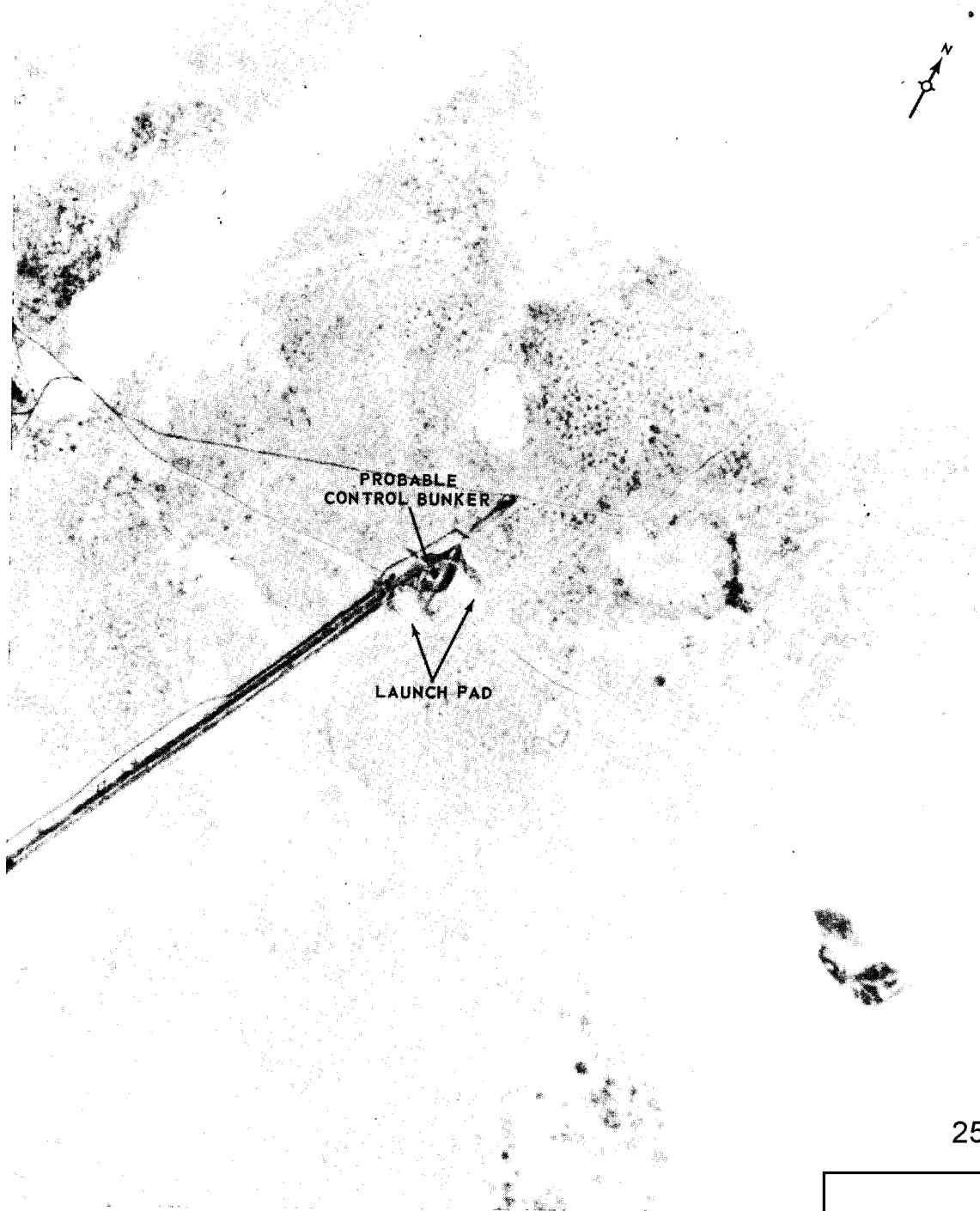
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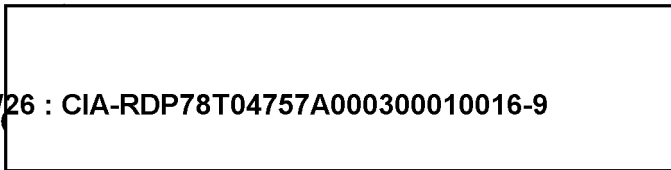
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FIGURE 48. LAUNCH COMPLEX H, KAPUSTIN YAR.



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TABLE 1. SUMMARY OF ESTIMATED STATUS OF IDENTIFIED ICBM, IRBM, AND MRBM LAUNCHERS
AT DEPLOYED COMPLEXES*

Type	Sites	Launchers	Operational	U/C	Type	Sites	Launchers	Operational	U/C
ICBM					IRBM				
IA	3	4	4	0	III	15	58	58	0
IB	2	4	0	4	IV	18	54	51	3
IIA	5	10	10	0	TOTAL	33	112	109	3
IIB	29	58	58	0	MRBM				
IIC	7	14	14	0	I	84	336	336	0
IID	30	60	60	0	II	52	208	208	0
IIIA	23	69	69	0	IV	21	84	84	0
IIIB	3	9	9	0	TOTAL	157	628	628	0
IIIC	35	35	0	35	GRAND				
IIID	60	60	0	60	TOTAL	190	740	737	3
TOTAL	197	323	224	99					

*See Tables 2, 3, and 4 for details. Figures include 3 launch silos at Type IIIA and IIIB ICBM and Type IV IRBM sites, and 4 launch silos at Type IV MRBM sites.

