Top Secret

[redacted]

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

25X1

basic imagery interpretation report

Developments at Selected Soviet Ballistic Missile Production and Test Facilities (S)

STRATEGIC WEAPONS INDUSTRIAL FACILITIES
BE: Various
USSR

Top Secret

[redacted]

25X1

RCA-09/0020/84
DECEMBER 1984
Copy 72

25X1
25X1

INSTALLATION OR ACTIVITY NAME					COUNTRY
Developments at Selected Soviet Ballistic Missile Production and Test Facilities					UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	CATEGORY	BE NO.	COMIREX NO.	NIETB NO.
NA	See Table 1	See Table 1	See Table 1	See Table 1	See Table 1

MAP REFERENCE

DMA. USATC; Series 200; Sheet 0155-20, 0161-21, 0164-07, 0167-07, and 0234-03, -07, -21, -22, and -24; scale 1:200,000 (SECRET)

LATEST IMAGERY USED	NEGATION DATE (if required)
	NA

25X1

ABSTRACT

1. Activity at 18 Soviet ballistic missile development, production, and test facilities and associated collateral suggest that as many as seven new strategic ballistic missile systems may be under development. Two of these systems are new submarine-launched ballistic missile (SLBM) systems: an SS-N-20 follow-on and the SS-NX-23. Five are confirmed or possible new intercontinental ballistic missile systems: an SS-18 follow-on, the SS-X-24, an SS-X-24 follow-on, the SS-X-25, and an SS-X-25 follow-on. Additionally, series production began in 1983 for the latest deployed SLBM, the SS-N-20. This report describes recent activities at 18 selected installations involved in the production and component testing of these new missile systems. (S/WN)

2. Also included in this report is a brief overview of the Soviet Union's strategic missile systems—both currently deployed and under development. The report contains one location map, 25 annotated photographs, one line drawing, and six tables. The information cutoff date is

25X1

INTRODUCTION

3. The 18 facilities described in this report are currently responsible for the production and static testing of components for most Soviet strategic ballistic missile systems. These facilities (Table 1) are in 10 locations within western and central USSR (Figure 1). An overview of the significant acitivity at these facilities associated with seven new systems under development and the SS-N-20 is presented in this report. A synopsis of the production facilities for currently deployed strategic missile systems is also presented. Emphasis has been placed on facilities that have been or may become contributors to the testing and production of these new systems designed by the Makeyev (SS-N-20, SS-N-20 follow-on, and SS-NX-23); Utkin (SS-18 follow-on, SS-X-24, and SS-X-24 follow-on); and Nadiradze (SS-X-25 and SS-X-25 follow-on) design bureaus (KBs).[1,2,3,4,5] The basis description provides an update of the functions, significant activity, and current expansion programs at each of the 18 facilities. Each of these facilities has been described in a previously published NPIC report. Table 1 in the Appendix lists the previous information cutoff date and the date of latest available imagery during the current reporting period.

25X1

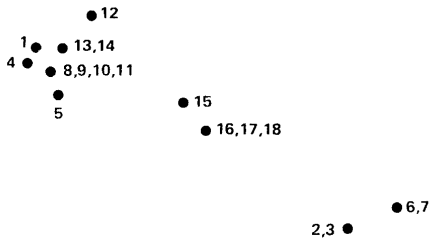
OVERVIEW

Submarine-launched Ballistic Missiles

4. Six SLBM systems (the SS-N-5, -6, -8, -17, -18, and -20) are currently deployed and two others (SS-N-20 follow-on and SS-NX-23) are under development in the Soviet Union. The SS-N-20, which became operational in 1983, is the latest SLBM to reach its initial operational capability, and series production is in progress. The other five SLBMs currently deployed reached their initial operational capability between 1963 and the early 1970s. The SS-N-5 is currently deployed on the Golf-II Class ballistic missile submarines (SSB) and one Hotel-II Class nuclear-powered ballistic missile submarine (SSBN), which will be dismantled soon. The SS-N-6 is still deployed in large numbers on Yankee-I Class SSBNs, although the launchers on some of these submarines are also being dismantled. Both the SS-N-5 and -6 were series produced at Zlatoust Armaments Plant 66. No new launch platforms are being built for the SS-N-8, SS-N-17, and SS-N-18. The SS-N-8 and -18 were series produced at Krasnoyarsk Arms Plant Voroshilov 4 and Zlatoust. The assembly facility has not been identified for the limited production of the SS-N-17, which is deployed on only one operational SSN—the 12-tube Yankee-II. (S/WN)

25X1

25X1



NPIC T-9865

FIGURE 1. LOCATION OF SELECTED SOVIET BALLISTIC MISSILE PRODUCTION AND TEST FACILITIES

Table 1.
List of Installations
(Keyed to Figure 1)

[redacted] 25X1

Item	Installation Name	Geographic Coordinates
1	Belgorod Plastics Plant	50-35-15N 036-37-30E
2	Biysk Solid Motor Production Plant II	52-28-49N 085-02-30E
3	Biysk Solid Motor Test Area II	52-31-16N 085-02-07E
4	Dnepropetrovsk Missile Development Production Center	48-26-03N 034-58-31E
5	Kamensk-Shakhtinskiy Solid Motor Production Plant	48-17-53N 040-10-49E
6	Krasnoyarsk Guided Missile and Arms Plant Voroshilov 4	56-00-38N 092-58-59E
7	Krasnoyarsk Rocket Engine Test Facility	56-06-17N 093-25-58E
8	Pavlograd Ordnance Research and Development Facility	48-29-28N 035-57-12E
9	Pavlograd Solid Motor Assembly and Test Support Facility	48-27-02N 035-57-25E
10	Pavlograd Solid Motor Production Plant	48-34-14N 035-45-50E
11	Pavlograd Solid Motor Test Facility	48-26-00N 035-58-23E
12	Safonovo Plastics and Guided Missile Component Plant	55-05-11N 033-14-55E
13	Voronezh Aircraft Engine Plant 154	51-39-24N 039-10-10E
14	Voronezh Rocket Engine Test Facility	51-34-37N 039-09-45E
15	Votkinsk Missile Final Assembly and Checkout Facility	57-02-43N 053-59-03E
16	Zlatoust Armament Plant 66	55-06-20N 059-42-24E
17	Zlatoust Rocket Engine Test Facility	55-08-38N 059-54-55E
18	Zlatoust SLBM Assembly Facility	55-08-33N 059-52-56E

This table is SECRET.

[redacted] 25X1

25X1
25X1

SS-N-20

5. The SS-N-20 was in research and development during the early 1970s. Several design bureaus collaborated in the design of the system. The design bureau in Miass, headed by the Makeyev KB, functioned as overall system designer, and the primary propulsion system design was handled by the Perm KB and an element of the Utkin KB in Dnepropetrovsk.[1,2,3]

6. The static test program for the first stage of the SS-N-20 was possibly performed at Pavlograd, a primary test and production facility of Utkin KB systems. From 1977 to 1979, meter motors, each with a nozzle, were tested at Pavlograd. Special intelligence indicates that the diameter of the SS-N-20 is meters.[2] Motor testing during that period coincides with the prototype and preseries production of SS-N-20 motors. Vibration tests at the national acceptance test facility at Krasnoarmeysk in early 1977 suggested that motor research and development was nearly complete.[1] The sighting of motors with diameters at Pavlograd, the same diameter as that cited in special intelligence for SS-N-20 motors, indicated that the motors may be SS-N-20 first-stage motors.[2]

7. At Biysk Solid Motor Production Plant II, SS-N-20 motor cases received from Perm are filled with solid propellant.[1] A motor, with a nozzle, was observed in 1980 at the Biysk Solid Motor Test Area II, and another motor of similar dimensions was canvas covered on a railcar in the motor series production line in Plant II in 1983. The dimensions of these motors indicate that they are for the second stage of the SS-N-20. Series production in the new line began in late 1982 or early 1983. Previous SS-N-20 motors were probably filled in production line 3.

