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PIC/JR-1015/61
April 1961

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JOINT PHOTOGRAPHIC INTELLIGENCE REPORT

PROBABLE AERODYNAMIC MISSILE FACILITIES

KAPUSTIN YAR/VLADIMIROVKA MISSILE TEST CENTER

USSR

ARMY NAVY CIA

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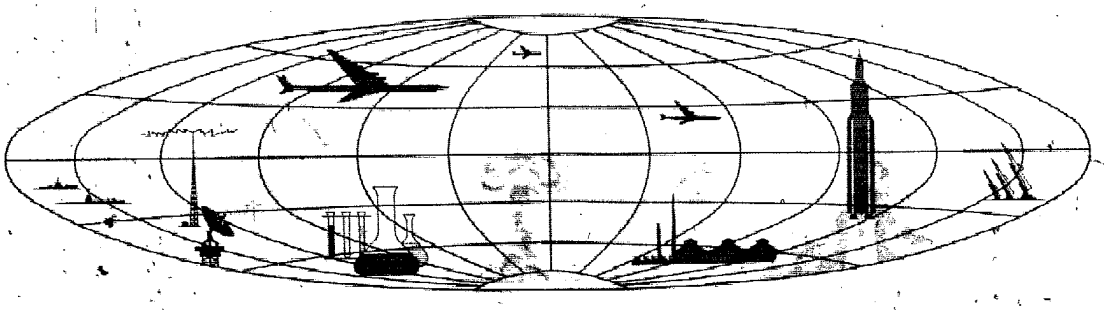

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PREFACE

This joint photographic intelligence report has been prepared by the Army, Navy, and Central Intelligence Agency as a partial answer to a general requirement for a detailed analysis of the Kapustin Yar/Vladimirovka Missile Test Center. It combines the [redacted] photography in presenting a detailed photo analysis of the Probable Aerodynamic Missile Facilities at the Kapustin Yar/Vladimirovka Missile Test Center. A similar analysis of the Surface-to-Air Missile Facilities has already been published in PIC/JR-1008/61, and Launch Complex "E" and Troop Training Launch Complex "G" of the Surface-to-Surface Missile Facilities have been reported, respectively, in PIC/JR-1005/61 and PIC/JR-1006/61. Analysis is continuing on other complexes and facilities in the Missile Test Center.

25X1D

This report presents a comparative analysis of the [redacted] 25X1D

25X1D [redacted] photography, and the line drawings portray in green all changes and additions subsequent to the [redacted] coverage. All reported azimuths are referenced from True North, and the term miles in the text refers to nautical miles. A table on page 28 provides geographic coordinates of the major areas within the Probable Aerodynamic Missile Facilities.

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FIGURE 1. GENERAL ORIENTATION MAP.

SUMMARY

25X1D

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25X1D

Photography of [redacted] revealed a major construction program under way at the Vladimirovka rangehead of the Kapustin Yar/Vladimirovka Missile Test Center. This expansion program, which included a launch complex and a missile fabrication complex, constituted the Probable Aerodynamic Missile Facilities. Photography of [redacted] supplies additional coverage of the Vladimirovka rangehead, and thereby, forms the basis for a comparative study of the Probable Aerodynamic Missile Facilities and their development over a two-year period.

The launch complex, designated Launch Complex "D", includes a launch area, a network of guidance and/or instrumentation, a support area, and an assembly and checkout area. The Missile Fabrication Complex includes a laboratory and administrative area, a fabrication area, and a support area. No major communications site has been identified at the Vladimirovka rangehead.

[redacted] the Launch area was under construction, and consisted of two contiguous launch sites positioned at the terminus of a branch rail line from Vladimirovka. Launch Site 1D was nearly complete, whereas construction had just begun on Launch Site 2D. The network of guidance and/or instrumentation included a range control center, a radar facility, and a rear "L" pattern of instrumentation, all of which were operative and were probably engaged in preliminary operations at the complex. A forward "L" pattern of guidance and/or instrumentation was in late stages of construction, and therefore, was not fully operative at that time. The Assembly and Checkout Area was still under construction, being about 30 percent complete. The Missile Fabrication Complex was in late stages of construction and featured a large fabrication building and two machine shops.

[redacted] the Launch Area had been expanded to include a third and fourth launch site, Sites 3D and 4D. Launch Site 3D, constructed during the intervening two-year period, was operative, and its support facilities were being expanded. Launch Site 4D, which will have the largest pad at the Test Center, was under construction, and approximately 50 percent complete. Construction at Launch Site 1D had been completed. Initial construction plans at Site 2D, however, were apparently abandoned, and instead, a smaller launch facility was constructed. The network of guidance and/or instrumentation had been expanded to include a linear pattern of instrumentation, probably associated with Launch Site 3D, and construction of the Forward "L" Pattern had been completed. The Assembly and Checkout Area had also been finished, and it appeared very sim-

ilar to a facility at Tyura Tam. The Missile Fabrication Complex was undergoing expansion, including the addition of a second large fabrication building and other supporting structures.

Analysis of these facilities strongly indicates that the Soviets have an extensive and expanding research program at the Vladimirovka rangehead for developing surface-launched, large aerodynamic missiles. This program was initiated prior to the [redacted] coverage, but actual firings probably did not take place until sometime in [redacted] These first firings were probably initiated at Launch Site 1D which appears to handle a liquid-propellant-boosted, large aerodynamic missile. The Assembly and Checkout Area is probably the handling facility for the liquid propellant booster. Launch Site 2D was probably the second site to become operative. However, Site 2D appears to handle a much smaller vehicle than that associated with Site 1D. Launch Site 3D, which was the third site to become operative, apparently handles a solid-propellant-boosted, large aerodynamic missile. An explosives storage and handling facility at this site should be adequate to handle the solid propellant boosters. The Fabrication Complex, probably associated with Complex "D", could be fabricating the prototype aerodynamic vehicle and/or vehicles which are flight tested at the Launch Area.

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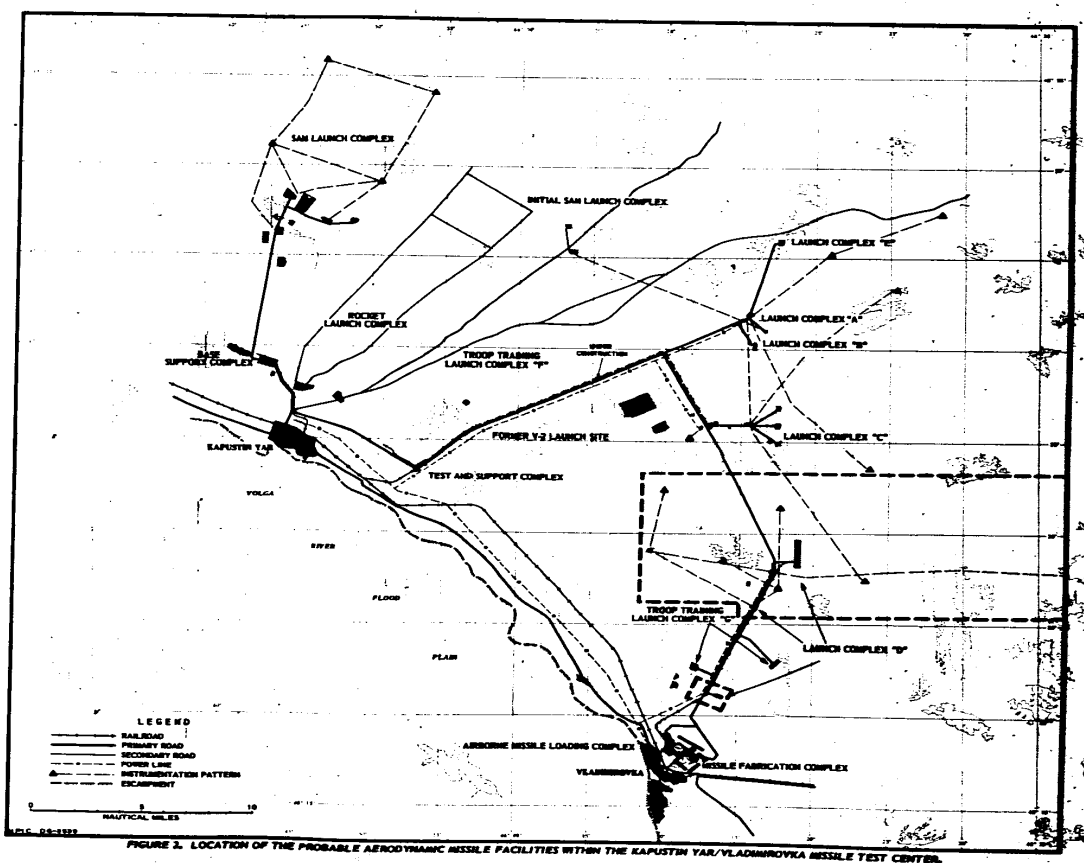

FIGURE 2. LOCATION OF THE PROBABLE AERODYNAMIC MISSILE FACILITIES WITHIN THE KAPUSTIN YAR/VLADIMIROVKA MISSILE TEST CENTER.

INTRODUCTION

The Probable Aerodynamic Missile Facilities constitute a large portion of the Kapustin Yar/Vladimirovka Missile Test Center which is located about 60 miles southeast of Stalingrad along the Volga River Flood Plain (see Figure 1). These facilities may occupy a unique position in the family of known Soviet missile test facilities, for they can be distinguished from all other test facilities by certain distinctive physical characteristics and operational requirements. Indeed, these facilities strongly suggest that the Soviets are concerned with the development of large aerodynamic-type missiles.

The facilities occupy a 675-square mile area in the southern portion of the Center and have been grouped in two functional units, a launch complex, designated Launch Complex "D", and a missile fabrication complex (see Figures 2 and 3). The Vladimirovka Support Base, which historically has been associated with Soviet Air Force activities, as contrasted with Soviet Artillery activities at Kapustin Yar, provides second- and third-echelon support, and is probably the headquarters for over-all operational control of this program as well as the airborne weapons program.

The Vladimirovka Support Base, like the one at Kapustin Yar, is situated along the Stalingrad/Astrakhan railroad, and an all-weather road connects Vladimirovka and Kapustin Yar. Vladimirovka is also served by Volga River barge traffic from the nearby docking facilities at Petropavlovsk.

From Vladimirovka, a branch rail line and an all-weather road lead out to Launch Complex "D", and the road continues on to Launch Complex "C". An overhead power line from Vladimirovka services Complex "D" and probable buried pipelines provide water for both the launch complex and the fabrication complex. In addition, a Class I airfield at Vladimirovka services the fabrication complex.

• • •

LAUNCH COMPLEX "D"

Launch Complex "D", which constitutes the major portion of the Probable Aerodynamic Missile Facilities, includes a launch area, several patterns of guidance and/or instrumentation, an administrative and logistical support area, and an assembly and checkout area (see Figure 3). These facilities are widely dispersed over an area of about 450 square miles, which lies north and east of the Vladimirovka Support Base. However, excluding the rear and forward instrumentation networks, the facilities are situated along the branch rail line and all-weather road servicing the complex from Vladimirovka.

In [redacted] construction was still under way on two launch sites at the launch area, the forward instrumentation network, and the assembly and checkout area. In [redacted] these facilities were complete and another launch site and instrumentation network had been added during the interim period of two years. In addition, an expansion program was under way at the launch area so as to provide a fourth launch site.