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TABLE 2. SUMMARY EVALUATION OF SOVIET ICBM DEPLOYMENT

Location*	BE Number	Coordinates	Type of Site	Number of Launchers		Site Negated		First Coverage		Latest Coverage		Stage of Const on Last Usable Coverage			Estimated Quarter Site Operational				Estimated Status	
				Soft	Hard	Date	Msn	Date	Msn	Date	Msn	Date	Msn	Const	1st	2nd	3rd	4th		
ALEYSK																				
Site A(1)		52-27N 82-35E	IIIC	1															65	U/C
Site B(2)		52-29N 82-40E	IIIC	1															65	U/C
Site C(3)		52-35N 82-45E	IIIC	1															65	U/C
Site D(4)		52-32N 82-34E	IIIC	1														66	U/C	
Site E(5)		52-35N 82-30E	IIIC	1														66	U/C	
Site F(6)		52-36N 82-36E	IIIC	1														66	U/C	
DOMBAROVSKIY																				
Site A(4)		51-11N 59-37E	IIIC	1															66	U/C
Site B(3)		51-06N 59-38E	IIIC	1															66	U/C
Site C(2)		51-01N 59-41E	IIIC	1															66	U/C
Site D(1)		50-58N 59-32E	IIIC	1															66	U/C
Site E(6)		51-04N 59-28E	IIIC	1															66	U/C
DROVYANAYA																				
Site A(1)		51-25N 113-00E	IIIB	2															63	Operational
Site B(2)		51-25N 113-04E	IIIA		3														64	Operational
Site C(4)		51-28N 113-04E	IID	2															64	Operational
Site D(3)		51-20N 113-01E	IID	2															64	Operational
Site E(5)		51-23N 112-50E	IIIA		3														64	Operational
Site F(6)		51-20N 112-55E	IIIA		3														64	Operational
Group G (7-14)		51-31N 113-04E	IID		10														66	Operational
GLADKAYA																				
Site A(3)		56-20N 92-18E	IID	2															64	Operational
Site B(2)		56-25N 92-27E	IID	2															64	Operational
Site D(5)		56-20N 92-13E	IIIA		3														64	Operational
Group F (7-13)		56-13N 92-13E	IID		10														65	Operational
IMENI GASTELLO																				
Site A(1)		51-03N 66-06E	IIIC	1															66	U/C
Site B(2)		51-06N 66-02E	IIIC	1															66	U/C
Site C(3)		51-10N 66-06E	IIIC	1															66	U/C
Site D(4)		51-07N 66-13E	IIIC	1															66	U/C
Site E(5)		51-13N 66-13E	IIIC	1															66	U/C
Site F(6)		51-13N 66-05E	IIIC	1															66	U/C
ITATKA																				
Site A(1)		56-59N 85-32E	IIIB	2															63	Operational
Site B(2)		57-01N 85-39E	IIIB	2															62	Operational
Site C(3)		56-54N 85-39E	IID	2															63	Operational
KARTALY																				
Site A(1)		53-01N 60-26E	IIIC	1															66	U/C
Site B(2)		52-56N 60-31E	IIIC	1															66	U/C
Site C(3)		52-55N 60-24E	IIIC	1															66	U/C
Site D(4)		52-51N 60-27E	IIIC	1															66	U/C
Site E(5)		53-00N 60-16E	IIIC	1															66	U/C
Site F(6)		53-04N 60-18E	IIIC	1															66	U/C
KOSTROMA																				
Site A(1)		58-02N 41-22E	IIIB	2															62	Operational
Site B(2)		58-02N 41-07E	IIIB	2															62	Operational
Site C(3)		57-59N 41-09E	IIIB	2															62	Operational
Site D(4)		58-05N 41-40E	IIIB	2															63	Operational
Site E(5)		57-58N 41-14E	IIIA		3														63	Operational
Site F(6)		57-58N 41-10E	IID	2															63	Operational
Site G(7)		58-06N 41-32E	IID	2															64	Operational

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73

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TABLE 2. (Continued)

Location*	BE Number	Coordinates	Type of Site	Number of Launchers		Site Negtd		First Coverage		Latest Coverage		Stage of Const on Last Usable Coverage			Estimated Quarter Site Operational				Estimated Status
				Soft	Hard	Date	Msn	Date	Msn	Date	Msn	Date	Msn	Const	1st	2nd	3rd	4th	
KOZELSK																			
Site A(3)		53-54N 35-45E	IIC	2													63		Operational
Site B(2)		53-48N 35-47E	IIC	2													63		Operational
Site D(4)		53-54N 35-51E	IIC	2													63		Operational
Site E(5)		53-51N 35-41E	IIIB		3												64		Operational
Site F(6)		53-41N 35-39E	IIIB		3												64		Operational
NOVOSIBIRSK																			
Site A(2)		55-19N 83-10E	IIB	2													63		Operational
Site B(1)		55-19N 83-02E	IIIA		3												63		Operational
Site C(3)		55-23N 82-54E	IIIA		3												64		Operational
Site D(4)		55-22N 83-14E	IID	2													64		Operational
Site E(5)		55-20N 82-56E	IID	2													64		Operational
OLOVYANNAYA																			
Site A(1)		50-54N 115-48E	IIIA		3												64		Operational
Site B(2)		50-55N 115-45E	IIIA		3												64		U/C
Site C(3)		51-01N 115-58E	IIIA		3												64		U/C
Group D (4-13)		51-04N 116-06E	IIID		10												66		U/C
Group E (14-23)		50-56N 115-59E	IIID		10												66		U/C
OMSK																			
Site A(1)		55-09N 73-38E	IIIB		3												64		Operational
PERM																			
Site A(1)		57-41N 56-11E	IIB	2													62		Operational
Site B(2)		57-44N 55-55E	IIB	2													62		Operational
Site C(3)		57-38N 56-07E	IIB	2													63		Operational
Site D(6)		57-42N 55-47E	IID	2													64		Operational
Site E(5)		57-45N 56-00E	IID	2													64		Operational
Site F(4)		57-41N 56-04E	IIIA		3												64		Operational
Group G Possible		57-43N 56-07E	IIID																U/C
PLESETSK																			
Site 1(1)		62-56N 40-27E	IA	2													60		Operational
Site 2(2)		62-56N 40-32E	IA	1													60		Operational
Site 3(3)		62-58N 40-41E	IA	1													60		Operational
Site A(4)		62-50N 40-47E	IIA	2													60		Operational
Site B(5)		63-03N 40-57E	IIIB	2													62		Operational
Site C(6)		63-01N 40-53E	IIIA		3												63		Operational
Site D(6)		62-54N 40-47E	IIC	2													63		Operational
Site E(7)		62-51N 40-35E	IIC	2													63		Operational
Site F 1/		62-52N 40-44E	IB	2													65		U/C
Site G(9) Probable		62-53N 40-51E	IB	2													65		U/C
Site H(10) Probable		62-53N 40-52E	IB	2													65		U/C
SHADRINSK																			
Site A(1)		56-09N 63-51E	IIIA		3												64		Operational
Site B(2)		56-10N 64-02E	IIIA		3												64		Operational
Site C(3)		56-07N 63-57E	IIIA		3												64		Operational
SVOBODNY																			
Site A(3)		51-55N 128-10E	IIB	2													62		Operational
Site B(1)		51-49N 128-19E	IIB	2													62		Operational
Site C(2)		51-53N 128-23E	IIB	2													64		Operational
Site D(4)		51-58N 128-07E	IID	2													64		Operational
Site E(6)		51-43N 128-00E	IID	2													64		Operational
Site F(5)		51-52N 128-13E	IID	2													64		Operational
Site G(7)		51-38N 127-58E	IIIA		3												64		Operational
Site H(8)		52-03N 128-06E	IID	2													64		Operational