8. SS-N-20 motors were produced at Biysk Solid Motor Production Plant II and shipped to the Zlatoust Rocket Engine Test Facility (RETF) for missile final assembly to support the flight test program.[1] The completed portion of the final assembly facility at Zlatoust was separately secured in late 1982, an indication that missiles were being produced to support the operational deployment of the system.

SS-N-20 Follow-on SLBM

9. Special intelligence and imagery-derived information suggest that a follow-on to the SS-N-20 is probably in the prototype or preseries production stage of development.[6] In May 1980,

25X1

SS-NX-23 SLBM

10. The development of a follow-on to the SS-N-18, the SS-NX-23, is in progress at several facilities in the Soviet Union. Preparations for this missile program have been observed at facilities used in the development, testing, and production of the SS-N-18. Facility modifications and upgrades and popup and flight test programs have been necessary to develop this system. Propulsion testing of the system's engines was probably performed at Krasnoyarsk and Voronezh RETFs.[4,7,8]

25X1
25X1
25X1
25X1
25X1
25X1
25X1
25X1
25X1
25X1
25X1

Intercontinental Ballistic Missiles

11. Four ICBM systems have been deactivated, and five others are currently deployed. The SS-11 was operationally deployed in the mid-1960s, the SS-13 in the early 1970s, and the SS-17, -18, and -19 by the mid-1970s. Development is in progress to replace some, if not all, of the currently deployed force. Series production apparently has halted on the SS-11, SS-13, and possibly the SS-17. The SS-11 was and the SS-19 is produced at Moscow Fili 23, the SS-13 at Pavlograd, and the SS-17 and -18 at Dnepropetrovsk. Five systems are in the research and development (R&D) cycle, including the SS-18 follow-on, the SS-X-24 and SS-X-24 follow-on, and the SS-X-25 and SS-X-25 follow-on. (S/WN)

25X1
25X1

SS-18 Follow-on ICBM

12. Facilities that have been involved in the development and production of the SS-18 are undergoing expansion and/or modifications. The facilities include the engine production and test facilities at Voronezh; the development, production, and test facilities at Dnepropetrovsk; the plastics plant at Safonovo; launch assist device production at Pavlograd; and two IIIF test silos at Tyuratam. An increase in the number of railcars observed at Dnepropetrovsk and Safonovo further indicates that possibly a new or improved system is being considered. Additionally, some of the construction in the final assembly area at Pavlograd may support launch assist device test activity for an SS-18 follow-on. (S/WN)

25X1

25X1
25X1

25X1
25X1

SS-X-24

13. Series production of the motors and missile final assembly would be performed at Pavlograd, if the system is to be deployed. The facilities previously identified as the motor series production facility for the SS-X-24 are still under construction. Construction emphasis has been shifted to other areas within the plant. These areas probably will not be ready for series production until 1987. (S/WN)

SS-X-24 Follow-on ICBM

14. Currently at Pavlograd, an extensive facility expansion and modifications program at the motor production facility and final assembly facility is in progress. This expansion and modification is an indication that a new program, possibly a follow-on to the SS-X-24 or a new missile system, may be produced and finally assembled there. The new construction efforts will not be completed and ready for operation prior to 1987. A new motor static test program (or programs), normally a precursor to the development of a new missile system, is under way at the Pavlograd Solid Motor Test Facility. (S/WN)

SS-X-25 and SS-X-25 Follow-on ICBMs

15. New curing and revetted storage buildings at Kamensk-Shakhtinskiy became operational in early 1984. These new buildings and the three buildings constructed in the munitions storage area may support series production of all three stages of the SS-X-25.[5] A new production area was under construction at Kamensk-Shakhtinskiy and will not be completed in time to support series production of the SS-X-25. This new area is probably designed to support a new program, possibly the 15Zh66—a Nadiradze-designed system.[9]

25X1

Unidentified System(s)

16. Pavlograd has historically been involved with the static testing of motors for more than one ballistic missile static test program during the same time. The only currently known missile system with a is the SS-N-20—a fact supported by imagery intelligence (imint) and The current expansion of facilities and new construction at Pavlograd seem to indicate that preparations are being made for another missile system(s), most likely for the Strategic Rocket Forces (SRF). The use of a water-cooled diffuser in static testing upper-stage motors is an expensive operation that requires a coolant supply and pumping system together with a large amount of maintenance to keep it operating satisfactorily. Pavlograd has the only known water-cooled diffuser test facility in the Soviet Union; therefore, it would appear that upper-stage motors from other motor production facilities are being tested there.

25X1
25X1
25X1

BASIC DESCRIPTION

Missile Component Plants

Belgorod Suspect Plastics Plant

17. Containers, rocket motor cases, and motor components for the SS-X-25 and the improved SS-20 (15Zh53) are believed to be produced at Belgorod (Figure 2).[10] Construction was continuing on several new buildings in the plant. (

18. Construction was nearly complete on an assembly/fabrication building (item 1, Figure 2) and an administration/engineering building (item 2, Figure 2), which have been under construction since May 1981 and June 1978, respectively. The buildings should become operational by early 1985; however, it cannot be determined at this time whether the buildings will support the production of missile components. (S/WN)

Safonovo Plastics and Guided Missile Components Plant

19. Safonovo (Figure 3) is the Soviet Union's major production facility for plastic/fiberglass motor cases and transport/launch canisters for strategic missile systems. Plastic/fiberglass components for the SS-16/-20, SS-18, SS-X-24, SS-X-25; for other missile systems; and for nonmilitary goods are also produced at Safonovo.[10] During the reporting period, an increase in the number of canister/capsule (can/cap) trains increased at the plant. Shipping crates believed to be associated with both the SS-16/-20 and possibly a new or follow-on missile system were still present, and construction was continuing at the plant.

25X1
25X1

20. Can/cap trains with SS-18 subcomponents were observed in increased numbers in the plant since late 1982 (Table 2, Appendix). No upper and lower canister SS-18 components were observed, suggesting that shipments of those components still occurred at night. Since the building associated with the renovations to SS-18 component production has been under renovation since 1982, the increase of rail activity may indicate that the renovations are complete or nearly complete. The shipment of components for the other SRF systems would require the use of 24-meter-long railcars for large components and box or gondola cars for the smaller components. The number of 24-meter-long railcars seen in the plant during the period remained normal (Table 2, Appendix). (S/WN)

25X1
25X1

21. Crates previously identified with the shipment of first-stage motor cases for the SS-16/-20, have been observed in the facility. The same type of crate was seen in increasing numbers at Kamensk-Shaktinskiy Solid Motor Production Plant (SMPP). At this plant, first-stage motor cases for the SS-16/-20 are filled. The SS-X-25 motor cases are also believed to be filled there. The chamfer-

25X1
25X1

25X1

roofed crates linked to the shipments of plastic/fiberglass components to Biysk SMPP II continued to be seen in the facility. Biysk SMPP II has primarily been associated with the SS-N-20 missile system and receives plastic/fiberglass components for that system from a plant in Perm.[1] (

22. The extensive construction program, ongoing on the south side of the plant since the mid-1970s, continued. The construction program encompasses at least five buildings, two materials receiving areas, and a steam/power plant. The five buildings were in an early to midstage of construction. In early 1984, construction resumed on one of the two large assembly/fabrication buildings, where construction had stopped in 1981. (S/WN)

23. The cleanup of materials outside of the assembly/fabrication building in the northwest corner of the plant suggests that renovations to that building are complete. In addition, at an unidentified building in the northeast area of the plant, work that includes the installation of a pipe gallery along the roof and internal construction was continuing. (S/WN)