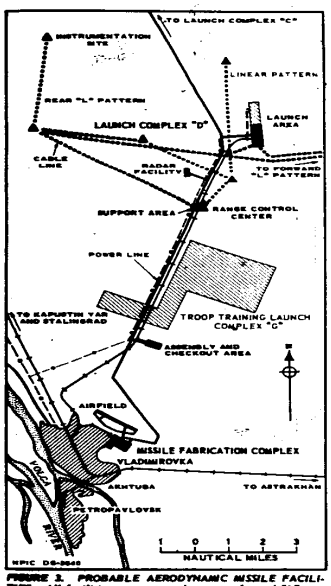

FIGURE 3. PROBABLE AERODYNAMIC MISSILE FACILITIES. All facilities are portrayed except a forward "L" pattern of guidance/instrumentation. Troop Training Launch Complex "C" which is associated with the SSM Facilities, is not discussed in this report.

External support apparently comes from Vladimirovka. An overhead power line extends from Vladimirovka to a substation near the Launch Area, and probable buried pipelines from Vladimirovka satisfy the water requirements of the complex, including water at the Launch Area. Internal communications are probably effected by buried cable lines interconnecting the facilities within the complex.

LAUNCH AREA

The Launch Area, located at the terminus of the branch rail line from Vladimirovka, consists of four contiguous launch sites (Figure 4). The facilities at each launch site strongly suggest an R&D program involving aerodynamic-type missiles. Of the four sites, there was evidence of only two in [redacted] At that time, heavy construction was essentially complete at Launch Site 1D, and construction had begun on Site 2D approximately 30 days prior to the [redacted] coverage. In [redacted] Launch Site 1D was complete and had been operative for some time, whereas the initial construction at Site 2D appeared to have been abandoned a few months subsequent to the [redacted] coverage. However, a much smaller launch facility was constructed at Site 2D, and it may have been utilized for small-scale operations. Between the [redacted] missions, Launch Site 3D was constructed and appeared to have been operative for some time. Work had begun on Launch Site 4D several months prior to the [redacted] coverage, and it then appeared to be approximately 50 percent complete.

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Only Launch Site 1D is served by rail, and all four sites are served by an all-weather road. A probable buried pipeline provides water for Site 1D which is apparently the only site requiring water for its launch operations. Buried cable lines probably provide communications between the Launch Area and other facilities in the complex.

It is significant to note that the launch facilities here are somewhat unique. Nothing comparable has been found at any other Soviet launch area.

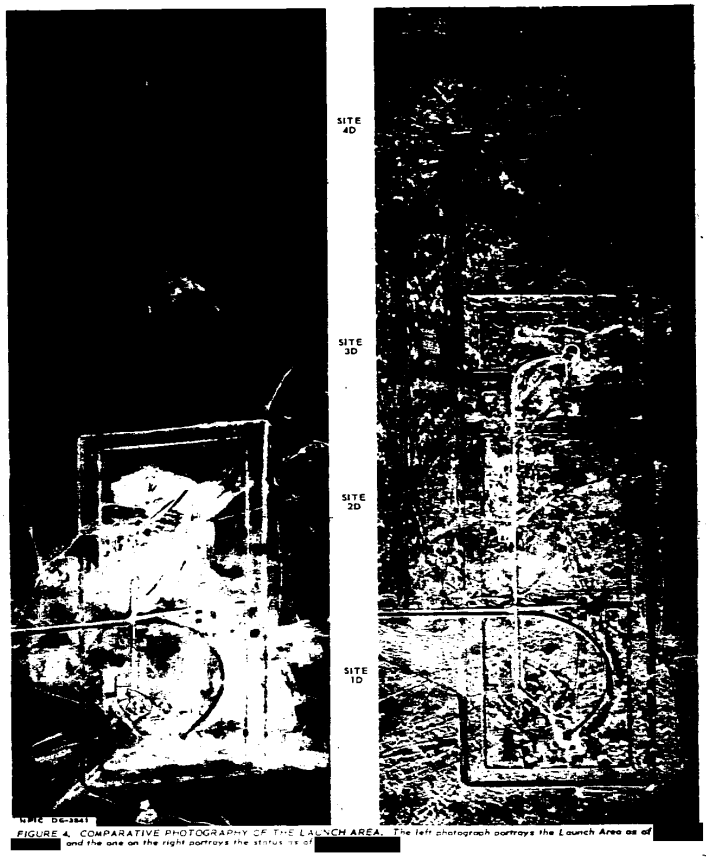

FIGURE 4. COMPARATIVE PHOTOGRAPHY OF THE LAUNCH AREA. The left photograph portrays the Launch Area as of [redacted] and the one on the right portrays the status as of [redacted]

LAUNCH SITE 1D

Launch Site 1D, probably completed during late [redacted] is located at the terminus of the branch rail line from Vladimirovka. It is secured by a double wire fence 2,250 by 1,525 feet, with guard towers positioned at equal intervals along the external fence line.

The site consists of a complex rail-served launch structure, a road-served probable rail launcher added since [redacted] a large rail-mounted tower crane, a control bunker, and two groups of support buildings (see Figure 5). Within the fenced area, an elaborate surface drainage system and water storage facilities are readily evident. Communications are ap-

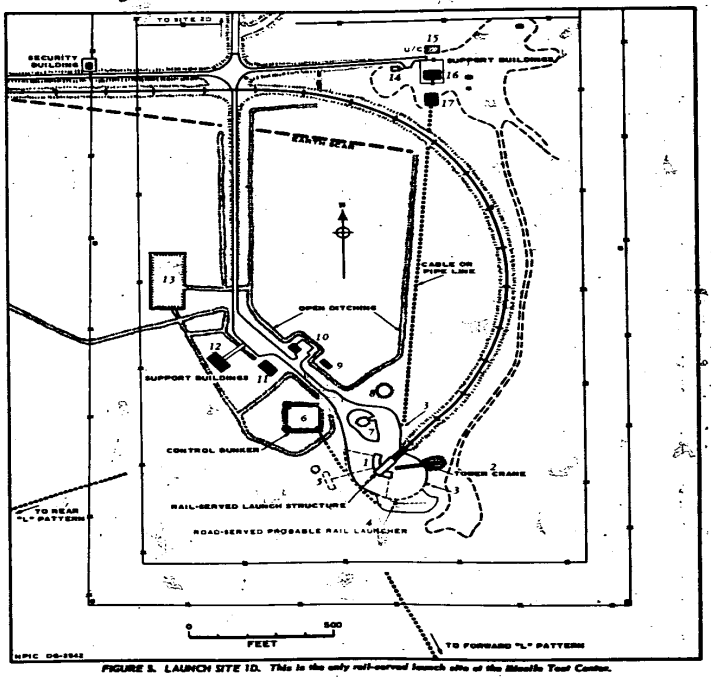

FIGURE 5. LAUNCH SITE 1D. This is the only rail-served launch site at the Missile Test Center.

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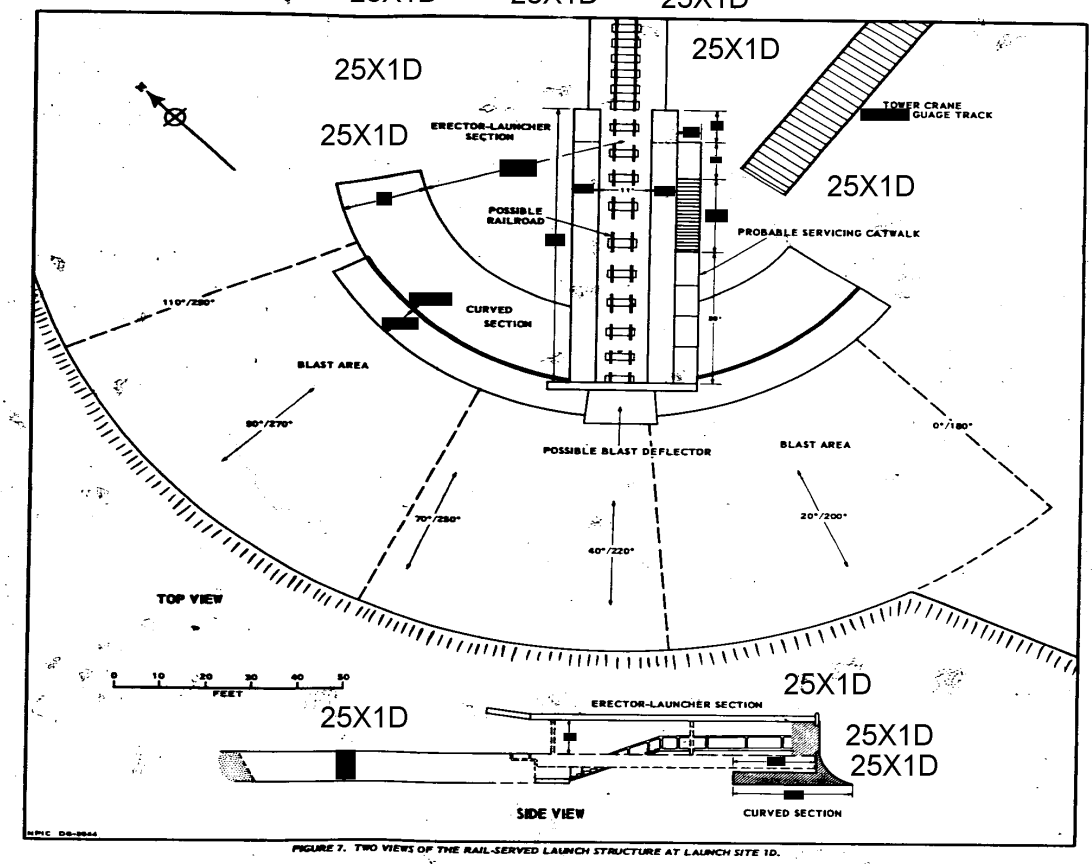

FIGURE 7. TWO VIEWS OF THE RAIL-SERVED LAUNCH STRUCTURE AT LAUNCH SITE 1D.

parently effected by buried cable lines connecting key facilities within the site, and also connecting the site with the associated rear and forward "L" patterns of guidance and/or instrumentation. In addition, a ditch, probably for a buried power line, extends west from the site to the nearby substation under construction. During the interim, power could be provided by on-site generators. A detailed description of facilities follows. Item numbers correspond to those on Figure 5.

(1) Rail-served launch structure. For purposes of description the launch structure has been arbitrarily divided into two sections, an erector-launcher section and a curved section. The configurational and mensural analyses of these sections are portrayed by Figures 6 and 7. Associated with the curved section are two fan-shaped blast areas which have a surface-finish quite different from that of the

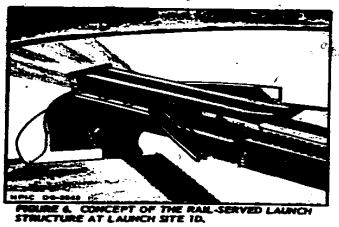

FIGURE 6. CONCEPT OF THE RAIL-SERVED LAUNCH STRUCTURE AT LAUNCH SITE 1D.

remaining pad area. These blast areas strongly suggest the erector-launcher has two primary firing positions, each near the center of one of the blast areas. Therefore, with regard to possible directions of fire, it should be noted that a line bisecting each of the two blast areas results in eastward azimuths of 20 and 90 degrees.