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TABLE 2. (Continued)

Location*	BE Number	Coordinates	Type of Site	Number of Launchers		Site Negated		First Coverage		Latest Coverage		Stage of Const on Last Usable Coverage			Estimated Quarter Site Operational				Estimated Status	
				Soft	Hard	Date	Msn	Date	Msn	Date	Msn	Date	Msn	Const	1st	2nd	3rd	4th		
TATISHCHEVO																				
Group A(1-11)		51-48N 45-39E	IID		10															U/C
Group B(12-21)		51-33N 45-29E	IID		10															U/C
TEYKOVO																				
Site A(1)		56-55N 40-27E	IIB		2															Operational
Site B(2)		56-56N 40-33E	IIB		2															Operational
Site C(3)		56-55N 40-17E	IIB		2															Operational
Site D(4)		56-59N 40-40E	IID		2															Operational
Site E(5)		56-49N 40-10E	IID		2															Operational
Site F(6)		56-55N 40-22E	IID		2															Operational
TYUMEN																				
Site A(3)		56-52N 65-34E	IIC		2															Operational
Site C(2)		56-51N 65-27E	IIC		2															Operational
UZHUR																				
Site A(1)		55-20N 88-43E	IIC		1															U/C
Site B(2)		55-18N 89-38E	IIC		1															U/C
Site C(3)		55-20N 89-33E	IIC		1															U/C
Site D(4)		55-17N 89-26E	IIC		1															U/C
Site E(5)		55-13N 89-33E	IIC		1															U/C
Site F(6)		55-25N 89-39E	IIC		1															U/C
Site G(7) Possible		55-22N 89-27E	IIC																	U/C
Site H(8) Possible		55-19N 89-20E	IIC																	U/C
VERKHNYAYA SALDA																				
Site A(2)		58-09N 60-16E	IIB		2															Operational
Site B(1)		58-06N 60-21E	IIA		2															Operational
Site C(3)		58-10N 60-28E	IIA		2															Operational
Site D(4)		58-12N 60-34E	IIB		2															Operational
Site E(5)		58-14N 60-55E	IIB		2															Operational
Site F(7)		58-14N 60-41E	IIA		3															Operational
Site G(8)		58-13N 60-49E	IIA		3															Operational
Site H(9)		58-05N 60-13E	ID		2															Operational
Site I(10)		58-09N 60-32E	IID		2															Operational
YEDROVO																				
Site A(2)		57-48N 33-36E	IIB		2															Operational
Site B(1)		57-48N 33-14E	IIB		2															Operational
Site C(5)		57-49N 33-08E	IID		2															Operational
Site D(4)		57-48N 33-28E	IID		2															Operational
Site E(8)		57-52N 33-18E	IIA		3															Operational
Site F(6)		57-44N 33-06E	IID		2															Operational
Site G(7)		57-47N 33-02E	IID		2															Operational
Site I(3)		57-52N 33-27E	IIA		3															Operational
YOSHKAR-OLA																				
Site A(1)		56-35N 48-09E	IIB		2															Operational
Site B(2)		56-35N 48-18E	IIB		2															Operational
Site C(3)		56-32N 48-27E	IIB		2															Operational
Site D(4)		56-31N 48-20E	IID		2															Operational
Site E(5)		56-34N 48-13E	IID		2															Operational
Site F(6)		56-36N 48-28E	IID		2															Operational

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TABLE 2. (Continued)

Location*	BE Number	Coordinates	Type of Site	Number of Launchers		Site Negated		First Coverage		Latest Coverage		Stage of Const on Last Usable Coverage			Estimated Quarter Site Operational				Estimated Status		
				Soft	Hard	Date	Msn	Date	Msn	Date	Msn	Date	Msn	Const	1st	2nd	3rd	4th			
YURYA																					
Site A(2)		59-10N 49-32E	IIA	2															61	Operational	
Site B(1)		59-09N 49-40E	IIA	2															61	Operational	
Site C(3)		59-13N 49-25E	IIIB	2														62	62	Operational	
Site D(4)		59-16N 49-22E	IIIB	2																Operational	
Site E(5)		59-23N 49-17E	IIIA		3															Operational	
Site F(7)		59-21N 49-14E	IIIB	2	3															Operational	
Site G(6)		59-04N 49-31E	IIIA																	Operational	
Site H(8)		59-11N 49-47E	IID	2																Operational	
Site I(11)		59-21N 49-25E	IID	2																Operational	
Site J(9)		59-06N 49-45E	IID	2																Operational	
Site K(10)		59-13N 49-18E	IIIA		3															Operational	
ZHANGIZ-TOBE																					
Site A(1)		49-12N 81-00E	IIIC	1																65	U/C
Site B(2)		49-16N 80-59E	IIIC	1																65	U/C
Site C(3)		49-11N 80-54E	IIIC	1																66	U/C
Site D(4)		49-10N 81-04E	IIIC	1																66	U/C
Site E(5)		49-06N 81-03E	IIIC	1																66	U/C
Site F(6)		49-08N 80-58E	IIIC	1																66	U/C
		ployed		197	150	173															
TYURATAM																					
Complex A1(1)		45-55N 63-21E	I	1																	Operational
A2		45-55N 63-21E	I	1																	Operational
A3(15)		45-54N 63-20E	IIIC ^p		1																U/C
Complex B1(2)		46-00N 63-34E	IA ^p	1																	Operational
B2(16)		45-59N 63-33E	IIIC		1																U/C
B3(17)		46-00N 63-34E	II	1																	U/C
Complex C1(3)		45-48N 63-39E	II ^p	1																	Operational
C2		45-48N 63-39E	II	1																	Operational
C3		45-48N 63-39E	II ^p	1																	Operational
Complex D1(4)		45-59N 63-37E	IIIA		3																Operational
D2(9)		45-59N 63-37E	IIIA	1	3																Operational
Complex E1(6)		45-48N 63-12E	IIIC ^p	1																	Operational
E2		45-48N 63-12E	IIIC	1																	Operational
E3		45-48N 63-12E	IIIC	1																	Operational
Complex F(5)		46-02N 63-06E	IIIB ^p		3																Operational
Complex G1/G2(7)		46-03N 62-56E	I	2																	Operational
G3/G4(11)		46-03N 62-56E	I	2																	Operational
G5/G6(12)		46-05N 62-54E	II	2																	Operational
G7(18)		46-04N 62-56E	IIIC ^p		1																U/C
G8/G9(19)		46-04N 62-57E	III		2																U/C
Complex H(8)		45-59N 63-42E	I	2																	Operational
Complex I(14)		45-56N 63-26E	IIIC ^p		1																U/C
Complex J		45-54N 63-84E	Undet																		U/C
Complex K1/K2(3)		46-02N 63-03E	IIIC ^p		2																U/C
K3(20)		46-02N 63-02E	IIID ^p		1																U/C
Total				18	18																

*TDI site designators are indicated in parentheses.