Pavlograd Ordnance Research and Development Facility

24. Pavlograd Ordnance Research and Development Facility (ORDF) has been involved in the research, development, and engineering of conventional high-explosives munitions. The facility (Figure 4), probably manufactures components for missiles produced in the Pavlograd Solid Motor Assembly and Test Support Facility. The facility also fits SS-17 and SS-18 launch assist devices (LADs) to the missile canisters. During the reporting period, a resumption of can/cap train activity occurred, and construction projects were nearly complete in both the engineering, fabrication, and storage area, and the adjoining new fabrication area. (S/WN)

25. Can/cap train activity resumed at the facility on after a hiatus of nearly five years. Can/cap trains have not been seen in the ORDF since 1979. Twenty-four-meter-long railcars continued to be in the facility. (S/WN)

26. A major expansion program began in the mid-1970s and consists of the construction of a separate new fabrication area. Also, the addition of new buildings within the existing research, fabrication, and storage area is nearly complete. This plant expansion will probably be for increased production of missile components, possibly for a new missile system. (S/WN)

27. Major construction in the new fabrication area was nearly complete. A fabrication building (item 2, Figure 4), next to the large fabrication/assembly building, was in the final stages of construction, and a second fabrication building (item 1, Figure 4) was in the late stages of construction. An administration/engineering building (item 4, Figure 4), under construction since October 1976, and a nearby shop building (item 3, Figure 4), under construction since October 1977, were both completed in July 1981. Numerous other support structures were in various stages of construction. (S/WN)

28. In the engineering, fabrication, and storage area, a new fabrication building (item 7, Figure 4) was completed in March 1982 but was probably not operational until August 1983. Another new fabrication building (item 8, Figure 4) was completed in February 1983. This new building consists of a large diameter pipe ventilation system along its roof. The pipe is connected to two separate exhaust scrubbers. A probable shop building (item 9, Figure 4) was completed in February 1984. Extentions were also completed on two existing fabrication buildings (items 5 and 6, Figure 4) in the eastern end of the area. A fabrication building (item 10, Figure 4), under construction in the southeast corner since March 1980, was in the final stages of construction. (S/WN)

Production Plants

Biysk Solid Motor Production Plant II

29. Motor cases are filled with solid propellant at Biysk SMPP II for at least the SS-N-20 missile system and an unidentified missile system. The facility consists of three production lines (lines 1, 2, and 3). Production lines 1 and 2 are shown in Figure 5. A new solid propellant missile program may be in progress in line 1, and activity in line 2 suggests that full-scale SS-N-20 production will take place soon. Although there has been no new construction in the plant, several production buildings have been or are undergoing modifications possibly in support of a new missile system(s). (S/WN)

30. Activity in production line 1 suggests that the line is involved in the development of a new solid propellant missile. One of the two casting buildings (item 1, Figure 5) in the line was modified in 1982. A canvas-covered probable motor, with a diameter between (Figure 6), was on a flatcar in the plant on Possible containers for the motor have been present in the plant several times. Chamfer-roofed crates, meters, were identified at the plant in September 1982 and may have served as shipping containers for the motor case. Similar crates were initially identified adjacent to the hydrostatic test building at Safonovo Plastics Plant in September 1982. Although Plant II is involved in the production of SS-N-20 motors, SS-N-20 motor cases are believed to be supplied to Biysk by a plant in Perm. The similarities in dimensions of probable first-stage SS-N-20 motors tested at Pavlograd during 1977-79 and those seen at Biysk SMPP II, line 1, and special intelligence stating that the SS-N-20 follow-on motors would be developed by two different KBs suggests that the first-stage motor case could be supplied by Safonovo and that Biysk line 1 would fill the motors with solid propellant.[2] In addition, the presence of a new diffuser in Test Area II at Biysk in March 1984 indicates that a new upper-stage motor test program was in progress.

25X1
25X1

25X1

31. Production line 2 (Figure 5) is the operational series production line for at least the first- and second-stage motors of the SS-N-20. Since late 1982, the production line has still not been fully used. No activity was observed at two of the four curing buildings (items 3 and 4, Figure 5). Preparations for increased activity in the line were in progress in early 1984, when a cast/curing building was modified and assembly was resumed on the third-bay charger (item 2, Figure 5) on the southern bay charger line. (S/WN)

32. The modifications to the casting building (item 5, Figure 5) include the construction of a revetment and a conduit around the building and probable internal alterations. A small storage bunker was removed to accommodate the modifications. These modifications are probably protective measures normally taken in case of potential explosions or fires. The protective measures, the resumption in assembly of a third-bay charger, and the availability of two unused curing buildings suggest that full-scale motor producton for the SS-N-20 will begin in the near future. (S/WN)

33. Production line 3 served as the pilot line for SS-N-20 motor production. It is not known at this time whether the facility will continue to produce those motors or produce pilot motors for the SS-N-20 follow-on. No significant activity was seen in the line during the reporting period. (S/WN)

Pavlograd Solid Motor Production Plant

34. At Pavlograd SMPP, motor cases for Nadiradze- and Utkin-designed missile systems that include upper-stage motors for the SS-20 missiles and probably the three stages of the SS-X-24 are filled with solid propellant. [11] A new solid motor production line, probably for series production of the SS-X-24 follow-on or an unidentified missile system, is nearly complete.

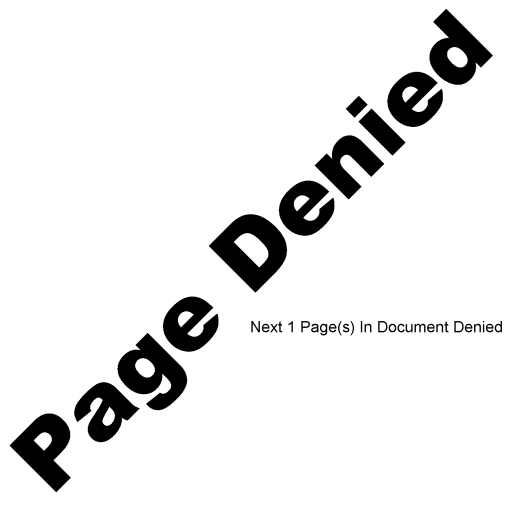
25X1
25X1

35. The new solid propellant motor production line (Figure 7), along the southwest boundaries of the plant, was in the late stage of construction. Construction began on this composite propellant line between September 1977 and August 1978. Although construction has been continuing on portions of the new line, a limited production capability has existed since early 1981. The line will probably become fully operational sometime during 1987. The new line is similar to new propellant production lines at Biysk SMPP II. (S/WN)

36. For discussion purposes, the new line has been divided into three separate areas (designated Areas A, B, and C). Area A is believed to be the pilot production line for the production of prototype and flight test missiles for the SS-X-24 program. The line consists of an ingredients preparations/mix building (item 12, Figure 7), a revetted casting building (item 15, Figure 7), a buried control bunker (item 13, Figure 7), and an unrevetted casting building (item 14, Figure 7). Each of these structures was completed and possibly operational by May 1981. Because of their limited size, the facilities in this area can provide only a limited propellant mix capability. (S/WN)

25X1

25X1



Next 1 Page(s) In Document Denied

37. Area B will serve as the motor finishing and shipping area of the line. Construction was externally completed on the major buildings in this area by February 1984. Included are a nondestruct test building (item 8, Figure 7) completed in September of 1983; an X-ray building (item 6, Figure 7) completed in February 1984; an administration/production control building (item 1, Figure 7) completed in June of 1983; and a probable component storage building (item 9, Figure 7), a finishing building (item 7, Figure 7), and a curing building (item 11, Figure 7) all completed in February 1984. Construction was continuing on a small support building, and pilings had been emplaced for a possible new curing building (item 10, Figure 7) and an unidentified structure (item 4, Figure 7). (S/WN)