(2) Rail-mounted tower crane. A mobile tower crane is situated on a [redacted] gauge track east of the launch structure. The track, 155 feet long, extends eastward from a point 30 feet from the launch structure and terminates on a fill 20 feet east of the pad surface. A lack of detailed shadow prevents precise measurement of the crane components. However, the configuration and approximate dimensions closely resemble several Soviet construction cranes (see Figure 8), all of which have a limited load-lifting capability of 3 metric tons (6,600 lbs). The crane tower is approximately 100 feet high and has a boom approximately 65 feet in length. Based on these dimensions, which

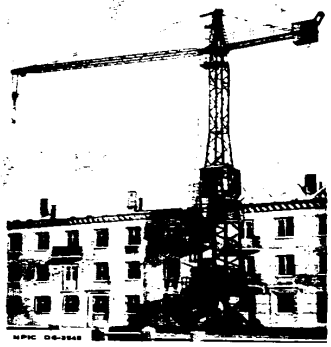

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FIGURE 8. SOVIET PHOTOGRAPH OF A TYPICAL TOWER CRANE USED IN CONSTRUCTION WORK THROUGHOUT THE SOVIET UNION. The tower crane at Site 1D is similar to this type crane.

are similar to those of known Soviet cranes, this crane should be able to lift a 3-ton load, at maximum elevation angle, to a height of approximately 140 feet above the pad surface.

(3) Two poles with top array, each 65 feet high.

(4) Probable zero-length rail launcher, 40 feet long and [redacted] high. The launcher, added since [redacted], pivots at its western end and may swivel for loading operations.

(5) Possible drainage sump with a nearby earth covered tank [redacted] in diameter. A ditch connects the sump with another ditch rimming the edge of the two blast areas.

(6) Control bunker, [redacted] with an object positioned at each of three corners and a possible entranceway positioned at the fourth corner.

(7) Earth-covered probable storage bunker, 25 feet in diameter.

(8) Earth-covered probable water storage tank, 45 feet in diameter.

(9) Building, one-story, flat-roofed, [redacted] This building was built

(10) Building, one-story, flat-roofed, [redacted] Two vehicles are parked on the adjoining hardstand.

(11) Building, one-story, gable-roofed [redacted]

(12) Building, one-story, gable-roofed [redacted] Two small sheds are located nearby.

(13) Catch basin, [redacted] and [redacted] deep.

(14) Bunker, [redacted] with an entranceway 19 by 8 feet.

(15) Building under construction, 52 [redacted]

(16) Building, one-story, gable-roofed [redacted] and secured by a single wire fence.

(17) Building, flat-roofed, [redacted] feet. There is a parapet around the south section of the roof, and a couple of sheds are located near this building.

FUNCTIONAL ANALYSIS OF LAUNCH SITE 1D

From an analysis of the complex rail-served launch structure at Launch Site 1D, a suggested method of operation and some general aspects of the vehicle configuration can be deduced.

The vehicle itself is probably aerodynamic, utilizing a liquid-propellant booster. However, the dimensions and detailed configuration of the vehicle and booster cannot be determined from analysis of the launch structure.

The booster and perhaps the vehicle itself probably are transported to the

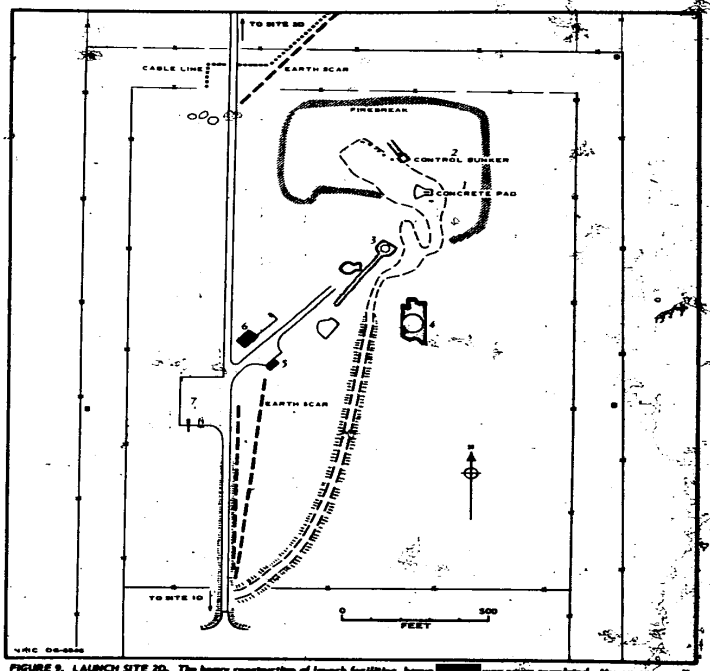

FIGURE 9. LAUNCH SITE 2D. The heavy construction of launch facilities, begun [redacted] was quite complete. However, a small launch facility was constructed, probably as an interim measure.

launch structure by rail. The mating of the vehicle to its booster could be performed either at the Assembly and Checkout Area or at the launch structure. However, the tower crane near the launch structure appears incapable of performing this mating operation. The vehicle and its booster are then attached to the erector-launcher, the launcher pivots to the selected firing position, and the vehicle is erected, serviced, and launched.

The configuration of the launch structure indicates that at least part of the vehicle is aerodynamic. The relationship of the curved section to the bridge-like erector-launcher suggests that the erector-launcher section pivots at its northeast end, with the other end traveling along the curved section to the selected firing position. The presence of the two fan-shaped probable blast areas indicates two primary firing positions. The bisector of one fan lies on an easterly azimuth of 90 degrees, the other on a northeasterly azimuth of 20 degrees. This pivoting requirement suggests that prior to launch, the orientation of the vehicle cannot be radically changed from the orientation of the launching equipment. An aerodynamic vehicle, which has protruding wings, could prohibit a radical change in its orientation from that of the launcher.

The initial flight of the vehicle is probably accomplished by a liquid-propellant booster. The two fan-shaped probable blast areas are lighter in tone than the remaining surface of the service pad, suggesting that they are composed of a heat- or corrosion-resistant material. If the booster were solid-propellant the pad surface probably would not be subjected to blast, heat, or corrosive effects sufficient to warrant the preparation of a specially treated blast area. The earth-covered water tank (Figure 5, item 8) and the drainage ditch rimming the south side of the service pad suggest that a limited flushing operation is required following, and possibly also during, each firing. Such a requirement probably would not exist if the booster were solid-propellant. Furthermore, no explosive storage or handling facilities for solid boosters are evident at the Vladimirovka rangehead, other than at Site 3D.

Since the vehicle appears to utilize a liquid-propellant booster, its angle of launch is probably vertical or near-vertical. The gradual curve at the base of the outer concrete wall of the curved section provides a certain blast-deflection capability which also suggests a vertical or near-vertical launch.

The precise function of the tower crane cannot be determined. However, its weight lifting limitation indicates that it is probably incapable of either mating the vehicle to its launcher or erecting the vehicle. Both the height of the crane and its placement on the service pad, coupled with its low lift capability, suggest that it is required only to lift a relatively lightweight object or objects from the service pad to a point as high as [redacted] above the erector-launcher. If the crane is used to service a vehicle erected to fire on a 90-degree azimuth, its 65-foot boom would be incapable of reaching the vehicle or erector-launcher. However, this limitation would not apply to a vehicle erected to fire on a 20-degree azimuth.

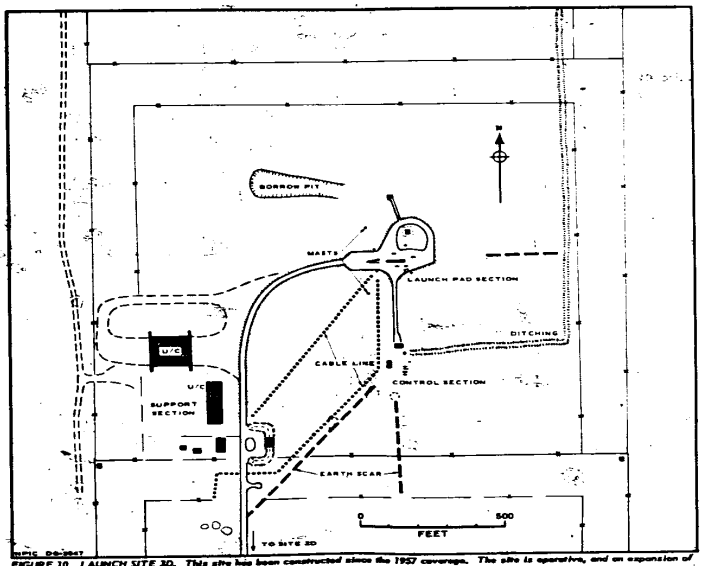

FIGURE 10. LAUNCH SITE 3D. This site has been constructed since the 1957 coverage. The site is operative, and an expansion of support facilities was in progress in December 1959.

LAUNCH SITE 2D

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Launch Site 2D was under construction in [redacted] However, heavy construction of the original facilities appears to have been abandoned some time later, and in place of them, several smaller ones were constructed. A detailed description of facilities follows. Item numbers correspond to those on Figure 9.

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25X1D

(1) Y-shaped concrete pad, [redacted] with an object [redacted] positioned near the center of the pad. A small possible gantry crane [redacted] wide and [redacted] high is positioned nearby.

25X1D
25X1D
25X1D
25X1D

(2) Probable control bunker, [redacted] semiburied, and has a vehicle access ramp leading to its sublevel. Several unidentified objects are located nearby.

25X1D
25X1D

(3) Circular object [redacted] in diameter positioned at the terminus of a long 15-foot wide ditch.

25X1D

(4) Tank, 70 feet in diameter, positioned within a large excavation.

(5) Building, flat-roofed, [redacted]

25X1D

(6) Building, gable-roofed, [redacted] feet, with a small shed located nearby and connected with the building by a walkway.

(7) Concrete hardstand, 190 by 155 feet. A vehicle and a probable road-mobile crane are parked on the hardstand.

LAUNCH SITE 3D

Launch Site 3D, constructed since [redacted] is situated between Sites 2D and 4D (Figure 4). It is secured by a double wire fence 1,615 by 1,525 feet and is served by a concrete road which passes through Site 2D. Facilities at the site have been arbitrarily grouped into three sections, a launch pad and control and support sections (see Figure 10). Facilities at both the launch pad and the control sections are complete and operative, while some of the facilities at the support sections are still under construction.

Launch Pad Section: The dominating facility at this area is an elongated concrete pad 300 feet long and varying in width from 70 to 80 feet. A linear probable launch structure, [redacted] is positioned along the center major axis of the pad. This structure is about [redacted] high at its western end and about 10 feet high at its eastern end (see Figure 11). At least five vehicles are parked around the structure, and an elongated possible blast scar is on the pad approximately 40 feet west of, and directly in line with, the launch structure. Positioned on either side of the pad are two masts, each [redacted] feet high; a perpendicular bisector of a line connecting the two coincides with the center-major axis of the launch structure. Situated within the loop-road area is a [redacted] by 15-foot shed, and off the north side of the loop road is another shed 10 feet square positioned on a hardstand 15 feet square. Near the latter shed are four probable poles, each about [redacted] high. Positioned around the pad at different points are four small objects, each [redacted] square and [redacted] high.

Control Section: This area is comprised of two flat-roofed buildings, each 30 by 15 feet, and at least four vans, possibly for communications, parked in a line nearby. There are a few other objects in the area, but their function has not been identified. Buried cable lines extend from this area to the Launch Pad and the Support Sections.

Support Section: Facilities completed in this section include a revetted hardstand 100 by 60 feet with a 30 by [redacted] building straddling the revetment, [redacted] gable-roofed building, and two sheds, one [redacted] and the other [redacted] Under construction in [redacted] were a building [redacted] and a drive-through hangar-type assembly and/or checkout building 150 by 125 feet. The revetted hardstand suggests a need for an explosives handling area, probably for solid-propellant boosters.