^p / Not considered an operational ICBM site (see 16th Revision).

^p Prototype.

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TABLE 3. SUMMARY EVALUATION OF SOVIET IRBM DEPLOYMENT

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR STATUS
AKTYUBINSK Launch Complex PETROVSKIY		50-00-30N 56-58-00E	IV	3		Complete
BELOMORSK Launch Complex RAMOYE		64-25-45N 34-18-15E	III	4		Complete
FEDOROVKA Launch Complex TRAKTOVYY		53-25-15N 62-23-00E	III	4		Complete
GELLI Launch Complex KAKASHURA		42-38-45N 47-27-00E	IV	3		Complete
GELLI		42-26-30N 47-28-30E	IV	3		Complete
PARAUL		42-47-30N 47-23-00E	IV	3		Complete
GRANOV Launch Complex GRANOV 1		48-56-15N 29-30-15E	III	4		Complete
GRANOV 2		48-50-00N 29-28-45E	IV	3		Complete
KALNIK		48-59-30N 29-21-45E	IV	3		Complete
KROLEVETS Launch Complex KROLEVETS 1		51-36-45N 33-29-30E	III	4		Complete
KROLEVETS 2		51-40-45N 33-31-15E	III	4		Complete
BEREZA		51-43-45N 33-43-45E	III	2		Complete
LEBEDIN Launch Complex LEBEDIN 1		50-33-00N 34-25-45E	III	4		Complete
LEBEDIN 2		50-35-45N 34-24-30E	III	4		Complete
LEBEDIN 2		50-38-00N 34-27-30E	III	4		Complete
NIGRANDE Launch Complex NIGRANDE		56-31-00N 22-02-15E	III	4		Complete
SKRUNDA		56-35-30N 21-49-15E	IV	3		Complete
VAINODE		56-28-30N 21-50-15E	IV	3		Complete
NOVOSYSOYEVKA Launch Complex NOVOSYSOYEVKA 1		44-11-45N 133-26-15E	III	4		Complete
NOVOSYSOYEVKA 2		44-07-15N 133-28-30E	IV	3		Complete
PERVOMAYSK Launch Complex KAMENNYI MOST		47-58-00N 30-53-15E	IV	3		Complete
SEMENOVKA 1		47-58-45N 30-59-00E	IV	3		Complete
SEMENOVKA 2		47-53-30N 30-58-45E	IV	3		Complete

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TABLE 3. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR STATUS
SARY OZEK Launch Complex		44-32-00N 77-46-15E	III	4		Complete
KARA BABAU 1		44-31-00N 77-58-45E	IV	3		Complete
KARA BABAU 2		44-30-15N 77-41-15E	IV	3		Complete
KARA BABAU 3						
SMORGON Launch Complex						
SMORGON 1		54-31-45N 26-17-30E	III	4		Complete
SMORGON 2		54-26-00N 26-18-30E	IV	3		Complete
SMORGON 3		54-36-15N 26-22-30E	III	4		Complete
TAYBOLA Launch Complex						
TAYBOLA 1	68-28-00N 33-15-30E	IV	3	Complete		
TAYBOLA 2	68-30-30N 33-23-15E	IV	3	Complete		
TAYBOLA 3	68-26-00N 33-29-15E	IV	3	Undetermined		
ZHURAVKA Launch Complex						
ZHURAVKA	54-36-30N 76-39-45E	III	4	Complete		

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

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78

TABLE 4. SUMMARY EVALUATION OF SOVIET MRBM DEPLOYMENT

LOCATION*	BF NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR STATUS
AKHTYRKA Launch Complex						
AKHTYRKA 1		50-16-00N 34-50-15E	II	4		Complete
AKHTYRKA 2		50-22-00N 34-57-00E	II	4		Complete
ALUKSNE Launch Complex						
LEJASCIEMS 1		57-21-00N 26-44-45E	II	4		Complete
RUSKI		57-25-15N 26-50-00E	II	4		Complete
LEJASCIEMS 2		57-13-00N 26-33-30E	IV	1		Complete
ANASTASYEVKA Launch Complex						
ANASTASYEVKA 1		48-34-15N 135-37-45E	II	4		Complete
ANASTASYEVKA 2		48-35-45N 135-41-00E	II	4		Complete
BALTA Launch Complex						
BALTA 1		48-01-45N 29-34-00E	II	4		Complete
BALTA 2		48-07-00N 29-34-30E	II	4		Complete
BARANO-ORENBURGSKOYE Launch Complex						
SOFIYE ALEKSEYEVSKOYE		44-16-15N 131-22-30E	I	4		Complete
BARANO-ORENBURGSKOYE		44-19-45N 131-30-45E	I	4		Complete
BELOKOROVICHI Launch Complex						
OLEVSK 1		51-08-45N 28-03-15E	I	4		Complete
OLEVSK 2		51-10-30N 27-59-30E	I	4		Complete
RUDNYA ZLOTINSKAYA		51-03-30N 28-07-30E	IV	4		Complete
BORSHCHEV Launch Complex						
SKALA PODOLSKAYA 1		48-51-00N 26-08-30E	I	4		Complete
SKALA PODOLSKAYA 2		48-52-45N 26-03-30E	I	4		Complete
BREST Launch Complex						
BREST 1		51-48-45N 24-00-45E	II	4		Complete
BREST 2		51-51-45N 24-01-45E	II	4		Complete
BRODY Launch Complex						
BRODY 1		50-06-00N 25-12-15E	IV	4		Complete
BRODY 2		50-12-46N 25-05-00E	I	4		Complete
BERESTECHKO		50-20-00N 25-05-30E	I	4		Complete
BYKHOV Launch Complex						
SLEDYUKI		53-41-30N 30-20-30E	II	4		Complete
DERAZHNYA Launch Complex						
DERAZHNYA 1		49-21-00N 27-26-30E	II	4		Complete
DERAZHNYA 2		49-26-15N 27-29-00E	II	4		Complete
KHMELNITSKIY		49-24-45N 27-08-45E	IV	4		Complete

