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NATIONAL PHOTOGRAPHIC
INTERPRETATION CENTER

PHOTOGRAPHIC INTERPRETATION REPORT

SS-X-18 MISSILE-HANDLING EQUIPMENT AND HANDLING PROCEDURES, USSR

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MAP REFERENCE
SAC. US Air Target Chart, Series 200, Sheets 0246-13 & -14, scale 1:200,000

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ABSTRACT

1. The SS-X-18 missile is probably transported from the production plant to the research and development test launch sites in a canister. The equipment used during this movement includes a canister, a specially configured three-car train, a road transporter, and a silo loader.

2. This report describes the four pieces of equipment associated with the movement of the SS-X-18 missile. The report also describes the handling procedures involved in receiving the missile at the Tyuratam Missile Test Center, transporting it to the launch site, and inserting the missile into the launch silo. Four line drawings and six annotated photographs of equipment and the handling procedures are included.

3. The handling procedures for the launch control capsule for the type IIIX probable control silo are probably the same as those for the SS-X-18 canister. These procedures are referred to in this report, but are not specifically discussed.

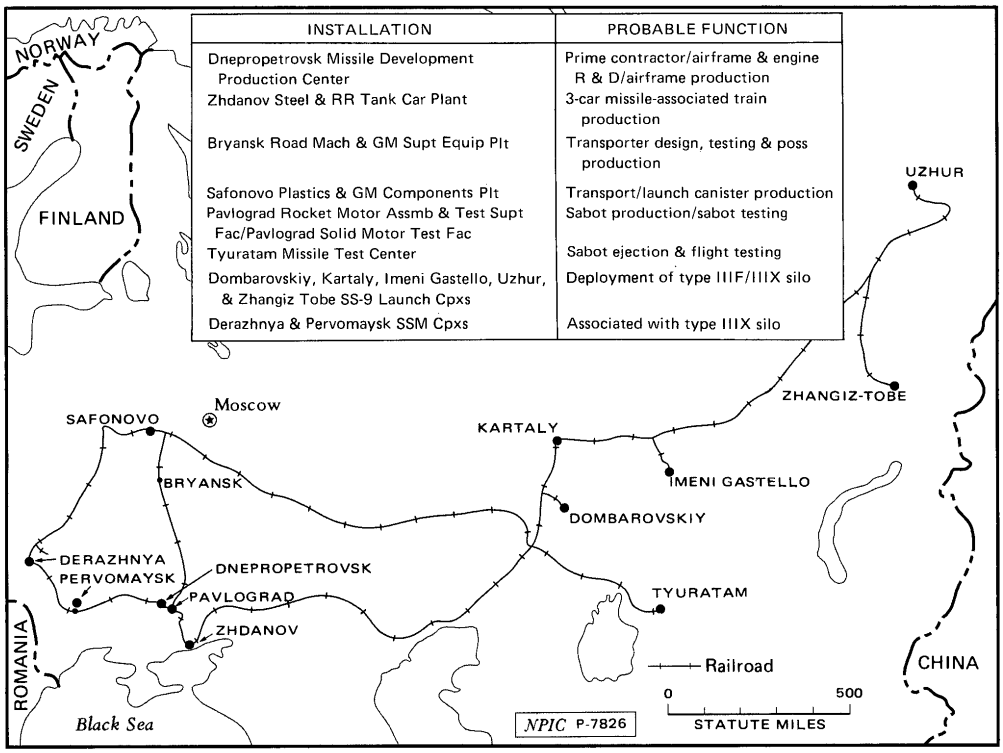

FIGURE 1. INSTALLATIONS ASSOCIATED WITH SS-X-18 MISSILE-HANDLING EQUIPMENT

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BASIC DESCRIPTION

4. The SS-X-18 ICBM is currently one of three ICBMs undergoing research and development at Tyuratam Missile Test Center (TTMTC). This missile was initially launch-phase tested on the H2 side of launch complex H. The facilities in the C/H support area (Tyuratam ICBM Test Support Facility 3, have been used to receive and handle the missile and its related handling equipment (Figure 1).

Equipment

5. Four major pieces of equipment are used to move the SS-X-18 missile from the production plant to the test launch facilities. The first piece is the missile canister which is used as an environmental container for the missile. The second piece is a three-car missile-associated train which brings the missile in the canister to the support area at TTMTC. The third is a transporter which moves the canister from the support area to the launch site. The fourth is a silo loader which places the canister into the silo. No missile-stage transporters, usually associated with a missile of this class, have been identified for this missile system.

6. The missile is produced at the Dnepropetrovsk Missile Development Production Center The missile canister is produced at the Safonovo Plastics and GM Components Plant The specially configured three-car train is produced at the Zhdanov Steel and RR Tank Car Plant Ilich The road transporter was developed at the Bryansk Road Machinery and Guided Missile Support Equipment Plant 1 The production plant for the silo loader is not known.

SS-X-18 Missile Canister

7. The SS-X-18 missile canister, is apparently fabricated from fiberglass. The canister is fabricated in segments which are joined and strengthened by probable metal flanges. Six joints have been seen on photography, indicating that the canister consists of at

least seven segments (Figure 2). An eighth segment (5 feet long) has been seen at the Dnepropetrovsk facility and at the Pavlograd Rocket Motor Assembly and Test Support Facility. Four of the segment joints are strengthened by wide flanges and two by narrow flanges. The function of four additional narrow flanges has not been determined, but they could be additional segment joints or fittings used to secure the canister in the silo. The two flanges at the bottom end of the canister (the end first inserted into the silo) appear to protrude more than the other flanges and are probably used as fittings to secure the canister in the silo.