38. Area C will serve as a probable ingredients receiving and case preparation area for the new line. Construction was continuing on a possible case preparation building (item 18, Figure 7), a high-bay building (item 20, Figure 7), and an unidentified structure (item 19, Figure 7). Tracks for a new bay-charger line have been under construction since October 1983. Two revetted probable storage bunkers (items 16 and 17, Figure 7), similar to bunkers constructed in the production area at Kamensk-Shakhtinskiy, were completed by May 1983. (S/WN)

39. If the new line is to be similar to Biysk SMPP II line 2, then a larger propellant mixing and casting capability will have to be constructed. It is expected that a new mixing building and two ingredients preparations buildings will be constructed in the vacant area between the storage bunkers and the pilot production line. This area will be served by the new bay charger line. (S/WN)

Kamensk-Shakhtinskiy Solid Motor Production Plant

40. Kamensk-Shakhtinskiy SMPP (Figure 8), a composite propellant plant, has been involved with the series production (filling of the motor cases) of the first-stage motors for the SS-16/-20 and the three motor stages for the SS-X-25.[5] The new six-bay curing building and the two nearby revetted possible storage buildings became operational during early 1984. Additionally, motor containers, possibly for the SS-X-25, were observed in the facility in addition to first stage-motor case shipping crates for the SS-20 missiles. A major construction program was in progress in the new probable production area that may support series production of future systems such as the 15Zh66.

41. Motor containers were seen on flatcars in front of the new six-bay curing building (item 5, Figure 8) on Two of the five containers were and the other three were each. The containers may be for first- and second-stage motors of a Nadiradze system,[5] possibly the SS-X-25. Five probable first-stage motor case shipping crates, were seen at the facility on Crates of this size were also seen during the reporting period at Safonovo Plastics Plant. During the early 1970s, this type of crate had been identified as a shipping crate for the first-stage SS-16/-20 motor case. 25X1 25X1

42. Construction within the main plant area appeared to be complete, but a major construction project was in progress in the new production area. Within the main plant area, the new six-bay curing building (item 5, Figure 8), and the two nearby revetted possible storage buildings (items 4 and 6, Figure 8) became operational during early 1984. In the probable new production area, one large assembly/fabrication-type building (item 9, Figure 8), two smaller buildings (items 7 and 8, Figure 8), roads, and steam lines were under construction. Ground preparations for a revetted building (item 10, Figure 8) was also present. Ground preparations for two new buildings, one outside of the plant (item 1, Figure 8) and the other within the northeast section of the plant (item 2, Figure 8), were under way. A probable warehouse (item 3, Figure 8) was also constructed during the reporting period. (S/WN)

43. In the munitions storage area (Figure 9), construction is complete on a new revetted storage building with lightning arrestors (item 1, Figure 9) and a new transshipment building (item 4, Figure 9). Both buildings are rail served. Additionally, a new rail-served storage/checkout building (item 2, Figure 9) is nearly complete. Lightning arrestors, like those at the probable SS-16/-20-associated storage/checkout building (item 3, Figure 9), have yet to be constructed near the new rail-served storage/checkout building. (S/WN)

Voronezh Aircraft Engine Plant 154

44. Voronezh Plant 154 (Figure 10) is currently associated with the development and production of engines for the SS-18 and possible SS-18 follow-on ICBMs, SS-N-18, SS-N-20, SS-NX-23 SLBMs, and the SL-12 and SL-13 space launch vehicles (SLVs).[4,12] Plant 154 has also been involved in the development and production of aircraft engines. A construction project was nearly complete at the end of the reporting period. 25X1

45. A major construction project, in progress at Plant 154 since August 1982, was nearly complete. This new construction will probably be for the production of engines for several missile systems currently under development if they are operationally deployed in the future. However, since the plant continues to be associated with the production of aircraft engines, the construction may also support that function. An addition to a large fabrication/assembly building (item 3, Figure 10), in the northeast end of the facility, was externally complete in April 1984. Additions to three shop/foundry buildings (items 2, 4, 5, and 6, Figure 10) were also completed, and a large probable storage building (item 1, Figure 10) in the northwest portion of the plant was in an early stage of construction. A large fabrication/assembly building recently completed at the nearby Voronezh RETF is believed to be an extension of this construction project. (S/WN) 25X1 25X1 25X1 25X1 25X1 25X1 25X1

Next 1 Page(s) In Document Denied

Test Facilities

Voronezh Rocket Engine Test Facility

46. Voronezh RETF (Figure 11) is a major acceptance test facility for rocket engines or engine clusters produced at Voronezh Plant 154.[12] During the reporting period, test activity was identified at test stands 1 and 2. Construction is externally complete on a new fabrication/assembly building and an open-sided, shedlike structure.

47. Evidence of rocket engine testing was observed on three times at vertical test stand 1 and once at vertical test stand 2. On a large blast mark extended across the flame bucket and into the adjoining wooded area of test stand 1. On the same date, steam was venting near the diffuser at test stand 2. Evidence of testing was again observed at test stand 1 on when the concrete flame bucket appeared to be discolored. (S/WN)

48. A new fabrication/assembly building, under construction since January 1983, was externally complete by April 1984. Because there is no apparent need for such a large fabrication/assembly-type building at a RETF, it is believed that this new building is part of the major construction project in progress at Plant 154, where there is no additional space for expansion. Construction of an open-sided, shedlike structure, under construction since December 1983, was completed in April 1984. The structure, in a revetted turnaround area between test stand 2 and the explosives forming facility, is similar to structures used to cover horizontal tanks in propellant storage areas. (S/WN)

Dnepropetrovsk Rocket Engine Test Facility

49. Dnepropetrovsk RETF (Figure 12) supports test programs for research and production items generated from the Utkin KB[12] and production areas at Dnepropetrovsk Plant 186. In response to programs at Plant 186, the RETF has undergone modifications and new construction for their support. The programs have required the construction of an assembly/checkout building, modifications to test stand 3, and the construction of a new power substation.

50. New construction and modification activity continued throughout the RETF. A new assembly/checkout building was in a late stage of construction, and a new water cooling tower was completed. Additionally, an overhead crane was being erected in the northwest portion of the RETF. Also, tree clearing, ground preparation, and fence realignment were in progress. A new power substation was under construction just outside the southeast corner of the facility. A new materials receiving area was completed outside the southwest corner of the RETF. This area is used for receiving construction materials used in the construction of a new building in the design bureau area of Plant 186. Another new area of construction, south of the materials receiving area, will probably be a test and support area for the Belarus tractors produced at Plant 186. Modifications continued on test stand 3 (Figure 13). The modifications include the addition of possible tankage and the rearrangement/additions of hardware on the roof of the test stand. (S/WN)

Krasnoyarsk Rocket Engine Test Facility

51. Krasnoyarsk RETF is associated with the testing of SLBM engines and the cleaning and refurbishment of liquid-propellant SLBMs. Among the systems that are probably sent to Krasnoyarsk for refurbishment are the SS-N-6, SS-N-8, and SS-N-18. Engines assembled at Krasnoyarsk Plant 4 and probably at Zlatoust Plant 66 and engines for the new liquid-propellant SLBM currently in flight testing, the SS-NX-23, are tested at the RETF.[4,7] During the reporting period, there was an increase in rail activity, and possible engine testing occurred at test stands 1 and 2. The possible hydrostatic facility and modifications to the laboratory test area and power substation were completed by mid-1984.