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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR STATUS
DISNA Launch Complex						
DISNA		55-35-15N 28-16-00E	I	4		Complete
ZELKI		55-35-45N 28-24-30E	I	4		Complete
BORKOVICHI		55-41-45N 28-27-00E	II	4		Complete
DOLINA Launch Complex						
DOLINA 1		49-03-30N 24-03-30E	I	4		Complete
DOLINA 2		49-06-15N 24-08-30E	I	4		Complete
BOLEKHOV		49-06-45N 23-51-15E	IV	4		Complete
DROGOBYCH Launch Complex						
MEDENITSA		49-22-15N 23-45-30E	I	4		Complete
DROGOBYCH		49-25-30N 23-34-45E	I	4		Complete
STRYY		49-16-45N 23-43-00E	IV	4		Complete
DYATLOVO Launch Complex						
DYATLOVO		53-32-45N 25-16-45E	I	4		Complete
BEREZOVKA		53-35-30N 25-17-30E	I	4		Complete
ZBLYANY		53-35-45N 25-27-30E	II	4		Complete
GOMEL Launch Complex						
BORKHOV 1		52-18-30N 30-42-45E	II	4		Complete
BORKHOV 2		52-24-45N 30-39-00E	II	4		Complete
GRESK Launch Complex						
GRESK 1		53-14-15N 27-42-30E	I	4		Complete
GRESK 2		53-17-00N 27-40-45E	I	4		Complete
URECHYE		53-11-00N 27-58-30E	II	4		Complete
GROZNYI Launch Complex						
SUNZHENSKOYE		43-08-15N 44-54-15E	I	4		Complete
NESTEROVSKAYA		43-11-30N 44-57-00E	I	4		Complete
ACHKHUY-MARTAN		43-10-30N 45-10-30E	IV	4		Complete
GUSEV Launch Complex						
GUSEV 1		54-41-30N 22-05-00E	I	4		Complete
GUSEV 2		54-44-00N 22-03-30E	I	4		Complete
GVARDEYSK Launch Complex						
GVARDEYSK 1		54-40-30N 21-07-30E	I	4		Complete
GVARDEYSK 2		54-45-15N 21-09-15E	I	4		Complete
JELGAVA Launch Complex						
IECAVA 1		56-35-30N 24-04-00E	II	4		Complete
IECAVA 2		56-39-45N 24-07-30E	II	4		Complete
IECAVA 3		56-33-00N 24-20-30E	IV	4		Complete

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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR STATUS	
JONAVA Launch Complex							
KARMEJAVA		54-57-15N 24-05-45E	II	4		Complete	
JONAVA		55-01-00N 24-14-15E	II	4		Complete	
KAMENETS-PODOLSKIY Launch Complex							
KAMENETS-PODOLSKIY		48-51-15N 26-42-30E	II	4		Complete	
DUNAYEVTSY		48-55-15N 26-59-00E	II	4		Complete	
KIVERTSY Launch Complex							
KIVERTSY 1		50-53-15N 25-31-00E	I	4		Complete	
KIVERTSY 2		50-56-00N 25-36-15E	I	4		Complete	
TROSTYANETS		50-58-30N 25-39-30E	II	4		Complete	
KONKOVICHI Launch Complex							
PETRIKOV		52-10-30N 28-34-45E	I	4		Complete	
KONKOVICHI		52-15-30N 28-37-45E	I	4		Complete	
KOROSTEN Launch Complex							
KOROSTEN 1		50-51-45N 28-18-15E	II	4		Complete	
KOROSTEN 2		50-52-15N 28-31-00E	II	4		Complete	
KOZHANOVICHI Launch Complex							
KOZHANOVICHI 1		52-10-15N 27-51-30E	I	4		Complete	
KOZHANOVICHI 2		52-11-30N 27-48-00E	I	4		Complete	
KRASKINO Launch Complex							
KRASKINO	42-44-00N 130-40-15E	II	4	Complete			
KRASNOZAMENSK Launch Complex							
VIESVILLE	55-01-30N 22-23-00E	I	4	Complete			
RAGNIT	55-01-15N 22-11-15E	I	4	Complete			
KREMOVO Launch Complex							
KREMOVO	44-01-24N 132-20-39E	I	4	Complete			
LYALICHI	44-02-30N 132-26-26E	I	4	Complete			
KURGANCHA Launch Complex							
KURGANCHA 1	39-37-45N 65-57-30E	I	4	Complete			
KURGANCHA 2	39-37-30N 65-57-00E	I	4	Complete			
TYM	39-35-15N 65-42-45E	IV	4	Complete			
LIDA Launch Complex							
LIDA 1	53-47-30N 25-20-30E	I	4	Complete			
LIDA 2	53-57-15N 25-27-45E	I	4	Complete			

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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR STATUS
LUTSK Launch Complex						
LUTSK 1		50-46-45N 25-03-00E	I	4		Complete
LUTSK 2		50-50-30N 25-04-15E	I	4		Complete
VLADIMIR-VOLYNSKIY		50-48-30N 24-42-30E	IV	4		Complete
MARINA GORKA Launch Complex						
MARINA GORKA		53-26-30N 27-45-30E	II	4		Complete
MAYKOP Launch Complex						
KURDZHIPSKAYA		44-31-45N 40-00-45E	II	4		Complete
SHIRVANSKAYA		44-25-30N 39-54-00E	IV	4		Complete
MOLOSKOVITSY Launch Complex						
MOLOSKOVITSY 1		59-28-45N 29-06-00E	II	4		Complete
MOLOSKOVITSY 2		59-29-30N 29-12-15E	II	4		Complete
GURLEVO		59-25-00N 28-53-15E	IV	4		Complete
MUKACHEVO Launch Complex						
MUKACHEVO 1		48-18-45N 22-30-45E	I	4		Complete
MUKACHEVO 2		48-19-30N 22-37-15E	I	4		Complete
NADVORNAYA Launch Complex						
PARYSHCHE		48-37-45N 24-42-00E	I	4		Complete
NOVA VES		48-39-30N 24-48-15E	I	4		Complete
OTYNYA		48-47-30N 24-50-30E	IV	4		Complete
OSTROG Launch Complex						
OSTROG 1		50-14-00N 26-43-15E	I	4		Complete
OSTROG 2		50-17-15N 26-41-00E	I	4		Complete
OSTROV Launch Complex						
ASANOVSHCHINA		57-31-45N 28-12-15E	I	4		Complete
SHEVELEVO		57-37-00N 28-12-15E	I	4		Complete
REDKINO		57-24-30N 28-26-00E	IV	4		Complete
PAPLAKA Launch Complex						
PAPLAKA 1		56-24-00N 21-17-30E	I	4		Complete
PAPLAKA 2		56-25-00N 21-16-45E	I	4		Complete
PINSK Launch Complex						
IVANOVO		52-10-45N 25-41-15E	I	4		Complete
MOTOL		52-12-30N 25-44-30E	I	4		Complete