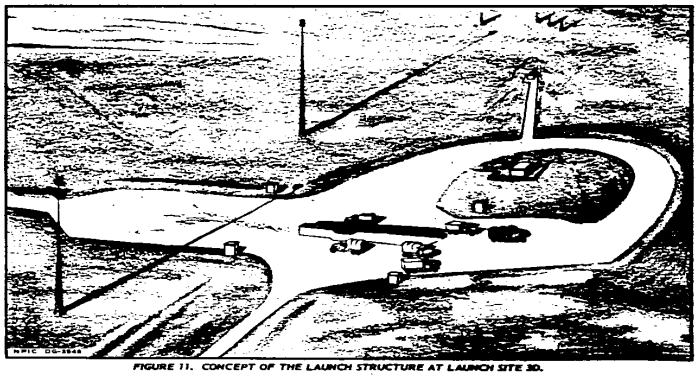

FIGURE 11. CONCEPT OF THE LAUNCH STRUCTURE AT LAUNCH SITE 3D.

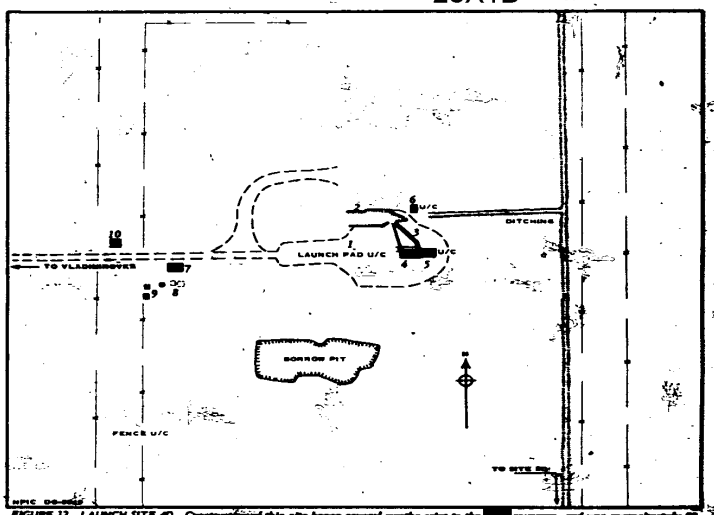

FIGURE 12. LAUNCH SITE 4D. Construction of this site began several months prior to the [redacted] coverage, and was approximately 80 percent complete by [redacted] The site will include the largest pad at the Missile Test Center.

FUNCTIONAL ANALYSIS OF LAUNCH SITE 3D

The pad at Site 3D, being elongated as opposed to a square, suggests the vehicle under development is launched at a low angle rather than vertically. In addition, the linear launch structure coupled with the nearby elongated possible blast scar also suggest a low angle mode of launching. The revetted explosives handling area suggests solid-propellant boosters which would be required for a low-angle launch. The apparent low-angle launch procedure is generally associated with an aerodynamic or cruise-type

missile, and coupled with the hangar-type configuration of the checkout building, strongly indicates that an aerodynamic or cruise-type missile is being developed at Site 3D. This particular vehicle may be quite different from the one under development at Site 1D, for the vehicle at Site 1D apparently requires a vertical or near vertical boost-launch.

LAUNCH SITE 4D

Launch Site 4D, under construction at the time of photography, is contiguous to Site 3D. It will be secured by a double wire fence 3,175 by 1,525 feet, and will be served by a road by-passing the other three sites. All facilities at the site were under construction in [redacted]. They include the largest pad at the Test Center, an adjoining excavation probably for a control bunker, and several buildings. A detailed description of facilities follows. Item numbers correspond to those on Figure 12.

(1) Launch pad. The larger portion of the pad will measure approximately 320 by 240 feet and the smaller portion about 240 by 85 feet. When completed this pad should be the largest at the Center.

(2) Excavation, [redacted] and approximately [redacted] deep. This excavation will probably be the site of a control bunker.

(3) Conduit, [redacted] wide. This conduit extends from the probable control bunker excavation to the two structures (Items 4 and 5) on the pad, and a branch from the conduit connects with a 10 by [redacted] object near one of the structures (Item 4).

(4) Probable structure, 75 by 90 feet long and [redacted]

(5) Building, 54 by [redacted] and about [redacted] high at the [redacted] stage of construction.

(6) Building under construction 40 by 25 feet.

(7) Building, 60 by 30 feet.

(8) Probable foundations for two structures. One measures [redacted] and the other 23 feet in diameter.

(9) Three sheds, each 15 feet square.

(10) Building, 40 by 30 feet.

GUIDANCE AND/OR INSTRUMENTATION

The layout of guidance and/or instrumentation facilities at Complex "D" is unlike that found at any other known Soviet launch complex. These facilities include a range control center, a radar facility, a rear "L" pattern, a forward "L" pattern, and a linear pattern which was added since [redacted] the Forward "L" facilities were in varying stages of construction, and therefore, the pattern as a whole was capable of only partial operation. In contrast, the Range Control Center, the Radar Facility, and the Rear "L"

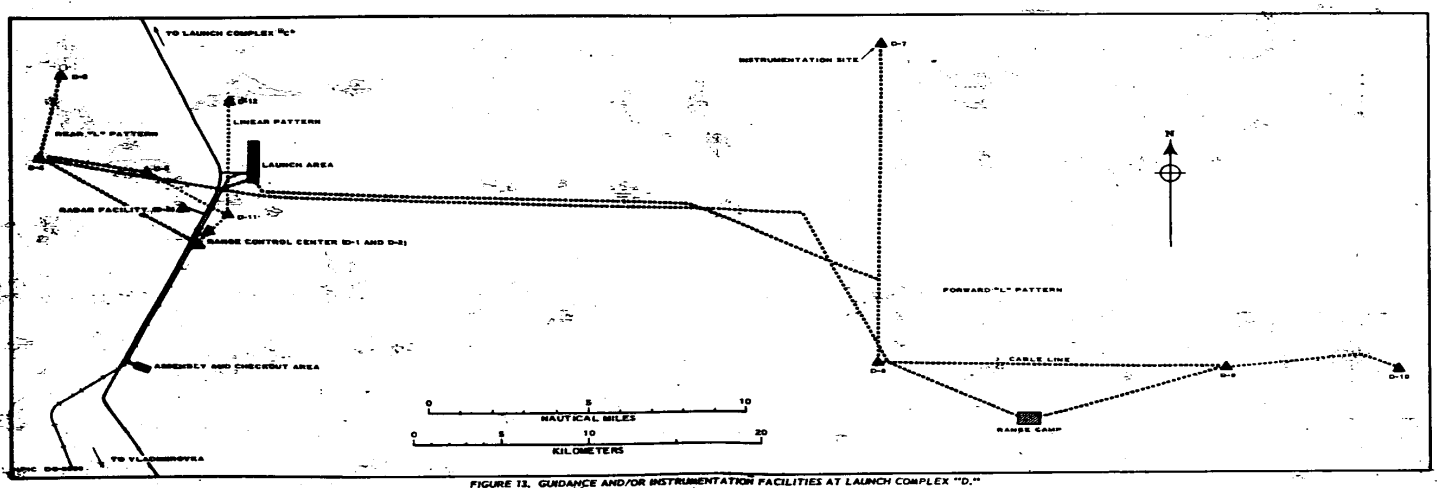

FIGURE 13. GUIDANCE AND/OR INSTRUMENTATION FACILITIES AT LAUNCH COMPLEX "D."

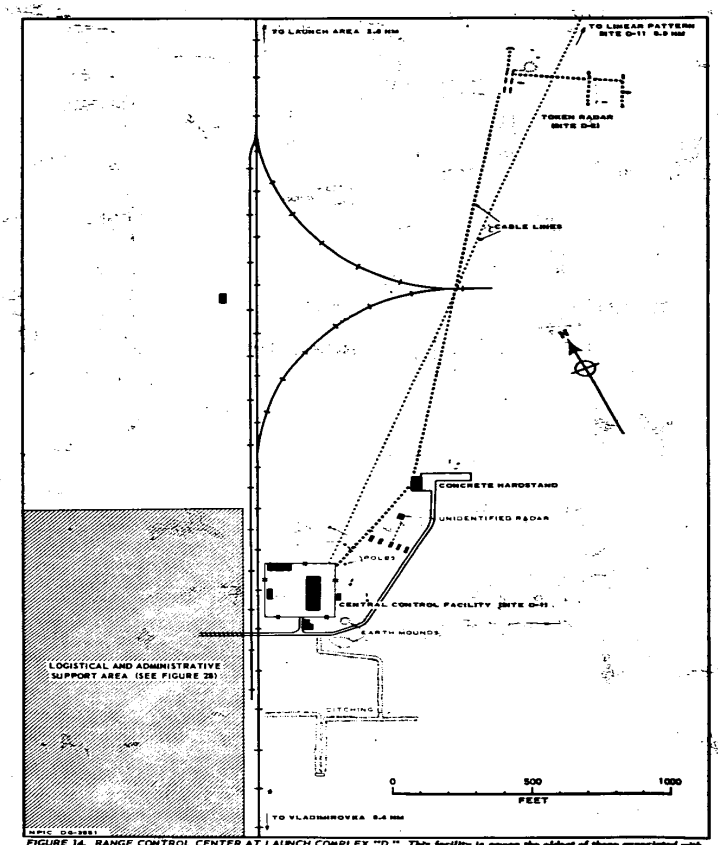

FIGURE 14. RANGE CONTROL CENTER AT LAUNCH COMPLEX "D." This facility is among the oldest of those associated with the complex and includes Sites D-1 and D-2.

Pattern were complete and may have been operational at that time. Since the latter facilities were the only components of the Probable Aerodynamic Missile Facilities which may have been operative in [redacted] preliminary instrumented operations may have been under way at the rangehead prior to completion of the over-all Probable Aerodynamic Facilities.

Cable lines and roads connect the Range Control Center with the Rear "L", the Linear Pattern, and possibly the Radar Facility. The Rear "L" is connected by roads and cables with Launch Site 1D, the Forward "L" and the Linear Pattern.

RANGE CONTROL CENTER

The Range Control Center adjoins the east side of the Logistical and Administrative Support Area (Figure 14) and includes a central control facility (Site D-1), an unidentified radar, a concrete hardstand with a contiguous building, and a token radar (Site D-2). Cable lines interconnect most of the facilities, and a cable extends from Site D-1 to Site D-11 of the Linear Pattern. A cable line also extends from the western side of the Support Area to Site D-4 of the Rear "L". The Range Control Center is one of the oldest facilities at Complex "D", and together with the Rear "L" Pattern was probably engaged in operations at Complex "D" prior to the [redacted] coverage. A detailed description of facilities follows.

Central Control Facility (Site D-1): This facility consists primarily of three buildings situated within a fenced enclosure 260 by 225 feet. The largest of these buildings is 145 by 50 feet, has two stories, and is gable-roofed. The second building in size has a raised center section 25 feet high and measures 85 by 25 feet. The third building, added since [redacted] measures [redacted] feet. Outside the enclosure are two buildings. The one by the entrance is probably the security building.

Poles, Probably Associated with Communications: Positioned to the north and to the east of Site D-1 are five poles approximately 40 feet high which probably are associated with communications.