52. The number of missile-associated railcars at the facility has gradually increased since early 1983. A high count of 29 railcars was at the RETF in mid-March 1984. The number of propellant railcars also increased during this same period. Two new inplant transporters arrived at the large assembly/checkout building in early 1984. The increase in rail traffic and the additional inplant transporters suggest that there has been an increase in rocket engine test and/or missile refurbishment activity at the RETF. (S/WN)

53. The continuing presence and movement of propellant-associated railcars within the engine test-associated areas of the facility indicates continued engine testing. The characteristics of the propellants being tested make the test exhaust marks difficult, if not, impossible to detect in nonwinter months. The presence of snow melt and steam venting at test stand 1 on suggested that a test had recently occurred. Additionally, snow removal from the flame bucket was observed at both test stands 1 and 2 several times during the 1983-84 winter season. (S/WN)

Zlatoust Rocket Engine Test Facility

54. Zlatoust RETF (Figure 14) is responsible for the cleaning and refurbishment of liquid propellant SLBMs. The facility was also involved in the prototype and flight test missile assembly of the SS-N-20 solid propellant SLBM. During the reporting period, rail activity declined, and construction was continuing on the new rocket engine vertical test stand. (S/WN)

55. A decline in rail traffic occurred at the RETF from late 1983 through mid-1984. This decline may be the result of an increase in rail traffic in the adjoining SLBM assembly facility; however, an enclosed rail shed in the RETF can store as many as nine 24-meter-long railcars. Rail traffic in the cleaning and refurbishment area of the RETF suggested that the refurbishment of liquid-propellant SLBMs was continuing. (S/WN)

56. A sporadic construction program, in progress since the mid-1960s to build a vertical test stand, was continuing at an obviously low priority. A portal jib crane, used to emplace large construction materials on the test stand, was removed during early 1984. The crane had been used in the construction effort since late 1981. Installation of flame bucket, blower lines, steam lines, storage bottles, and pipelines has yet to be done. The installation of racks for vertical high-pressure bottles began in June 1984. (S/WN)

Biysk Solid Motor Test Area II

57. Biysk Solid Motor Test Area (SMTA) II is responsible for the testing of large-diameter motors produced at Biysk Solid Motor Production Plant II. Improvements to the test area and the arrival of a diffuser during the late 1970s had been in preparation for testing SS-N-20 motors. Since early 1984, preparations that will support a new static test program at the facility have been seen. The new test program may be for the new motors produced at Biysk SMPP II, line 1. (S/WN)

58. Motor test-related activity was continuing at the facility during the reporting period (Table 3, Appendix). A new diffuser, [redacted] meters, was in the test position on [redacted] (Figure 15). Diffusers are used for altitude testing and exhaust gas pumping and would be used during testing and evaluation of motors for new missile systems. The new diffuser will probably support upper-stage motor testing for the missile system associated with the large motors seen at the SMPP II, line 1, since late 1982. Possible preparations for upper-stage motor testing were seen on 29 July, when the diffuser was in the test position (but not aligned with the thrust block). The environmental shelter was at the thrust block, and the mobile crane was next to the environmental shelter. (S/WN)

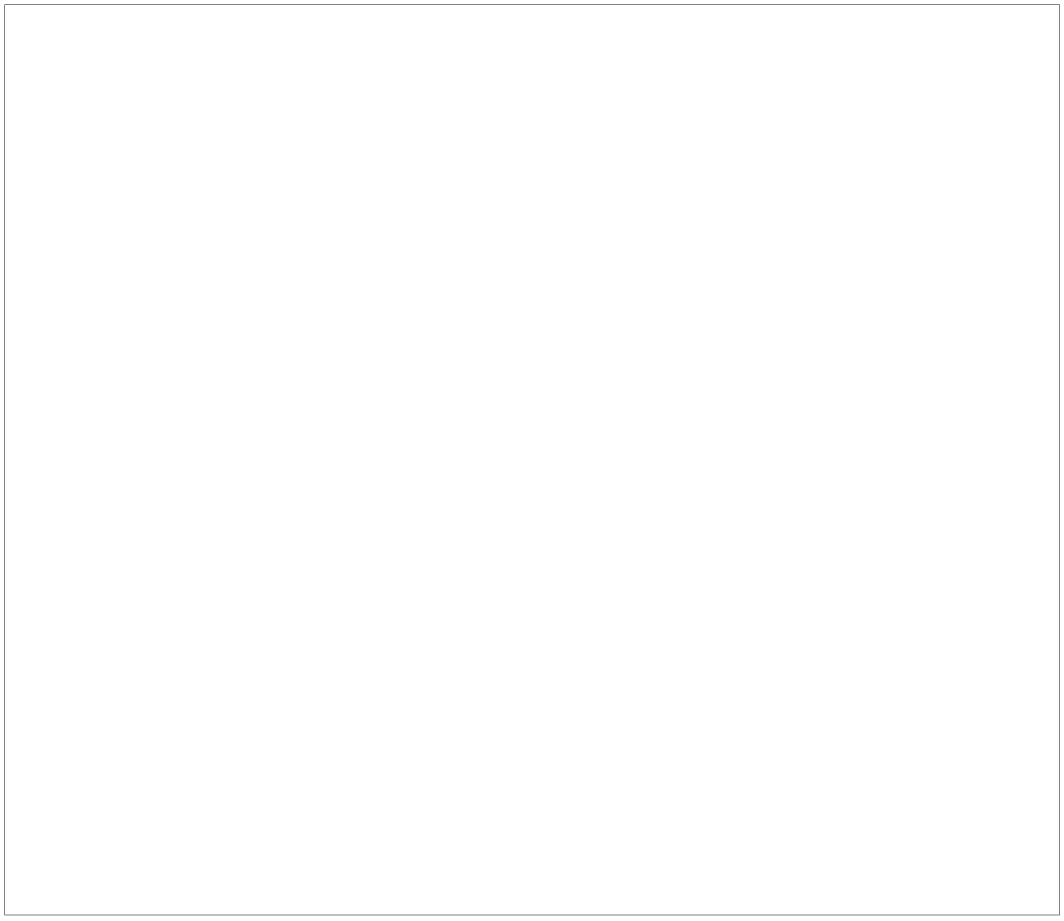
59. In addition to the new diffuser, the new static test program has required the surfacing of the inner revetment wall with concrete blocks, cleanup of discarded materials, and a new environmental shelter, [redacted] (S/WN)

Pavlograd Solid Motor Test Facility

60. Pavlograd Solid Motor Test Facility (SMTF) is involved in the static testing of solid motors and LADs produced at the Pavlograd SMPP and ORDF. The SMTF may also conduct static testing of motors produced at other production facilities. The SMTF consists of a horizontal test area and a LAD test area (Figure 16). (S/WN)

Horizontal Test Area

61. The horizontal test position at Pavlograd SMTF has the only known water-cooled diffuser system in the Soviet Union. At least two motor static test programs have been in progress at the facility since early 1983. Table 4 in the Appendix describes test-related activity since May 1982. One program involves an upper-stage motor, and the second, a possible first-stage motor. The upper-stage motor requires the use of a water-cooled diffuser to simulate inflight upper-atmospheric conditions. (S/WN)



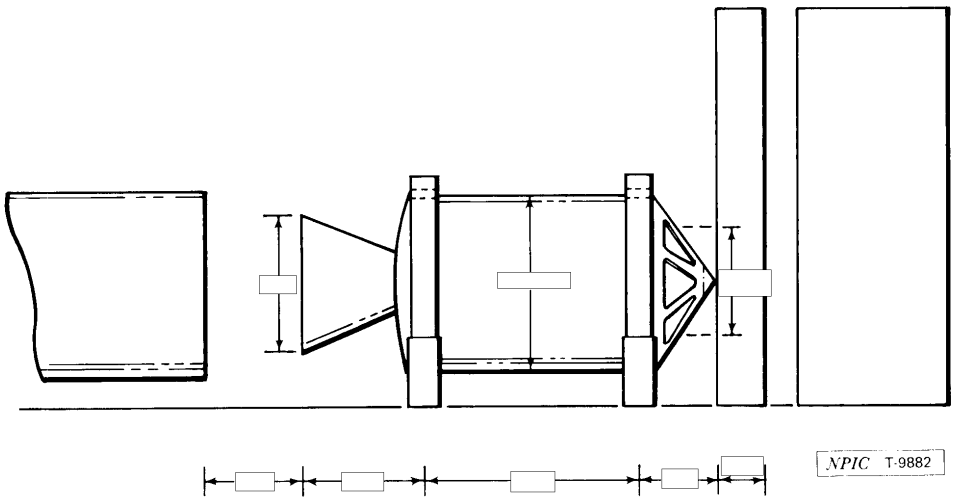


FIGURE 18. CONCEPTUAL DRAWING OF UPPER-STAGE MOTOR, PAVLOGRAD SMTF

62. Water-cooled diffuser segments arrived at the test facility during a period of modifications to the horizontal test area in late 1981. A control building, two reservoirs, new monitoring stations, and a railed diffuser storage area were constructed to accommodate this new upper-stage motor test program. Although the diffuser segments were seen assembled in the test cell area in November 1981 and January 1982 (probably for checkout and/or training), operational use of the diffuser probably did not occur until September 1983. (S/WN)