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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR STATUS	
POLOTSK Launch Complex							
POLOTSK 1		55-22-30N 28-44-30E	II	4		Complete	
POLOTSK 2		55-24-15N 28-33-45E	II	4		Complete	
POSTAVY Launch Complex							
POSTAVY 1		55-09-45N 26-53-45E	II	4		Complete	
KOZYANY		55-20-30N 26-51-30E	II	4		Complete	
POSTAVY 2		55-06-15N 27-00-15E	IV	4		Complete	
PRUZHANY Launch Complex							
PRUZHANY 1		52-30-30N 24-08-45E	II	4		Complete	
PRUZHANY 2		52-33-30N 24-06-15E	II	4		Complete	
RAKVERE Launch Complex							
SIMUNA		59-08-45N 26-26-45E	II	4		Complete	
VAIKE MAARJA		59-11-15N 26-20-45E	II	4		Complete	
RISTI Launch Complex							
RISTI 1		59-04-00N 24-04-30E	I	4		Complete	
RISTI 2		59-07-45N 24-06-45E	I	4		Complete	
RUZHANY Launch Complex							
KRUPA 1		52-47-45N 24-42-30E	II	4		Complete	
KRUPA 2	52-49-15N 24-45-30E	II	4	Complete			
SATEIKIAI Launch Complex							
SALANTAI 1	55-59-45N 21-38-15E	I	4	Complete			
SALANTAI 2	56-02-15N 21-41-30E	I	4	Complete			
ZEMAICIU KALVARIJA	56-01-45N 21-54-30E	IV	4	Complete			
SIMFEROPOL Launch Complex							
MAZANKA	44-53-45N 34-20-00E	I	4	Complete			
VALKI	44-57-00N 34-26-00E	I	4	Complete			
SLOXIM Launch Complex							
BYTEN 1	52-52-30N 25-21-30E	I	4	Complete			
BYTEN 2	52-55-45N 25-22-15E	I	4	Complete			
SOKAL Launch Complex							
SOKAL 1	50-22-45N 24-18-15E	I	4	Complete			
SOKAL 2	50-27-15N 24-20-00E	I	4	Complete			
SOKAL 3	50-20-15N 24-26-15E	IV	4	Complete			

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TOP SECRET

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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR STATUS	
SOVETSK Launch Complex	[REDACTED]	54-59-15N 21-36-30E	I	4	[REDACTED]	Complete	
SLAVSK 1		54-59-45N 21-28-30E	I	4		Complete	
SLAVSK 2							
SUCHAN Launch Complex							
NOVITSKOYE		43-01-45N 133-17-00E	I	4		Complete	
SEVERNYY SUCHAN		43-10-00N 133-20-05E	I	4		Complete	
TAURAGE Launch Complex							
TAURAGE 1		55-10-15N 22-20-30E	I	4		Complete	
TAURAGE 3		55-05-00N 22-20-00E	I	4		Complete	
TORVA Launch Complex							
TORVA 1		57-56-00N 26-04-00E	I	4		Complete	
TORVA 2		57-59-15N 26-05-00E	I	4		Complete	
TSIRGULHNA		57-49-45N 26-12-30E	IV	4		Complete	
UGOLNYY Launch Complex							
UGOLNYY		64-47-32N 177-56-15E	II	4		Complete	
UKMERGE Launch Complex							
VEPRIAI		55-07-45N 24-38-30E	I	4		Complete	
UKMERGE		55-11-00N 24-42-30E	I	4		Complete	
UMAN Launch Complex							
MOLODETSKOYE		48-53-45N 30-27-45E	I	4		Complete	
MANKOVKA	48-57-45N 30-23-45E	I	4	Complete			
KISHENTSY	49-00-15N 30-13-45E	IV	4	Complete			
USOVO Launch Complex							
OVRUCH 1	51-17-15N 28-16-15E	I	4	Complete			
OVRUCH 2	51-18-30N 28-10-30E	I	4	Complete			
LIPNIKI	51-12-15N 28-26-30E	II	4	Complete			
UZHGOROD Launch Complex							
UZHGOROD	48-33-30N 22-13-15E	II	4	Complete			
VORU Launch Complex							
VORU 1	57-46-00N 26-47-15E	II	4	Complete			
VORU 2	57-49-00N 26-50-30E	II	4	Complete			
VSELYUB Launch Complex							
VSELYUB 1	53-45-45N 25-43-00E	I	4	Complete			
VSELYUB 2	53-48-00N 25-46-45E	I	4	Complete			

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TABLE 4. (Continued)

LOCATION*	BE NUMBER	COORDINATES	TYPE	NO OF PADS/ LAUNCHERS	DATE OF LATEST PHOTOGRAPHY	ESTIMATED CONSTR STATUS	
YELSK Launch Complex	[REDACTED]	51-42-30N 29-12-30E	I	4	[REDACTED]	Complete	
YELSK 1		51-47-15N 29-18-15E	I	4		Complete	
YELSK 2							
ZAGARE Launch Complex							
ZAGARE 1		56-23-15N 23-19-15E	I	4		Complete	
ZAGARE 2		56-29-00N 23-20-45E	I	4		Complete	
LIELELEJA		56-24-30N 23-36-45E	IV	4		Complete	
ZHITOMIR Launch Complex							
ZHITOMIR 1		50-04-45N 28-15-45E	II	4		Complete	
ZHITOMIR 2		50-10-00N 28-16-15E	II	4		Complete	
BERDICHEV		50-05-30N 28-22-00E	II	4		Complete	
ZHMERINKA Launch Complex							
GNIVAN		49-09-00N 28-11-45E	II	4		Complete	
ZHMERINKA		49-10-15N 28-05-00E	II	4		Complete	
VINNITSA		49-17-30N 28-20-15E	IV	4		Complete	
ZNAMENSK Launch Complex							
ZNAMENSK 1		54-32-45N 21-11-15E	I	4		Complete	
ZNAMENSK 2		54-35-15N 21-07-30E	I	4		Complete	