Unidentified Radar: This facility contains five vans and an unidentified radar. The five vans, which are positioned in a line, are connected by cable with the radar.

Concrete Hardstand: This hardstand measures 170 by 30 feet, and the contiguous building is flat-roofed, measuring [redacted] by 30 feet.

Token Radar (Site D-2): The Token

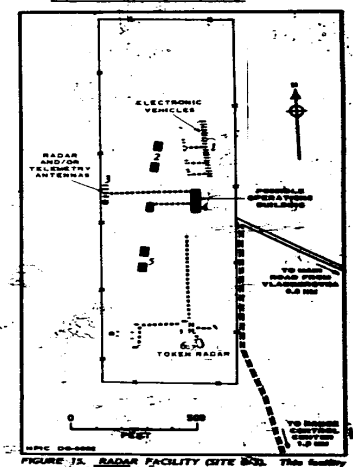

FIGURE 15. RADAR FACILITY (SITE D-2). This facility was probably [redacted]. However, several dishes have been added since the [redacted] coverage.

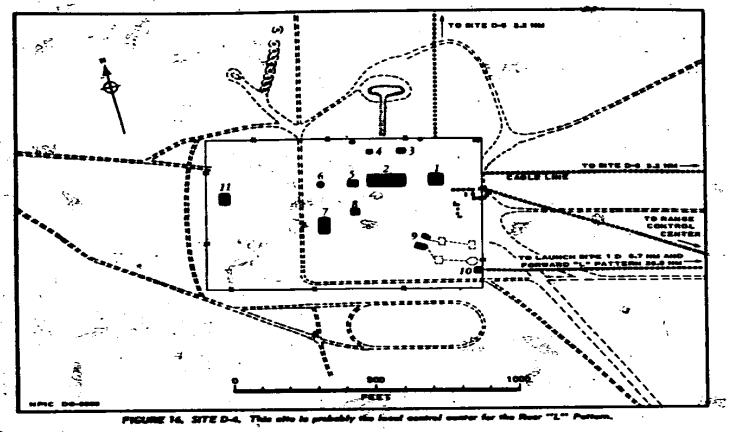

FIGURE 16. SITE D-4. This site is probably the local control center for the Rear "L" Pattern.

radar with its seven supporting vehicles is situated 2,350 feet northeast of the Central Control Facility. In addition to the Token radar, there are two probable tracking radars positioned nearby, which are connected by cable with the Token.

RADAR FACILITY

The Radar Facility (Site D-3), situated 1.3 miles northwest of the Range Control Center, is enclosed by a single wire fence 1,725 by 535 feet, and is served by an all-weather road. The facility contains a Token radar with two associated probable tracking radars, another group of radar and/or telemetry antennas, several buildings, and numerous electronic vehicles parked in line. A detailed description of facilities follows. Item numbers correspond with those on Figure 15.

(1) Approximately 21 electronic vehicles parked in line, with about 9 probable mobile generators situated nearby.

(2) Two buildings, each flat-roofed and measuring 45 by 30 feet.

(3) Four electronic vehicles and a shed [redacted] The four vehicles may be radar and/or telemetry antennas.

(4) Possible operations building, two-story, gable-roofed, [redacted] by 35 feet. A cable line connects the building with the four possible radar and/or telemetry antennas and a nearby building.

(5) Two buildings, each flat-roofed, and measuring 45 by 30 feet.

(6) Token radar with seven associated vehicles and an earth-mounded structure. A cable line connects the Token with two probable tracking radars situated to the east. Another cable line extends north, and may connect with the possible operations building.

25X1D 25X1D

REAR "L" PATTERN

The rear instrumentation, located 6.7 miles west of the Launch Area, consists primarily of a distinctive "L" pattern formed by Sites D-4, D-5, and D-6 (see Figure 13). Cable lines and roads interconnect these sites, and it appears that the largest, Site D-4, is the local control center. Also included in this discussion are several aerial targets (not shown on graphic) which are located in the vicinity of the "L" pattern.

The legs of the pattern measure 3.2 miles (6 km) in length and intersect at a 90-degree angle. The north/south leg lies along a northerly azimuth of [redacted] and the east/west leg lies along an easterly azimuth of [redacted] Each site contains an instrumentation building surmounted by a 20-foot-square observation-type platform with a protective parapet. Each platform rises 20 feet above ground level and is positioned on its respective building so that it faces one of the other two. In addition, two smaller buildings are associated with each of these buildings.

Of the several aerial targets in this area, three lie along the perpendicular bisector of the north/south leg. [redacted] a possible cable line connected two of these targets with the north/south leg, forming a cruciform configuration with each of the four legs measuring 1.6 miles (3 km) long. It is possible that these targets could have been used as visual markers for aircraft performing initial instrumentation checkout flights. These targets have greatly deteriorated since [redacted] and [redacted] appear to be in a state of disuse. 25X1D 25X1D

Site D-4: This site, located at the vertex of the "L", is the largest of the three sites and probably functions as the local control center. It consists of a fenced area, 1,000 by 660 feet, containing an instrumentation building, a large probable headquarters building, and several smaller structures (see Figures 16 and 17). [redacted] there was a group of five vehicles in the northwest corner which may have constituted a mobile communications site similar to those identified elsewhere at the Center. However, these vehicles have been removed from the site since [redacted] A description of facilities in the site follows. Item numbers correspond with those on Figure 16. 25X1D 25X1D

(1) Instrumentation building, two-story, 50 by 40 feet, with a 20-foot-square observation-type platform rising 20 feet

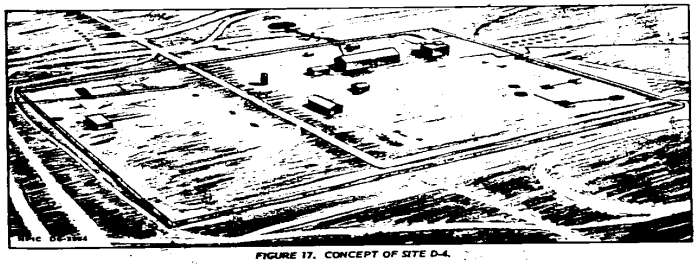

FIGURE 17. CONCEPT OF SITE D-4.

25X1D

25X1D 25X1D

above the ground. Cable lines lead from this building to similar buildings in Sites D-5 and D-6 and also to the Range Control Center, the Launch Site 1D, and the Launch "L" Pattern.

(2) Probable headquarters building, gable-roofed, 140 by 40 feet and [redacted] high. An earth scar, possibly a ditch, extends 350 feet northward, terminating at a large irregularly-shaped pit.

(3) Building, [redacted]

(4) Building, [redacted]

(5) Building, gable-roofed, [redacted] by 20 feet and 15 feet high.

(6) Solid tower-like structure, [redacted] in diameter and 25 feet high.

(7) Building, gable-roofed, [redacted] feet and 15 feet high.

(8) Building, [redacted] and 15 feet high, with a small shed-like structure near the south side.

(9) Two structures, approximately 35 by 25 feet and 25 by 20 feet. Possible cable trenches connect the structures with two possible electronic sites added since [redacted] Just north are three vans which may constitute a third electronic site.

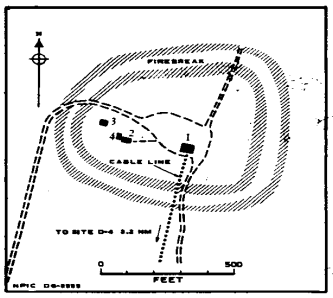

FIGURE 18. SITE D-5. This site is positioned at the northern end of the north/south leg of the Rear "L" Pattern.

(10) Security building, [redacted]

(11) Building, flat-roofed, [redacted] feet and [redacted] high.

Site D-5: This site, located at the northern end of the north/south leg, includes an instrumentation building and several smaller structures (see Figure 18). A description of these facilities follows. Item numbers correspond with those on Figure 18.

(1) Instrumentation building, 45 by 35 feet and 10 feet high, with a raised center section 20 feet square and 20 feet high. This center section has a flat observation-type platform with a protective parapet.

(2) Building, one-story, 25 by 20 feet.

(3) Building, one-story, 20 feet square.

(4) Possible building under construction.

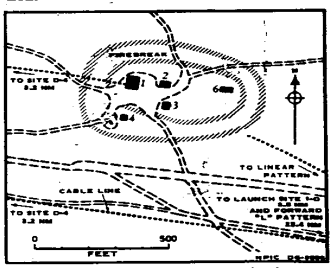

FIGURE 19. SITE D-6. This site is positioned at the eastern end of the east/west leg of the Rear "L" Pattern.

Site D-6: This site, located at the eastern end of the east/west leg, consists of an instrumentation building identical to the one in Site D-5 and several smaller structures. A cable line from this site connects the Rear "L" Pattern with the Linear Pattern. A detailed description of facilities follows. Item numbers correspond with those on Figure 19.

(1) Instrumentation building, 45 by 35 feet and 10 feet high, with a raised center section 20 feet square and 20 feet high. This center section also has a flat observation-type platform with a protective parapet. Two unidentified objects are positioned on this platform.

(2) Building, one-story, 25 by 20 feet.

(3) Building, one-story, 30 by 20 feet.

(4) Building, [redacted] square.

(5) Clearing, 30 feet across, with a possible instrument positioned near the center.

(6) Unidentified structure, 30 by 20 feet.

FORWARD "L" PATTERN

The Forward "L" Pattern is located 19.9 miles (36.9 km) east of the Launch Area (see Figure 13). The pattern includes three major sites (D-7, D-8, and D-9), a fourth smaller site (D-10), and a permanent range camp. Roads and cable lines interconnect these sites, and the over-all forward pattern is connected by roads and cable with both the Launch Area and the Rear "L" Pattern.

The north/south leg of this pattern measures 12.0 miles (22.2 km) in length and lies along a northerly azimuth [redacted] degrees. The east/west leg measures 16.2 miles (30.0 km) long and lies along an easterly azimuth of [redacted] Excluding the easternmost site (D-10), the length of the east/west leg measures 10.7 miles (19.9 km). A perpendicular bisector of the north/south leg, when extended to the Launch Area, intersects the launch structure at Launch Site 1D. This bisector which lies along an easterly azimuth of [redacted] coincides with the alignment of the center points of domes and platforms positioned within each of the three major sites. A detailed description of the four sites and the range camp follows. Due to the obliquity and small scale of the [redacted] coverage, the description of Site D-7 is based mainly on the [redacted] coverage.

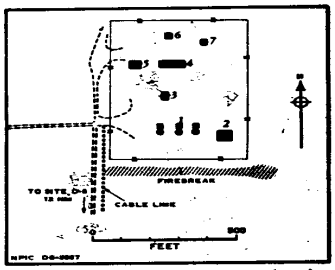

FIGURE 20. SITE D-7. This site is positioned at the northern end of the north/south leg of the Forward "L" Pattern.

Site D-7: This site is positioned at the northern end of the north/south leg (see Figure 13) and is secured by a wire fence 625 by 500 feet. Facilities include three identical tracking antennas housed under domes, each with an associated building having an observation platform, and other supporting structures (see Figures 20 and 21). A detailed description of facilities follows. Item numbers correspond to those on Figure 20.

(1) Three tracking antennas housed in 20-foot-diameter domed cylindrical structures. In [redacted] only the westernmost structure had a dome positioned on it, making its over-all height 30 feet. Positioned on each of the other uncovered structures was a tracking antenna 10 to [redacted] in diameter. Immediately behind each antenna was a small building measuring [redacted] feet. The center of the

FIGURE 21. CONCEPT OF SITE D-7. Facilities at Sites D-8 and D-9 are almost identical to those at Site D-7.

dome and the centers of the two antennas are colinear along an azimuth of [redacted] degrees.