63. Test preparations and posttest activity, involving a possible first-stage motor, meters (without a nozzle), were observed during February and March 1983. (S/WN)

64. A canvas-covered motor was at the thrust block and the water-cooled diffuser segments were being assembled on (Figures 17 and 18). The motor, including the nozzle, was approximately in diameter. The diameter of the nozzle was approximately A thrust cone was positioned between the motor and the thrust block. The distances between cradle support uprights suggest that the motor case is at least long. Motors on cradles with similar support distances were observed in January, May (Figure 19), and July 1984. In each case, the water-cooled diffuser was positioned in the test cell, and the motor had a diameter of approximately The nozzle area was covered by the diffuser and/or adapter segment. (S/WN)

65. On the segments for a new small diffuser were seen in open storage next to the LAD test area hardstand. The open storage has accommodated a number of test support articles used for the horizontal and LAD test programs. On the assembled, new, small diffuser segments had been moved to the diffuser storage area near the horizontal test position. It is not known at this time whether the diffuser segments could be used as an extension to the large water-cooled diffuser segments and/or for a new upper-stage motor static test program. (S/WN)

66. The motor test activity observed at Pavlograd may or may not be for the same missile system. Pavlograd has historically been involved in more than one static or LAD test program during the same periods for major SRF liquid- and solid-propellant systems. Static testing of solid-propellant motors for a naval ballistic missile and/or its follow-on could also be indicated by this activity. (S/WN)

LAD Test Area

67. The developmental testing of LADs for missiles designed for the Utkin design bureau takes place in the LAD test area of Pavlograd SMTF. [11,12] LADs for both the SS-17 and SS-18 ICBMs were tested in the test area. Activity in the test area during 1983 was possibly associated with the SS-18 follow-on or SS-X-24 follow-on ICBMs or even a yet to be identified missile system. A new diffuser for the horizontal test position was delivered to the LAD test area in April 1984.

68. From February to July 1983, probable refurbishment/modification for a new LAD test program was in progress on the LAD test position. After an approximately one year hiatus, this refurbishment was a resumption in activity at the position. LAD testing was under way at the position by early August 1983. On the LAD test position was fully assembled and readied for a test. When next seen on the test position was partially dismantled (extension poles and dome-topped section removed), an indication that a test had probably been conducted. Preparations for another LAD test were observed on Either test apparatus, a possible LAD, or a shipping container, in diameter, was on the test apron. (In comparison, the SS-18 system uses the largest known LAD which is in diameter.) At least one additional LAD test had been conducted at the test position by Since that time, the test position has remained dismantled, indicating that the LAD test program is complete. (S/WN)

69. In possibly related activity, a can/cap train loaded with SS-18 MOD-4 canister components arrived at the nearby Pavlograd Solid Motor Assembly and Test Support Facility (SMA&TSF) in early August 1983. This was the first sighting of a loaded can/cap train at this facility since August 1980. The arrival of this train during the resumption of LAD testing suggests that the test program was possibly associated with an SS-18-sized missile system; however, other new missiles under development by the Utkin design bureau [11,12] such as the SS-X-24 follow-on must also be considered.

70. On segments for a new small diffuser to be used at the horizontal test position were seen in open storage adjacent to the LAD test area hardstand. The open storage area has accommodated a number of test support articles used for the horizontal and LAD test programs. By the diffuser segments had been assembled and moved to the horizontal test position. (S/WN)

Final Assembly

Pavlograd Solid Motor Assembly and Test Support Facility

71. The Pavlograd Solid Motor Assembly and Test Support Facility (Figure 20) has been involved with the final assembly of the SS-13 and is currently the final assembly facility for the SS-X-24.[11] The facility also supports test activities at the nearby solid motor test facility. An extensive expansion program (in two or three phases), probably for final assembly facilities for a new missile system(s), was in progress. Recent fence realignments indicate that the overall new construction will approximately double the usable area of the facility. Additionally, an increase in can/cap and other missile railcar activity was observed at the facility.

72. The first expansion program, in progress since 1977, was in support of the SS-X-24 program and was complete in late 1982. A second expansion program, probably for an SS-X-24 follow-on or a new missile system, has been in progress since early 1983. Construction was continuing on two new probable assembly buildings, and ground preparations were started on two additional possible assembly buildings in the summer of 1983. An addition to an existing assembly building was in an early stage of construction. Two railspurs have been under construction since mid-1983, and construction was started on a new rail shed (approximately 350 meters long) in September 1984. When complete, the rail shed will reduce the monitoring rail traffic at the facility. (S/WN)

73. Construction of a possible third expansion area was started along the northeastern boundaries of the facility. This new area consists of construction for a new concrete road, two probable rail spurs, and excavations for two large possible assembly buildings. The current construction and the orientation of the excavations suggest that the possible buildings will be revetted and rail served. (S/WN)

74. Railcar traffic in the facility has increased since early 1984. Significantly, two can/cap trains, each loaded with SS-18 canister components, were underneath the rail shed on In this same facility, an unusual number of 24-meter railcars were moved in and about during the latter part of September. This activity may have been related to the expansion of the area. (S/WN)

Votkinsk Missile Final Assembly and Checkout Facility

75. Votkinsk Missile Final Assembly and Checkout Facility (Figure 21) continues to serve as the final assembly and checkout facility for Nadiradze-designed, solid-propellant missile systems for the SRF.[5] The final assembly of prototype, flight test, and series-produced missile systems is performed at this facility. The facility consists of four major functional areas—multisystem receiving/checkout and prototype assembly, SS-16 series production, SS-20 series production, and SS-X-25 preseries production.[5] A normal level of rail traffic continued to be observed, and a construction of a new rail shed was started during the period.

76. Rail traffic in the facility has been observed in the multisystem receiving/checkout and prototype assembly areas, the SS-20 series production area, and the SS-X-25 series-production area of the facility. Most of the missile railcar activity was observed on the rail line to the assembly building in the SS-20 series-production area. No rail traffic in the SS-16 series production area and no evidence of renovation for accommodating the final assembly of a new missile system were observed.

25X1

25X1

25X1

77. Ground preparations and foundations for a possible rail shed were begun in January 1984. However, no rail right-of-way or aboveground construction of the rail shed has been started. Upgrading of the steamplant and power substation continued. (S/WN)

Dnepropetrovsk Missile and Space Development Center

78. Dnepropetrovsk Missile and Space Development Center (Figure 22) is a production plant for Utkin-designed strategic missile systems and space launch vehicles. The plant also produces nonmilitary items such as the Belarus tractor. Although Utkin is also involved in solid-propellant systems, at Dnepropetrovsk liquid-propellant associated-items seem to prevail. The Utkin design bureau is collocated with Plant 186 in the center.[1,11,12] During the reporting period, an increase in can/cap trains was observed at the center, and the large scale construction project continued in Plant 186.