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

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Table 5. 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		First Coverage		Latest Coverage		Stage of Construction on Last Usable Coverage	
				Soft	Hard	Date	Msn	Date	Msn	Date	Msn	Date	Msn
Complex A													
Launch Site 1A1		48-42N 46-15E	R&D	1	--								Complete
Launch Site 1A2			R&D/Trng	1	--								Complete
Launch Site 2A1			R&D	--	1								Complete
Launch Site 2A2			R&D	--	1								Inactive
Complex C													
Launch Site 1C1		48-36N 46-17E	Space R&D*	1	--								Complete
Launch Site 1C2			Undet	1	--								Late
Launch Site 1C3			Undet	1	--								Late
Launch Area 2C		48-35N 46-17E	R&D/Trng	2	--								Complete
Launch Area 3C		48-34N 46-17E	R&D/Trng	1	--								Complete
Launch Site 4C1		48-34N 46-17E	Type IV	--	4								Complete, under-going modification
			MRBM _p										Complete
Launch Site 4C2		48-33N 46-17E	Type IV	--	3								Complete
			IRBM _p										Complete
Launch Site 5C1		48-32N 46-17E	Undet	2	--								Complete
Launch Site 5C2		48-32N 46-17E	--	2	--								Never completed, abandoned
Complex E		48-46N 46-18E	Undet	1	--								Complete
Complex G		48-24N 46-17E	Trng	2	--								Complete
Complex H		48-48N 46-20E	Undet	2	--								Mid

*R&D/Trng site on first coverage
_p Prototype

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TABLE 6. SUMMARY EVALUATION OF SOVIET FIXED FIELD SITES (SSM FIXED FIELD POSITIONS)

LOCATION*	BE NUMBER	COORDINATES	NEGATION DATE	FIRST OBSERVED	NO OF LAUNCH POSITIONS
AKHTYRKA Akhtyrka		50-19-30N 34-51-30E			4
ALUKSNE Lejasciems		57-15-15N 26-41-15E			4
ANASTASYEVKA Anastasyevka		48-32-15N 135-31-45E			4
BELOKOROVICHI Rudnya Zlotinskaya		51-08-30N 27-59-45E			4
BREST Pishcha		51-35-15N 23-46-45E			4
Zamshany		51-50-05N 24-02-05E			4
BRODY Yazlovchik		50-05-45N 25-02-00E			4
Stanislavchik		50-07-00N 24-56-30E			4
DERAZHNYA Khmelnitskiy		49-25-00N 27-06-30E			2
Letichev 1		49-22-45N 27-43-45E			4
Letichev 2		49-25-15N 27-45-00E			2
DISNA Dernovichi		55-47-45N 28-20-00E			4
DOLINA Berezhnitsa		49-12-45N 23-57-30E			4
Rukuv		48-58-21N 24-05-35E			4
DYATLOVO Ruda		53-23-15N 25-10-30E			4
Yavorskaya 1		53-23-15N 25-12-45E			5
Ruda		53-23-15N 25-13-30E			4
Yavorskaya 2					
Ruda					
Yavorskaya 3					
GOMEL Gomel		52-20-45N 30-51-30E			4
GUSEV Tolminkemsk		54-22-15N 22-20-15E			4

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TABLE 6. (Continued)

LOCATION*	BE NUMBER	COORDINATES	NEGATION DATE	FIRST OBSERVED	NO OF LAUNCH POSITIONS
GVARDEYSK Geroyskoye Vysokoye		54-45-45N 21-25-15E 54-44-30N 21-33-45E			2 4
JELGAVA Jelgava 1 Jelgava 2		56-38-45N 23-52-45E 56-44-15N 23-55-15E			2 4
JONAVA Kaisiadorys		54-59-30N 24-29-00E			4
KAMENETS-PODOLSKIY Yarmolinty		49-12-00N 26-46-45E			4
KIVERTSY Kivertsy		50-50-00N 25-25-00E			4
KONKOVICHI Novoselki 1 Novoselki 2		52-23-00N 28-42-45E 52-25-45N 28-41-00E			4 4
KOROSTEN Litki 1 Yemilchino 1 Yemilchino 2 Litki 2		51-01-30N 28-27-45E 50-52-30N 27-53-00E 50-52-00N 27-53-00E 51-01-15N 28-24-15E			4 4 4 2
KRASNOZNAMENSK Krasnoznamensk Sudargas		54-57-30N 22-35-00E 55-00-30N 22-35-00E			4 4
KREMOVO Manzovka		44-12-00N 132-34-00E			4
LIDA Vasilishki		53-44-00N 24-56-15E			4
LUTSK Gorokhov		50-35-45N 24-48-45E			4
MARINA GORKA Shotsk		53-27-45N 27-48-00E			4
MAYKOP Tulskaya Maykop		49-31-15N 40-14-15E 44-32-30N 39-57-45E			4 4

TABLE 6. (Continued)

LOCATION*	BE NUMBER	COORDINATES	NEGATION DATE	FIRST OBSERVED	NO OF LAUNCH POSITIONS
NADVORNAYA Ivanovtsy		48-38-00N 24-54-15E			4
OSTROG Slavuta Shepetovka		50-16-45N 26-57-45E 50-12-30N 26-59-00E			2 4
OSTROV Shabany		57-23-45N 28-13-15E			4
PINSK Lychkovtsy		52-15-00N 25-21-45E			4
POLOTSK Plissa 1 Plissa 2		55-12-30N 28-01-45E 55-11-30N 27-54-45E			3 4
POSTAVY Sivtsy Bogatoye Kobylnik		55-09-30N 26-53-45E 54-57-15N 26-28-45E 54-56-30N 26-37-15E			1 4 4
PRUZHANY Strigovo Shcherby		53-23-15N 24-14-30E 52-23-00N 24-10-00E			4 4
RUZHANY Shchitno 1 Shchitno 2		52-43-15N 24-58-15E 52-41-00N 24-57-30E			4 4
SATEIKIAI Telsiai Aisedziai		55-56-45N 22-07-00E 56-00-15N 22-06-00E			4 4
SLONIM Byten		52-54-30N 25-22-00E			2
SMORGON Smorgon		54-34-45N 26-21-30E			2
TAURAGE Skauvile Taurage		55-23-00N 22-31-00E 55-10-00N 22-14-30E			4 2