(2) Instrumentation building, flat-roofed, 50 by 40 feet and 30 feet high. An observation platform, 20 feet square, is positioned on the northeast corner of the roof. The center of this platform is colinear with the center of the dome and the centers of the two possible antennas.

(3) Building, one-story, gable-roofed, 40 by 20 feet.

(4) Building, one-story, gable-roofed, 90 by 30 feet.

(5) Building, one-story, flat-roofed, 40 by 30 feet.

(6) Building, one-story, flat-roofed, 25 feet square.

(7) Semiburied structure, light-colored, about 30 feet across, and with the roof rising approximately 15 feet above ground level.

Site D-8: This site, which is nearly a mirror image of Site D-9, is positioned at the vertex of the "L" configuration. This site also includes the three identical tracking antenna structures as well as the associated building with the observation platform. In addition, there are four supporting buildings and several small objects. A detailed description of facilities follows. Item numbers correspond with those on Figure 22.

(1) Three tracking antennas, each housed on a cylindrical structure under a 20-foot-diameter dome. The centers of these domes are also colinear along an easterly azimuth of [redacted]

(2) Instrumentation building, flat-roofed, 50 by 40 feet and 30 feet high. An observation platform 20 feet square is positioned on the southwest corner of the roof. The center of this platform is also colinear with the [redacted] azimuthal alignment of the three domes.

(3) Building, one-story, gable-roofed, 40 by 20 feet.

(4) Building, one-story, gable-roofed, 90 by 30 feet.

(5) Building, one-story, flat-roofed, 50 by 30 feet.

(6) Building, one-story, flat-roofed, 25 feet square.

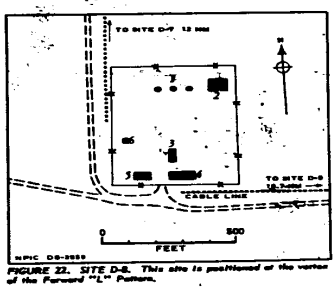

FIGURE 22. SITE D-8. This site is positioned at the vertex of the Forward "L" Pattern.

Site D-9: This site is positioned along the east/west leg at a point 10.7 miles (19.9 km) east of Site D-8 (see Figure 13). This site was still under construction in [redacted] photography, it appeared that the site was then complete. Facilities include only two tracking antennas, the single building with the observation platform, and several supporting structures. A detailed description of facilities follows. Item numbers correspond with those on Figure 23.

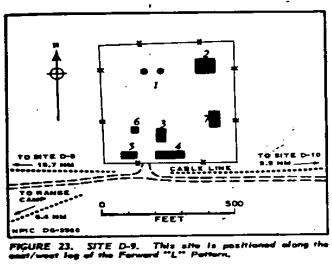

FIGURE 23. SITE D-9. This site is positioned along the east/west leg of the Forward "L" Pattern.

(1) Two tracking antennas, each housed on a cylindrical structure under a 20-foot diameter dome. Although there are but two antennas at this site, they are positioned in precisely the same manner as their counterparts in Sites D-7 and D-8, along an easterly azimuth of [redacted]

(2) Instrumentation building, flat-roofed, 50 by 40 feet and 30 feet high. An observation platform 20 feet square is positioned on the southwest corner of the roof. The center of this platform and centers of the two domes are colinear.

(3) Building, one-story, gable-roofed, 40 by 20 feet.

(4) Building, one-story, gable-roofed, 90 by 30 feet.

(5) Building, one-story, flat-roofed, 50 by 30 feet.

(6) Building, one-story, flat-roofed, 25 feet square.

(7) Building, two-story, gable-roofed, 75 by 25 feet.

Site D-10: This site, which is much smaller than the other three, is positioned at the eastern extremity of the east/west leg, 5.5 miles (10.1 km) east of Site D-9 (see Figure 13). It is secured by a wire fence 470 by 330 feet and contains one instrumentation building and two support-type buildings. A detailed description of facilities follows. Item numbers correspond with those on Figure 24.

(1) Instrumentation building, one-story, flat-roofed, 50 by 30 feet, with a 30-foot-high center section supporting an observation platform 30 by 20 feet.

(2) Building, one-story, gable-roofed, 40 by 30 feet.

(3) Building, one-story, 30 by 20 feet.

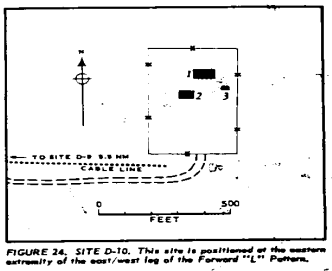

FIGURE 24. SITE D-10. This site is positioned at the eastern extremity of the east/west leg of the Forward "L" Pattern.

Range Camp: The range camp is located 2 miles (3.7 km) south of the east/west leg and along the north shore of Lake Turgay (see Figure 13). It consists of 11 to 12 barracks-type buildings, 10 other support-type buildings, and 3 probable instrumentation buildings (see Figure 25). The barracks-type buildings provide permanent quarters for at least 185 persons and the other support buildings could provide miscellaneous first-echelon support. A cable line extends from the Rear "L" Pattern to the Range Camp and possibly continues on to Site D-9 (see Figure

13). A detailed description of facilities follows. Item numbers correspond with those on Figure 25.

(1) Building, one-story, gable-roofed, 40 by 20 feet.

(2) Probable barracks, one-story, gable-roofed, 70 by 20 feet and capable of housing about 10 persons.

(3 through 13) Eleven barracks, each two-story, gable-roofed, 40 by 30 feet. They are capable of housing about 175 persons.

(14) Building, one-story, gable-roofed 50 by 20 feet.

(15 and 16) Two buildings, each two-story, gable-roofed, 150 by 40 feet.

(17) Building, two-story, gable-roofed 55 by 35 feet.

(18) Building, 60 by 20 feet.

(19 and 20) Two buildings, each 55 by 30 feet.

(21) Building, 115 by 35 feet.

(22) Building, 55 by 30 feet.

(23 through 25) Three probable instrumentation buildings, each one-story, flat-roofed, 25 feet square, with a dome positioned on top.

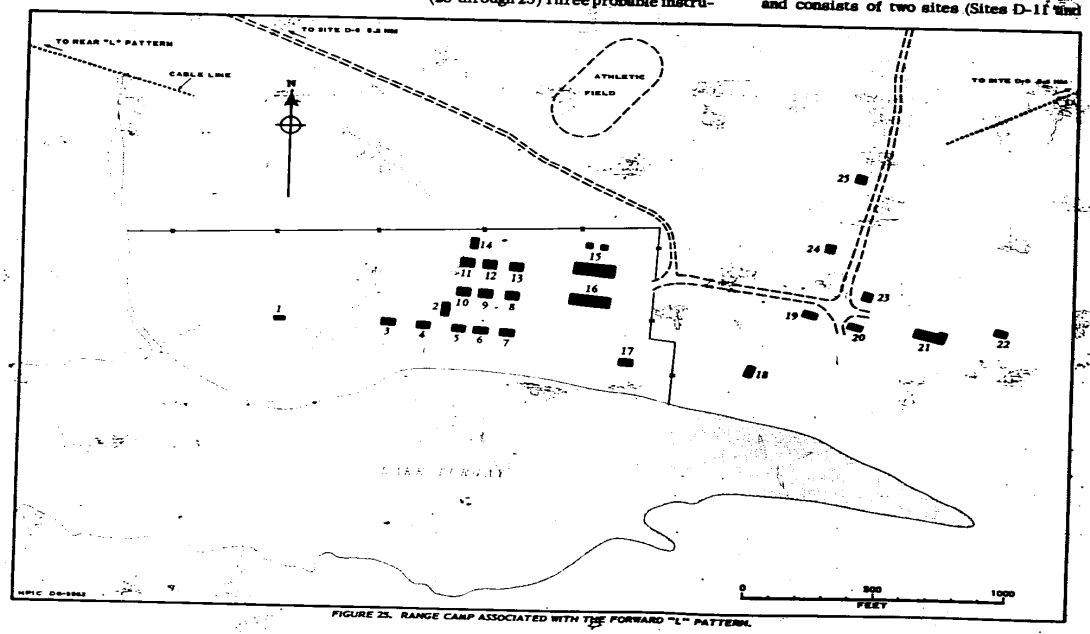

FIGURE 25. RANGE CAMP ASSOCIATED WITH THE FORWARD "L" PATTERN.

LINEAR PATTERN

The Linear Pattern of tracking facilities has been added since [redacted]. This pattern is located about 4,920 feet (1.5 km) west of the Launch Area (see Figure 13), and consists of two sites (Sites D-11 and D-12) which are separated by 4.2 miles (7.8 km). Cable and roads interconnect the sites, and cables extend from Site D-11 to both the Range Control Center and the Rear "L" Pattern. The two sites lie along a northerly azimuth of zero degrees, and it should be noted that a perpendicular bisector of the interconnecting line passes through the launch structure at Launch Site 3D. However, there is no apparent cable tie-in between this launch site and the Linear Pattern. A description of the two sites follows.

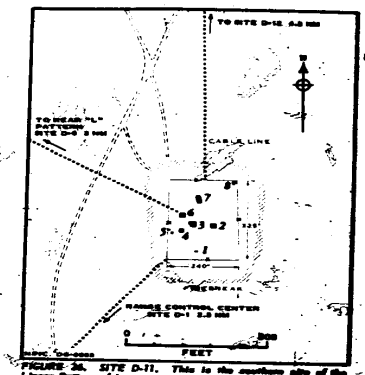

FIGURE 26. SITE D-11. This is the southern site of the Linear Pattern of instrumentation, and was constructed subsequent to the [redacted] overflight. It is probably associated with operations of Launch Site 3D.

Site D-11: This site is located at the southern end of the pattern. A detailed description of facilities follows. Item numbers correspond with those on Figure 26.

(1) Building, shed-roofed, 10 feet square.

(2) Instrumentation building, flat-roofed, [redacted] with a protective parapet around the roof. Two objects are

positioned on the roof. One of the objects, a possible optical tracking instrument, measures approximately [redacted] feet.

(3) Structure [redacted]

(4) Building, 15 feet square.

(5) Two objects, each [redacted]

(6) Building, flat-roofed, 25 feet square.

(7) Unidentified structure, 30 [redacted] feet.

(8) Shed, 15 by 10 feet.

Site D-12: This site is located at the northern end of the Linear Pattern. A detailed description of facilities follows. Item numbers correspond with those on Figure 27.

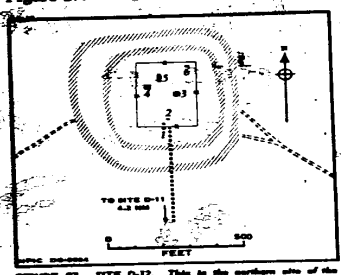

FIGURE 27. SITE D-12. This is the northern site of the Linear Pattern of instrumentation.

(1) Two unidentified objects, each [redacted]

(2) Building, flat-roofed, 10 feet square.

(3) Instrumentation building, flat-roofed, [redacted] with a protective parapet around the roof. There are two objects positioned on the roof.

(4) Building, flat-roofed, 25 feet square.

(5) Unidentified structure, 45 by 15 feet.