25X1

79. An increase was observed in the number of SS-18 can/cap trains and components in the missile/space launch vehicle shipping area (Table 5, Appendix). An increase of trains and components have also been observed at Safonovo Plastics Plant, where transport launch components and launch control capsules are produced. Other known missile and space launch systems produced at Dnepropetrovsk can be accommodated in 24-meter railcars and are not readily accountable. (S/WN)

80. The large scale construction project in the design bureau area at Plant 186 continued during this reporting period. A large fabrication building and additions to the prototype production area were in mid-to-late stages of construction. The fabrication building is externally complete and may be ready to support the SS-18 follow on. Additionally, materials have been shipped into an open storage area. The other new construction in the design bureau area may be for the SL-Y. (S/WN)

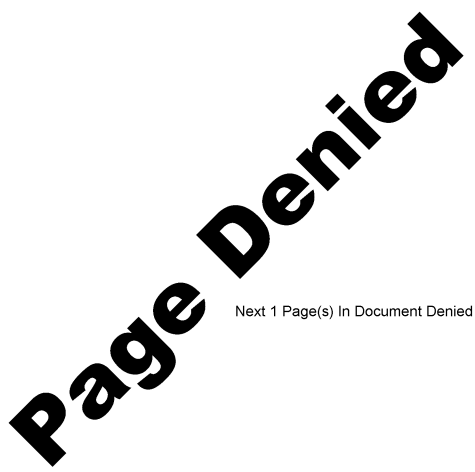
81. The concealment structure over the missile/space launch vehicle shipping area has not been completed. (S/WN)

Zlatoust Armament Plant 66

82. Zlatoust Armament Plant 66 (Figure 23) is involved in the production of several liquid-propellant SLBMs such as the SS-N-6, SS-N-8, the SS-N-18, and probably the SS-NX-23.[4,7] It is associated with Zlatoust RETF and the SLBM Assembly Facilities. The facility is divided into Plant A and Plant B. Construction in plant B has been minimal since 1981, whereas, approximately 24,000 square meters of fabrication/assembly floorspace has been constructed at plant A.

25X1
25X1

25X1
25X1



Next 1 Page(s) In Document Denied

83. Construction on a small (5,460 square meters) fabrication/assembly building (Figure 23) in the southeast corner of plant A was started in February 1981. This building is externally complete but not yet operational. In November 1981, construction was started on a larger (18,200 square meters) fabrication/assembly building (building 8) in an area between plant A and plant B. This building was in the midstage of construction. If the Soviets chose to have dual production facilities for the SS-NX-23, as they have for several deployed liquid propellant SLBM systems, this new assembly floorspace may be used. The larger fabrication/assembly building, however, will probably not become operational until at least early 1986. (S/WN)

Zlatoust SLBM Assembly Facility

84. Zlatoust SLBM Assembly Facility (Figure 24) is the final assembly facility for SS-N-20 missiles. The final assembly of the SS-N-20 follow-on missiles will probably also take place at the facility. Vehicle and rail traffic has increased at the facility since early 1982, and construction, possibly associated with the SS-N-20 follow-on, was under way throughout the facility. (S/WN)

85. Since 1982, rail traffic and personnel have increased in the assembly facility. SS-N-20-associated 19-meter-long railcars were seen periodically at the two rail-served final assembly buildings. However, the activity still appears to be less than expected for a facility involved in series production of a deployed missile system. Series production of the SS-N-20 probably began in late 1982 or early 1983, as indicated by activities observed in the motor series production facility at Biysk and heightened railcar activity observed at the final assembly facility. (S/WN)

86. Construction was under way on several new buildings and additions to existing buildings in the facility. Construction continued at a slow pace on two partially constructed assembly buildings and a section of the service bay. An unidentified building was in an early stage of construction in the northwest corner of the facility. Additionally, tree clearing and ground preparations for another unidentified structure were begun east of the final assembly building. (S/WN)

Krasnoyarsk Guided Missile and Arms Plant Voroshilov 4

87. Krasnoyarsk Guided Missile and Arms Plant Voroshilov 4 (Figure 25) produces liquid-propellant SLBMs and probably will be the series production plant for the SS-NX-23.[4,7] A major construction project probably in support of the probable SS-NX-23 production continues.

88. When complete, the major construction project in the plant will add some 38,200 square meters of fabrication/assembly floorspace, and approximately 3,500 square meters of administration/engineering floorspace were under construction at the plant. The construction includes three new fabrication buildings. The largest of three new buildings, under construction since 1977, is externally complete but not operational. The other two fabrication/assembly buildings were still in the midstage of construction and will not be complete until at least mid-1985. (S/WN)

25X1
25X1

Appendix

Table 1.
Reporting Period For Installations

Installation Name	Information Cutoff Date of Previous Report	Date of Latest Imagery Used In Present Report
Belgorod Plastics Plant		
Biysk Solid Motor Production Plant II		
Biysk Solid Motor Test Area II		
Dnepropetrovsk Missile Development Production Center		
Kamensk-Shakhtinskiy Solid Motor Production Plant		
Krasnoyarsk Guided Missile and Arms Plant Voroshilov 4		
Krasnoyarsk Rocket Engine Test Facility		
Pavlograd Ordnance Research and Development Facility		
Pavlograd Solid Motor Assembly and Test Support Facility		
Pavlograd Solid Motor Production Plant		
Pavlograd Solid Motor Test Facility		
Safonovo Plastics and Guided Missile Component Plant		
Voronezh Aircraft Engine Plant 154		
Voronezh Rocket Engine Test Facility		
Votkinsk Missile Final Assembly and Checkout Facility		
Zlatoust Armament Plant 66		
Zlatoust Rocket Engine Test Facility		
Zlatoust SLBM Assembly Facility		

25X1

This table is SECRET/WNINTEL.

25X1

25X1

25X1
25X1

Table 2.
Presence of Missile-Associated Railcars and Crates at Safonovo (Feb 1983-Aug 1984)

Date	Can/Cap*	MRC**	Remarks
	1	4	1 chamfer-roofed crate
	1	3	
	1		
	1	4	
	2	3	
	0	3	1 chamfer-roofed crate
	0	2	2 chamfer-roofed crates, 3 first-stage crates (
	0	2/3	
	0	1	
	2	3	
	3 poss		
	0	3	
	0	3	
	0	3	
	4	3	
	3	1	
	3	1	1 chamfer-roofed crate
	4	1	1 chamfer-roofed crate
	2	3	2 chamfer-roofed crates
	3	2	2 chamfer-roofed crates
	3	2	1 chamfer-roofed crate
	2	2	

25X1
25X1

*can/cap canister/capsule train
**MRC 24-meter-long missile railcar

This table is SECRET/WNINTEL.

Table 3.
Motor Test-Related Activity at Biysk Solid Motor Test Area II (May 1982-Sep 1984)

1982

Environmental shelter at thrust block

10-meter crate on transporter east of test position

Probable test apparatus aligned with thrust block

Environmental shelter away from thrust block

Fire as a result of test failure; large scorch mark, environmental shelter moved to entrance of revetment

Environmental shelter over thrust block; 10-meter crate not present, mobile crane outside revetment

10-meter crate on transporter near entrance to the test area

10-meter crate still on transporter near entrance to the test area; environmental shelter still over thrust block; mobile crane outside revetment

Environment shelter over thrust block and mobile crane outside of the revetment

Environmental shelter removed from the thrust block; small object up against the thrust block; mobile crane in the revetment

Environmental cover against the thrust block; mobile crane in the revetment; 10-meter crate on a transporter on the access road to the test position

Environmental shelter against thrust block; mobile crane in the revetment; the 10-meter crate not present

Environmental shelter removed from the thrust block, shelter and crane still in revetment

Environmental shelter still over thrust block; mobile crane outside the revetment

Environmental shelter against thrust block; mobile crane in revetted area; 10-meter crate on transporter on access road to the test position