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TOP SECRET

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TABLE 6. (Continued)

LOCATION*	BE NUMBER	COORDINATES	NEGATION DATE	FIRST OBSERVED	NO OF LAUNCH POSITIONS
TORVA Valga	[REDACTED]	57-50-15N 25-54-15E	[REDACTED]	[REDACTED]	4
UKMERGE Gelvonai Balninkai		55-07-15N 24-43-45E 55-13-00N 25-02-00E			4 4
USOVO Luginy		51-08-00N 28-23-00E			4
YELSK Yelsk		51-50-45N 29-05-15E			4
ZAGARE Dobele 1 Dobele 2		56-40-00N 23-11-45E 56-40-45N 23-06-45E			4 4
ZHITOMIR Berdichev		49-51-30N 28-25-30E			2
ZHMERINKA Vinnitsa Bar		49-13-15N 28-18-45E 49-05-30N 27-43-00E			4 4
ZNAMENSK Pravdinsk Domnovo		54-23-00N 20-59-45E 54-25-30N 20-53-00E			3 4

*TDI site designators have been adopted for the fixed field sites, which are listed under the nearest permanent IRBM/MRBM complex.

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TABLE 7. COMPOSITION OF IRBM/MRBM COMPLEXES

No of Complexes	Containing Soft Sites Only				Containing Hard Sites Only			Containing Hard and Soft Sites			
	One Site, No Housing or Support Facility	One Site	Two Sites	Three Sites	One Site	Two Sites	Three Sites	Two Soft One Hard Site	One Soft One Hard Site	One Soft Two Hard Sites	
IRBM	3			2				1	1	3	
	2				1		3				
	5										
	4										
MRBM	4										
	43	1	36	6							
	21							20	1		
TOTALS	82	7	1	36	8	1	0	3	21	2	3

TOP SECRET

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Table 8. Soviet ICBM, IRBM, and MRBM Systems, Estimated Technical Characteristics and Performance

	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10 <u>1</u> /
Initial operational capability (IOC)							
Nominal maximum range <u>2</u> / (NRE, non-rotating earth)	1,020 nm	2,200 nm	6,000 nm	6,000 nm	6,000 nm	6,000 nm	Undetermined
Guidance	Inertial	Inertial	Radio inertial	Inertial	Radio inertial	Radio inertial	Undetermined
Circular error probability (CEP)							
Initial	1.25 nm	1.0 nm	2.0 nm	1-2 nm	1.0 nm	0.5-1.0 nm	Undetermined
Improved/year	--	--	--	1.0/1966	0.8/1967	0.5/1968-1970	Undetermined
Re-entry vehicle weight (lbs)	3,200, ± 500	2,500-4,000	8,000, ± 1,000	3,000-4,000 <u>4</u> /	2,500-4,000	10,000, ± 1,000	Undetermined
Warhead weight (lbs)	2,000, ± 300	2,000-3,200	6,000, ± 1,000	2,400-3,200	2,000-3,200	8,000, ± 1,000	Undetermined
Gross lift-off weight (lbs)	88,000 (approx)	200,000 (approx)	500,000 (approx)	300,000 (approx)	165,000 (approx)	400,000 (approx)	Undetermined
Configuration	Single-stage	Single-stage	Parallel	Tandem 2-stage	Tandem 2-stage	Tandem 2-stage	Undetermined
Propellant	Storable liquid	Storable liquid	Non-storable liquid	Storable liquid	Non-storable liquid	Storable liquid	Undetermined
Reliability rates: <u>5</u> /							
Ready-missile Countdown	80%	80%	80%	80%	80%	80%	Undetermined
Initial	90%	85%	85%	85%	85%	80%	Undetermined
Improved/year	--	--	--	--	--	85%/1967	Undetermined
Inflight							
Initial	85%	90%	85%	90%	90%	85%	Undetermined
Improved/year	--	--	--	--	--	90%/1967	Undetermined
Overall							
Initial	60% (soft) 65% (hard)	60% (soft) 65% (hard)	60%	60%	60%	55%	Undetermined
Improved/year	--	--	--	--	--	60%/1967	Undetermined

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Table 8. (Continued)

	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10 <u>1/</u>
Reaction time from ready condition: <u>6/</u>							
Condition 3	1-3 hrs	1-3 hrs	12 hrs (minimum)	1-3 hrs	1-3 hrs	1-3 hrs	Undetermined
Condition 2	15-30 min	15-30 min	1-2 hrs	15-30 min	30-45 min	15-30 min	Undetermined
Condition 1	5-15 min	5-15 min	5-15 min	5-15 min	5-15 min	5-15 min	Undetermined
Hold time in ready condition <u>1 7/</u>	hrs-days	hrs-days	1 hr	hrs (soft) - days (hard)	1 hr (approx)	hrs (soft) - days (hard)	Undetermined
Refire time <u>8/</u>	2-4 hrs	2-4 hrs	12 hrs (minimum)	2-4 hrs	2-4 hrs	2-4 hrs	Undetermined

1/ The evidence is insufficient to enable us to make an estimate of SS-10 characteristics and performance.

2/ Operational range is dependent on weight class of payload used.

3/ It is believed that the SS-9 has an additional all-inertial guidance capability with a CEP of 1-1.5 nm.

4/ More than one re-entry vehicle exists within these limits. Another, weighing as much as approx. 5,000 lbs (warhead 4,000 lbs) has been tested to a reduced range (4,700 nm).

5/ These reliability rates may be too high since they may not sufficiently take into account the effect of Soviet operational methods and troop training, which are at least as important as technical characteristics in determining system reliability. We have little basis for estimating these effects.

6/ Readiness Condition 3 is believed to be the normal readiness condition for missiles deployed at soft sites, and Condition 2 for hard sites.

7/ An unfavorable environment could seriously degrade these hold times. Because of the protection afforded a missile in a hardened site, it is given a longer hold time than its soft counterpart. We believe the cryogenic properties of non-storable propellants probably limit these missiles to a hold time of about 1 hour.

8/ Refire capabilities are applicable to soft sites only. Estimated refire times are based on the assumption that the launch sites were designed specifically for an efficient refire capability and that no major refurbishment of ground support equipment or launch stand is necessary.

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