(6) Building, about [redacted]

LOGISTICAL AND ADMINISTRATIVE SUPPORT AREA

The Support Area, situated along the road and branch rail line from Vladimirovka, is located 2.6 miles from the Launch Area (see Figure 3) and is essentially unchanged from its status in [redacted] Analysis of the [redacted] coverage indicated the area to be one of the oldest in the Probable Aerodynamic Missile Facilities and, together with the Range Control Center and the Rear "L" Instrumentation Pattern, was probably engaged in the earliest activities of the Vladimirovka rangehead area.

The Support Area has been arbitrarily divided into three sections (see Figure 28). Sections North and South are contiguous and secured, whereas Section West is a short distance from the others and unsecured. The two secured sections contain housing and support facilities capable of billeting approximately 425 persons. In addition, two possible instrumentation buildings are situated in Section North. Section West consists generally of several buildings, an unoccupied tent-base area, and a waste disposal facility. Outside the three sections, facilities along the branch rail include a 2,445-foot siding with an off-loading hardstand and turning wye. The wye has a turning radius of 725 feet and the stem of the wye measures 190 feet in length. A small gable-roofed building [redacted] is situated opposite the turning wye.

A possible water line parallels the west side of the branch rail line, and a possible water pumping station is situated just north of the turning wye. A buried cable line extends from Section West to Instrumentation Site D-4 in the Rear "L" Pattern. In addition, there is a ground scar, added since [redacted] which parallels the road to the Launch Area.

SECTION NORTH

Section North is secured by a wire fence 835 by 395 feet and its service road continues through the section to the Range Control Center, suggesting that operations at these two may be related. Facilities include two possible instrumentation buildings, two barracks-type buildings, several other structures, and a motor pool. A description of these facilities follows. Item numbers correspond to those on Figure 28.

(1) Motor Pool, 175 by 125 feet, containing about 17 parked vehicles and two flat-roofed buildings; one measuring 45 by [redacted] and the other 35 by 15 feet.

(2) Two structures, each gable-roofed. One measures [redacted] square with a [redacted] wing, and the other measures [redacted] 15 feet with an extended entrance on the south side.

(3) Building, gable-roofed, [redacted] 25 feet.

(4) Possible instrumentation building, 55 by 40 feet, with a contiguous raised section on the northeast corner measuring [redacted]. The roof of this raised section is enclosed by a parapet and may be used as an observation point or instrumentation platform. A small object is positioned at the center of the platform.

(5) Possible instrumentation building, 15 feet square and 25 feet high.

(6) Thermal plant, 90 by 30 feet with a stack 90 feet high.

(7) Bunker, 25 by 15 feet.

(8) Possible building foundation, 135 by 50 feet.

(9) Building, gable-roofed, [redacted] feet.

(10) Barracks-type building, two-story, hip-roofed, 145 by 60 feet, with three vents and a dormer on the roof. This structure is capable of housing 120 persons.

(11) Barracks-type building, one-story, hip-roofed, 105 by 55 feet. This structure is capable of housing 40 persons.

(12) Possible security building, gable-roofed, 35 by 20 feet.

SECTION SOUTH

Section South encompasses an area 680 by 325 feet and is secured on three sides by a solid fence, and on the north side by a wire fence shared with Section North. Facilities include several buildings and a water standpipe. A detailed description of facilities in Section South follows. Item numbers correspond to those on Figure 28.

(13) Water standpipe, [redacted] in diameter and 73 feet high; estimated capacity 210,000 U.S. gallons.

(14) Two structures, each gable-roofed, [redacted], earth-mounded at the base, and with an extended entrance on the road side. These two are similar to one of the structures (item 2) in Section North. A possible lightning arrestor is situated near one of the structures.

(15) Building, two-story, hip-roofed, 145 [redacted] This building may be an administrative or barracks building capable of housing 80 persons. There is an earth scar, added since [redacted] which extends to the Range Control Center.

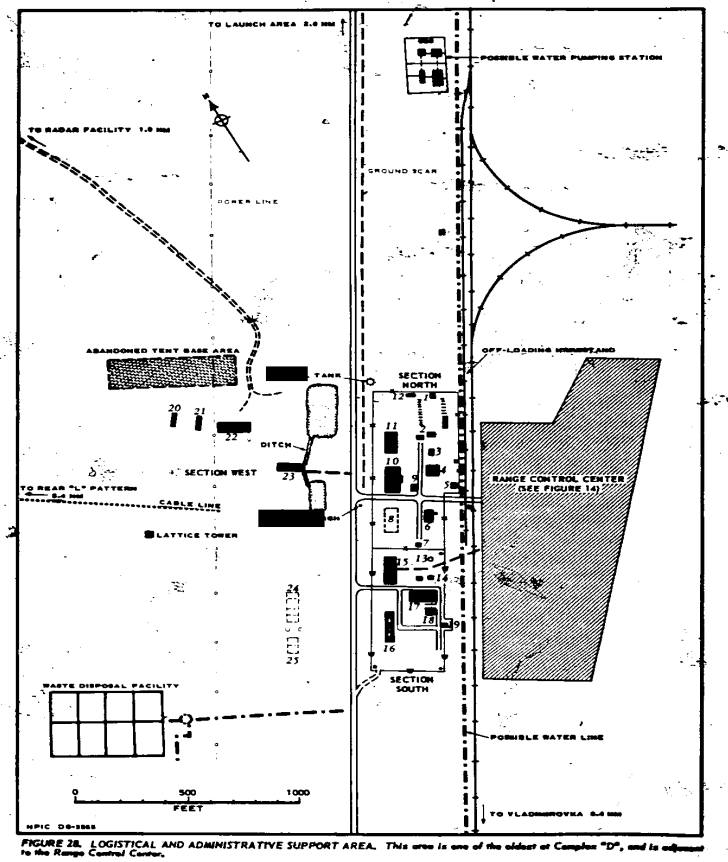

FIGURE 28. LOGISTICAL AND ADMINISTRATIVE SUPPORT AREA. This area is one of the oldest at Complex "D", and is adjacent to the Range Control Center.

(16) Building, three-story, flat-roofed 160 by 40 feet with two vents on the roof. This building has been constructed since [redacted] and is capable of housing 125 persons.

(17) Building, one-story, 110 by 55 feet, with six vents and a possible chimney on the roof. This building is gable-roofed with a hipped east end, and capable of housing 40 persons.

(18) Building, gable-roofed, [redacted] feet.

(19) Shed, flat-roofed, 15 by 10 feet.

SECTION WEST

Section West is unsecured and includes six buildings of which two are under construction, a lattice tower, an abandoned tent base area, and a waste disposal facility. The lattice tower, which may be fenced, is 20 feet square at its base and measures [redacted] The waste disposal facility measures 500 by 320 feet and contains eight sediment ponds. A detailed description of the six buildings follows. Item numbers correspond to those on Figure 28.

(20) Building, one-story, gable-roofed 60 by [redacted] This building has been constructed since [redacted]

(21) Building, one-story, gable-roofed 70 [redacted] This building has been constructed since [redacted]

(22) Building, one-story, gable-roofed 130 by 20 feet.

(23) Building, one-story, gable-roofed 110 by [redacted]. An earth scar connects the building with the concrete road, and two ditches connect with two excavations that have been added since [redacted]

(24) Building foundation, 140 by 55 feet.

(25) Building foundation, [redacted]

ASSEMBLY AND CHECKOUT AREA

The Assembly and Checkout Area, probably completed during the spring or summer of [redacted] is situated along the rail and road serving Complex "D", at a point 7.9 miles from the Launch Area and 3.7 miles from the Missile Fabrication Complex (see Figure 3). The area probably serves as the assembly and checkout point for the liquid propellant booster associated with the vehicle flight tested at Launch Site 1D. A portion of the area is secured by a double wire fence, 2,350 by 720 feet, which encloses a large rail and road drive-through building, a transloading facility, a security building, and several other miscellaneous structures (see Figure 29). A buried possible water line and a buried steam line serve this fenced portion. The remaining facilities are situated outside the fenced area and include a thermal plant, two earth-mounded storage tanks, and three excavations. A detailed description of these facilities follows. Item numbers correspond to those on Figure 29.

(1) Rail and road drive-through assembly and checkout building, 210 by 125 feet, with a raised clerestory section 175 by 65 feet. The building is served by both a buried steam line and a buried possible water line. Two poles, [redacted] high, are situated at either end of the building. The inset on Figure 29 provides a mensural analysis of the interior working areas as determined from the [redacted] coverage.

(2) Transloading facility. This facility parallels the servicing rail spur at its terminal end, and consists of a raised

concrete platform 170 by [redacted] having a concrete access ramp at its eastern end.

(3) Building, [redacted] with a chimney-like structure [redacted] high near one end.

(4) Earth-mounded object, [redacted] feet.

(5) Earth-mounded object, about 20 by 15 feet.

(6) Security building, 65 by [redacted] with a wing [redacted] square.

(7) Building, 30 by 20 feet.

(8) Unidentified structure, 55 by 15 feet, with three protrusions; one is [redacted] square, another [redacted] square, and the third 21 feet square.

(9) Six guard towers, each [redacted] square and 20 feet high.

(10) Concrete hardstand, 175 by 50 feet. This appears to be the unloading point for coal to be used at the thermal plant (Item 11).

(11) Thermal plant, 55 by 30 feet, with a raised center section 30 by [redacted] and a stack 95 feet high.

(12) Three excavations, each [redacted] square, situated in an area 135 by 90 feet delineated by a surrounding ditch.

(13) Two earth-mounded tanks, one [redacted] in diameter and the other 15 feet in diameter. They are positioned in a fenced area 140 by 65 feet, and are served by two buried pipelines.

These facilities at the Complex "D" Assembly and Checkout Area are nearly identical to some of those constituting Missile Checkout and Assembly Facility No. 2 at Tyura Tam (see Figure 30). Each installation features an identical rail and road drive-through building, a steam plant, water lines, and drainage facilities. The rail and road pattern at each, except for a few variations, is strikingly similar. These major similarities suggest that each installation may be handling the same basic vehicle or components thereof.

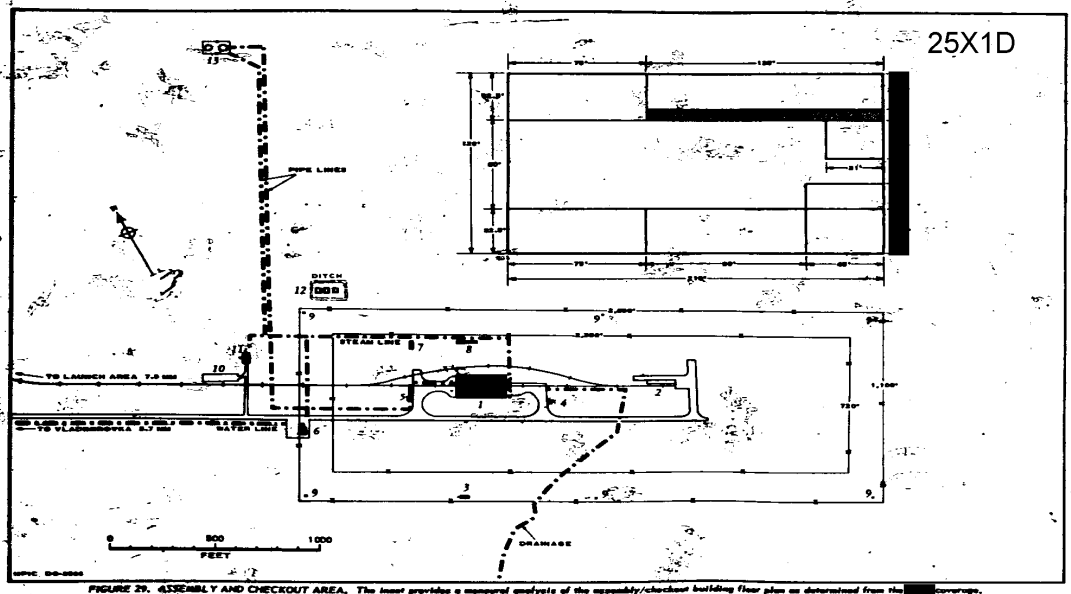

FIGURE 29. ASSEMBLY AND CHECKOUT AREA. The inset provides a measured analysis of the assembly/checkout building floor plan as determined from the [redacted] coverage.