Cylindrical object near the edge of the apron; object in diameter with a length of meters—4-meter body and conical point; environmental shelter in the revetment in the storage position

Environmental shelter at the thrust block; mobile crane in the test area

Environmental shelter against the thrust block; mobile crane within the revetment

Environmental shelter has been removed from the thrust block; mobile crane outside the revetment

Environmental shelter against the thrust block; mobile crane in revetted area; 10-meter crate on transporter on the access road; large burn mark also observed

25X1
25X1
25X1
25X1

25X1

25X1

Table 3. (cont'd)

1983	1984
Environmental shelter at entrance to the test cell, mobile crane in revetted test position, probable motor with dimensions of meters in diameter outside test cell, probable motor/test fixture diameter at one end and at the other	Environmental shelter against thrust block; mobile crane outside of test area
Environmental shelter against the thrust block, mobile crane in the revetment, probable motor and probable motor/test fixture still at the entrance to the revetment	A new diffuser in position near the thrust block; environmental shelter moved toward the entrance of the test position; mobile crane working over the diffuser; no 10-meter crate in the area
Environmental shelter removed; mobile crane in revetment	The new diffuser outside of the test cell; environmental shelter outside the horizontal test cell; mobile crane next to thrust block
Environmental shelter near entrance to the revetment; probable motor and probable motor/test fixture also near entrance to revetment; small enviromental cover over thrust block	Environmental shelter off to side of the test cell; mobile crane near the entrance to the test cell
Environmental shelter near the entrance to the test position, 10-meter crate on the transporter on the access road	Mobile crane next to the test cell
Mobile crane moved to the entrance of the test position	Environmental shelter away from thrust block
Environmental shelter against the thrust block, mobile crane working over environmental shelter	Environmental shelter against thrust block; mobile crane next to the shelter, probable diffuser near the entrance to the test position, paving blocks being placed on inner wall of test position
Environmental shelter against thrust block, mobile crane working over environmental shelter	Environmental shelter against thrust blocks; large mobile crane still next to shelter, 10-meter shipping container on trailer near test position
Environmental shelter off to the side of the revetment; mobile crane working over thrust block	Environmental shelter removed from the thrust block and placed at test position entrance, two mobile cranes in operation over a new environmental shelter outside the test position
Environmental shelter off to the side of the revetment; mobile crane parked next to thrust block	Environmental shelter against thrust block, boom of large mobile crane extended over environmental shelter with the cable attached to the shelter; probable 10 meter crate near entrance to test position
Environmental shelter over thrust block; mobile crane in revetment	Environmental shelter against thrust block, mobile crane still within revetment
Environmental shelter against thrust block, 10-meter crate on a lowboy transporter on the access road, mobile crane also in the revetment	

This table is SECRET WNINTEL

Table 4.
Test-Related Activity at Pavlograd Solid Motor Test Facility (May 1982-Sep 1984)

1982	
Environmental shelter at thrust block, large crane near environmental shelter	Environmental shelter at thrust block
Probable motor at thrust block (dimensions not available); environmental shelter, large crane, and probable motor crate/dolly inside test position	Cradles and handling/adapter ring in front of thrust block. Cradles separation center to center; handling/adapter ring has inner diameter of
Environmental shelter at thrust block, large crane and probable motor crate/dolly near environmental shelter	Diffuser in front of the thrust block with a large motor under canvas, length of motor with a diameter of
Same as except canvas-covered object under environmental shelter	One diffuser section on rail spur in horizontal test position; others in the storage area
Environmental shelter at thrust block	Environmental shelter at the thrust block
Environmental shelter away from thrust block; transporter not present	Environmental shelter at the thrust block
Environmental shelter outside horizontal test position	Cradles spaced apart; cradle from the thrust block
Diffuser sections moved to entrance of horizontal test position	**1984**
Environmental shelter at thrust block	Water-cooled diffuser assembled; canvas-covered motor at thrust block
1983	Environmental shelter at thrust block; water-cooled diffuser segments in storage area
Motor/container on dolly in test cell	Environmental shelter away from thrust block
Motor in two sections, both with a diameter of in a discard area; cradles spaced apart in test position	Environmental shelter offset from thrust block; empty transporter at the rear of the test position; water-cooled diffuser segments still in storage area
Environmental shelter over cradles at thrust block	Environmental shelter at the thrust block; water-cooled diffuser segments in storage
Environmental shelter at thrust block; motor case, in diameter, in boneyard	Environmental shelter offset from thrust block; water-cooled diffuser segments in storage area; new small diffuser segments arrived at the LAD test position
Environmental shelter at thrust block	Environmental shelter at thrust block; water-cooled diffuser in storage area; new small diffuser segments in LAD test area
Environmental shelter at thrust block	
Environmental shelter at thrust block	
Environmental shelter at thrust block	
Environmental shelter away from thrust block	

25X1
25X1

Table 4. (cont'd)

Water-cooled diffuser fully assembled; a probable motor in length (cradle to cradle) and in diameter, at thrust block; empty transporter at the rear of test position; new small diffuser segments in LAD test area	Environmental shelter offset from thrust block; an empty transporter at the rear of the test position; water-cooled diffuser segments and new small diffuser still in storage area
New small diffuser, 10 meters in length by 2 meters in diameter, assembled in the diffuser storage area, environmental shelter offset to the side of the test position	Enviromental shelter at the thrust block; water-cooled diffuser segments and newsmall diffuser in storage
A large mobile crane working over the environmental shelter, transporter parked in the opposite end of the test cell; water-cooled diffuser segments and new small diffuser still in diffuser storage area	The environmental shelter removed from the test position since two mobile cranes at the test position; water-cooled diffuser segments and new small diffuser still in storage area
Water-cooled diffuser fully assembled and a probable motor between the thrust block and diffuser; hoses associated with water-cooled diffuser also present, motor appeared to be similar in size to the motor present on new small diffuser in storage area	Two mobile cranes on a hardstand in front of a support building; water-cooled diffuser segments and a new small diffuser still in storage area
	Environmental shelter offset from thrust block; water-cooled diffuser segments and new small diffuser in storage area
	Environmental shelter at the thrust block; water-cooled diffuser segments and new small diffuser in storage area

25X1
25X1
25X1
25X1
25X1

This table is SECRET/WNINTEL.

Table 5.
SS-18-Associated Components on Canister/Capsule Trains at Dnepropetrovsk Missile Development Production Center (Aug 82-Sep 84)

25X1

Date	Lower Canister Section	Section	Container
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	2	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	1	1	1
	-	-	-
	1	4	10
	-	1	8
	-	1	2
	-	-	-
	2	4	8
	-	-	-
	-	2	2
	-	1-2	6
	-	-	-
	1	2	7
	-	1	7
	-	1	-
	-	2	8
	-	-	-
	-	-	-
	1	1	1
	1	2	-
	-	-	-
	1	1	6
	2	2	6
	2	2	8
	-	-	6
	-	-	-
	-	-	6
	-	1	7
	-	2	8
	-	2	8

This table is SECRET/WNINTEL.

25X1

25X1

25X1
25X1

REFERENCES

IMAGERY

All relevant imagery acquired through [redacted] was used in the preparation of this report. (S/WN)

25X1

MAPS OR CHARTS

DMA. US Air Target Chart, Series 200: Sheets 0155-20, 0161-21, 0164-07, 0167-07, and 0234-03, -07, -21, -22, and -24. Scale 1:200,000 (SECRET)

DOCUMENTS

A list of documents 1 through 13 will be furnished upon request. (S)

REQUIREMENTS

Comirex J09
Project 544059J
Distribution 86-004

Comments and queries regarding this report are welcome. They may be directed to [redacted] Soviet Missile and Space Division, Imagery Exploitation Group, NPIC, [redacted]

25X1
25X1
25X1

25X1

25X1

25X1

[redacted]