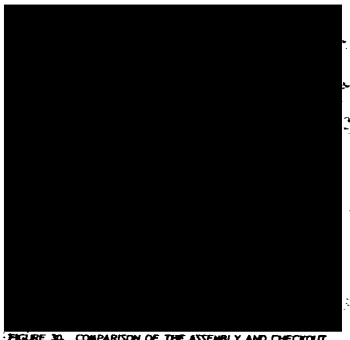

FIGURE 30. COMPARISON OF THE ASSEMBLY AND CHECKOUT AREA AT COMPLEX "D" WITH MISSILE CHECKOUT AND ASSEMBLY FACILITY NO 2. AT TYURA TAM.

Facility No. 2 at Tyura Tam is probably handling large liquid propellant missiles and their components, possibly to include explosive components as evidenced by its explosives storage and handling area. The Complex "D" installation does not require either the explosives storage and handling area or the other component storage facilities found at the Tyura Tam facility. Therefore, the Complex "D" area may be handling only that portion of the vehicle which would be used as the liquid propellant booster for the vehicle flight-tested at Launch Site 1D.

• • •

MISSILE FABRICATION COMPLEX

The Missile Fabrication Complex is located adjacent to the Vladimirovka Support Base (see Figure 3). Facilities comprising this complex have been grouped into a laboratory and administrative area, a fabrication area, and a support area, (see Figure 31). In [redacted] the complex was in final stages of construction, and in [redacted] those facilities were complete and operative, and a current expansion program was under way. The complex is connected with Launch Complex "D" by both rail and an all-weather road, and a 70-foot-wide taxiway connects it with the Class I Vladimirovka Airfield.

It appears that the complex may be utilized for fabricating the prototype aerodynamic vehicle and/or vehicles which are flight tested at Launch Complex "D". Large-scale production would probably require additional facilities. However, there is ample room for future expansion.

LABORATORY AND ADMINISTRATIVE AREA

The Laboratory and Administrative Area is dispersed over the southwestern portion of the complex. It includes a probable laboratory, a water pump house, an administrative-engineering building, and several other buildings under construction. A detailed description of these facilities follows. Item numbers correspond to those on Figure 31.

(1) Probable laboratory building, two-story, hip-roofed, 240 by 50 feet, with a tower 40 feet high on one end of the roof.

(2) Water pump house, 54 by [redacted]

(3) Building under construction, 110 by 55 feet.

(4) Building under construction, 100 by 55 feet,

(5) Two structures under construction. One is circular, measuring 30 feet in diameter, and the other measures 30 [redacted]

(6) Administrative/engineering building, U-shaped, with a complex main section 200 by 40 feet and two wings, each 140 by [redacted]

(7) Building, flat-roofed, [redacted] square.

(8) Building under construction, 145 by 50 feet.

FABRICATION AREA

The Fabrication Area is located in the central portion of the complex. It includes two rail-served machine shops, two large fabrication buildings of which one is under construction, and several other structures. A detailed description of these facilities follows. Item numbers correspond to those on Figure 31.

(9) Building, 45 by 30 feet.

(10) Machine shop, monitor-roofed, 115 by 75 feet.

(11) Building, flat-roofed, 95 by 30 feet.

(12) Fabrication building, saw-tooth-roofed, 385 by 195 feet and 75 feet high. A one-story workshop 20 feet wide runs the length of each side of the building. Two door-storage compartments are at each end of the building, and two rail spurs, 55 feet apart, pass through the building.

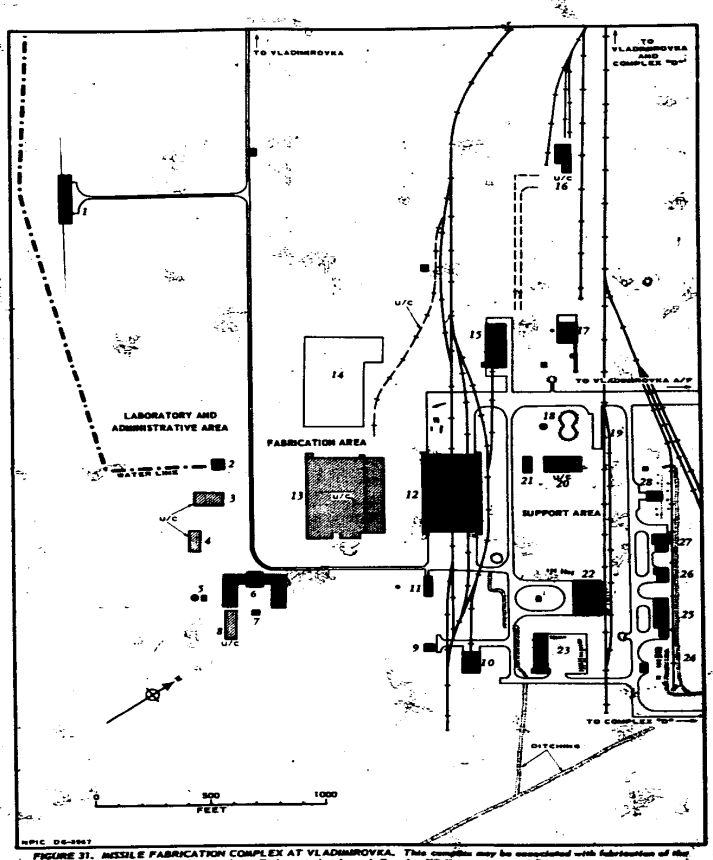

FIGURE 31. MISSILE FABRICATION COMPLEX AT VLADIMIROVKA. This complex may be associated with fabrication of the prototype vehicle and/or vehicles which are flight tested at Launch Complex "D."

(13) Fabrication building under construction. The main section of this building measures 415 by 255 feet and will apparently be served only by road. The other section measures 385 by 80 feet and will be served by rail.

(14) Paved probable open storage area, 450 by 240 feet.

(15) Machine shop, monitor-roofed, 215 by 80 feet.

SUPPORT AREA

The Support Area is located in the northeastern portion of the complex. Facilities include a steam plant, water storage, a motor pool, closed storage buildings, and transloading facilities. A detailed description of facilities follows. Item numbers correspond to those on Figure 31.

(16) Building under construction, 100 by 70 feet.

(17) Steam plant, 95 by 80 feet with a stack 75 feet high. Nearby is a shed [redacted] and an earth-covered structure [redacted] in diameter.

(18) Water storage consisting of a standpipe [redacted] in diameter and 75 feet high and two earth-covered tanks about 55 feet in diameter.

(19) Transloading platform, 220 by 30 feet.

(20) Building begun in [redacted] yet still incomplete, 150 by 75 feet.

(21) Building, 85 by 40 feet.

(22) Warehouse, monitor-roofed, 155 by 120 feet. An overhead traveling crane straddles the rail siding servicing the warehouse.

(23) Motor pool, consisting of a maintenance building, 100 by 55 feet with a raised section 70 by 20 feet at one end, and a hardstand area 190 by 170 feet. About 20 vehicles are parked on the hardstand of which two appear to be conventional propellant transporters and two, whose function has not been determined, are of an unusual configuration.

(24) Fuel storage and off-loading point consisting of a gable-roofed building [redacted] and 11 cylindrical horizontal storage tanks ranging from [redacted] to 30 [redacted]

(25) Storage building, 130 by 50 feet with a wing 45 [redacted]

(26) Storage building, 55 by [redacted] with a wing 15 feet square.

(27) Storage building, 70 by 50 feet with a wing 55 b[redacted]

(28) Building, 70 by 35 feet. A tower-like structure 15 feet square and 30 feet high is located nearby, and numerous small objects have been positioned on either side and to the rear of the building.

25X1D

25X1D

25X1D

CONCLUSIONS

25X1D

Launch Complex "D" and the Missile Fabrication Complex constitute the facilities for an extensive Soviet research program which is probably developing surface-launched, large aerodynamic missiles.

The probable aerodynamic missile research program was initiated prior to [redacted] However, actual firings probably did not commence until sometime in [redacted]

Launch Site 1D, apparently the initial launch facility to become operative, is probably associated with a liquid-propellant-boosted, large aerodynamic missile.

Probably in late [redacted] initial construction plans at Launch Site 2D were abandoned, and instead, a smaller launch facility was constructed.

Launch Site 3D, constructed sometime between [redacted] is probably associated with a solid-propellant-boosted, large aerodynamic missile.

Construction at Launch Site 4D was about 50 percent complete and should have been finished by mid-to-late [redacted]

The Rear "L" and Forward "L" Patterns appear primarily associated with operations at Launch Site 1D.

The Linear Pattern appears primarily associated with Launch Site 3D.

The Assembly and Checkout Area probably handles the liquid propellant booster employed at Launch Site 1D.

The Missile Fabrication Complex probably fabricates the prototype aerodynamic vehicle and/or vehicles flight tested at the Launch Area.

TABLE OF GEOGRAPHIC COORDINATES FOR MAJOR
AREAS IN THE PROBABLE AERODYNAMIC MISSILE FACILITIES

Area	Geo. Coordinates
Launch Site 1D (Zone 10, Launch Area South)	46°28'15"N/46°19'00"E
Launch Site 2D (Zone 10, Launch Area North)	46°28'45"N/46°19'00"E
Launch Site 3D	46°29'00"N/46°19'00"E
Launch Site 4D	46°29'40"N/46°19'00"E
Range Control Center (Site D-1*)	46°28'30"N/46°16'30"E
Radar Facility (Site D-3*)	46°27'15"N/46°15'30"E
Rear "L" Pattern (Site D-4*)	46°29'10"N/46°09'00"E
Forward "L" Pattern (Site D-8*)	46°21'25"N/46°08'45"E
Linear Pattern (Site D-11*)	46°27'00"N/46°17'30"E
Logistical and Administrative Support Area (Zone 11)	46°25'30"N/46°16'10"E
Assembly and Checkout Area (Zone 12)	46°21'05"N/46°13'30"E
Missile Fabrication Complex	46°17'45"N/46°12'10"E

*Reference point

REFERENCES

PHOTOGRAPHY

25X1D

[redacted]

25X1C

Classification

S/Noforn [redacted]
(Downgrading Prohibited)

25X1C

S/Noforn [redacted]
(Downgrading Prohibited)

25X1C

S/Noforn [redacted]
(Downgrading Prohibited)

25X1C

25X1C

MAPS or CHARTS

AMS. Series 501, Sheet NM 38-11 (Stalingrad), 3d ed, May 58, scale 1:250,000 (U)
AMS. Series 501, Sheet NM 38-12 (Petropavlovskyy), 2d ed, Oct 56, scale 1:250,000 (U)
ACIC. ONC 235 (Lake El'ton), 1st ed, Apr 59, scale 1:1,000,000 (U)