8. A system of rectangular panels, probably baffles, are along the top 25 feet of the canister. If these panels are baffles, they would regulate the venting of hot exhaust gases during launch. The panels are of an undetermined thickness. They appear to be mounted on parallel rails in rows of five panels, with the rows spaced at 90-degree intervals around the circumference of the canister. A probable access port to the missile which is below these panels with an undetermined thickness. A probable cableway extends the length of the canister.

Three-Car Missile-Associated Train

9. The specially configured three-car missile-associated train is made up of two cars attached to opposite ends of a car. The train can be adapted to two different shipping modes (Figure 3). Mode 1 is used to transport the SS-X-18 missile canister. The SS-X-18 canister when seen in the shipping configuration, probably because an environmental cap is placed on each end of the canister. Mode 2 is used to transport launch control capsule (LCC) for the type IIIX probable control silo.

10. In mode 1, the SS-X-18 missile canister is placed on the center car. The canister extends beyond both ends of this car (Figure 3). One of the end cars is used to transport a cylinder which may be associated with the launch assist device for the SS-X-18. The other shorter car which protects the bottom end of the canister is empty.

11. In the mode 2 configuration (Figure 3), the LCC is also carried on the center railcar and extends beyond both ends. Two cylindrical objects are carried, one vertically and one horizontally, on one of the two shorter cars while the other is empty.

Canister/Capsule (Can/Cap) Transporter

12. Two transporters of the same overall length but of slightly different configuration have been identified (Figure 4). These two transporters are used to transport either the SS-X-18 canister or the LCC. Because of the interchangeability of these two transporters, they are arbitrarily designated can/cap (canister/capsule) transporters. This interchangeability is illustrated by the identification of one model of the transporter at the Derazhnya SSM Complex and the other model at the Pervomaysk SSM Complex. These two complexes would both use a transporter only for transporting the LCC for the type IIIX silos; neither of these complexes has launch facilities for the SS-X-18.

13. The overall configuration of these two transporters (Figure 5) consists of a gooseneck-type front end, an open-framework section with side braces, a solid tray section, and an open-framework tray section. The transporter, and when attached to its prime mover has an overall. The difference in the two transporters is in the last three sections. One transporter has an open framework section with nine side braces, a solid tray section over five axles, and an open tray section. These three sections on the other transporter have lengths. The 60-foot-long open framework has ten side braces, and four axles are under the solid tray section. These two transporters do not appear to be functionally different. One explanation for the different configuration of the transporters may be that the five-axle transporter is the later configuration and better able to handle the weight of the canister or capsule.

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Can/Cap Silo Loader

14. The can/cap silo loader (Figure 4) is associated with both the SS-X-18 missile canister and the launch control capsule for the type IIIX silo. The loader is 70 feet long When attached to an MAZ-537 prime mover, The loader consists of a ladderlike framework support section with a high front section. This front section may be an extension for the support section, since the canister or capsule is longer than the loader. Silo loaders for other missile systems (SS-7, 9, and 11) generally have a support section approximately the same length as the missile or canister.

Handling Procedures

15. The SS-X-18 missile is probably shipped by rail from the production plant to the test center in its canister. The handling procedures described below refer to the handling of the canister. The canister first arrives at the TTMTC C/H support area where it is checked out before being taken to the launch silo for insertion.

Receiving Facilities at C/H Support Area

16. Two rail-served transloading facilities have been constructed since January 1971 at the C/H support area. The can/cap transloading facility is used in transloading the canister or capsule from the center car of a three-car missile-associated train. The missile-handling/ground support equipment transloading facility is probably used in transloading the transporter, silo loader, and other associated ground support equipment.

17. The facility and method used in off-loading the cylinder from the mode 1 railcar configuration are undetermined and the vehicle used to road-transport this cylinder has not been identified. The two cylinders associated with the capsule on the mode 2 railcar configuration were seen at the can/cap transloading facility. Similar transloading facilities are under construction at the Dombarovskiy ICBM Complex Rail-to-Road Transfer Point where type IIIF launch sites and a type IIIX probable control silo are under construction. Similar facilities probably will be built at the six deployed complexes where type IIIF launch sites and/or type IIIX probable control silos are under construction.

18. The can/cap transloading facility (Figure 6) consists of a rail spur and a concrete apron. The bed of the rail spur has been built up to allow the bed of the railcar to be on a level with the bed of the transporter when the transporter is on the concrete apron. Two sets of concrete hardstands and two probable tiedown positions are built into the apron. The hardstands are reinforced areas where the leveling and stabilizing jacks of the transporter are placed. The spacing and general appearance of the hardstands on this apron are identical to a section of the silo apron at type IIIF launch sites.

19. The actual transloading of a canister from a railcar onto a transporter has not been seen. However, a transloading of a load simulator between a transporter and a platform was seen at Bryansk Plant 1 indicating how the Soviets intend to handle the canister or capsule (Figure 7). The transporter will be positioned on the apron, the canister or capsule on the center railcar will be moved to the end of the rail spur, and then the canister or capsule will be transferred horizontally onto the transporter. An exercise involving an empty railcar and a can/cap transporter was seen at the Tyuratam C/H support area in June 1973 (Figure 8).

20. Presumably after off-loading, the canister or capsule is moved to assembly and checkout building B (Figure 6) in the C/H support area for inspection and preparation for placement into the silo. It is then taken to a type IIIF silo on the transporter.

21. The missile-handling/ground support equipment transloading facility (Figure 6) consists of a rail spur which terminates at a U-shaped dock. An inclined ramp extends from this dock. The equipment would be brought in on a flatbed railcar and driven onto the dock and down the ramp to the support area.

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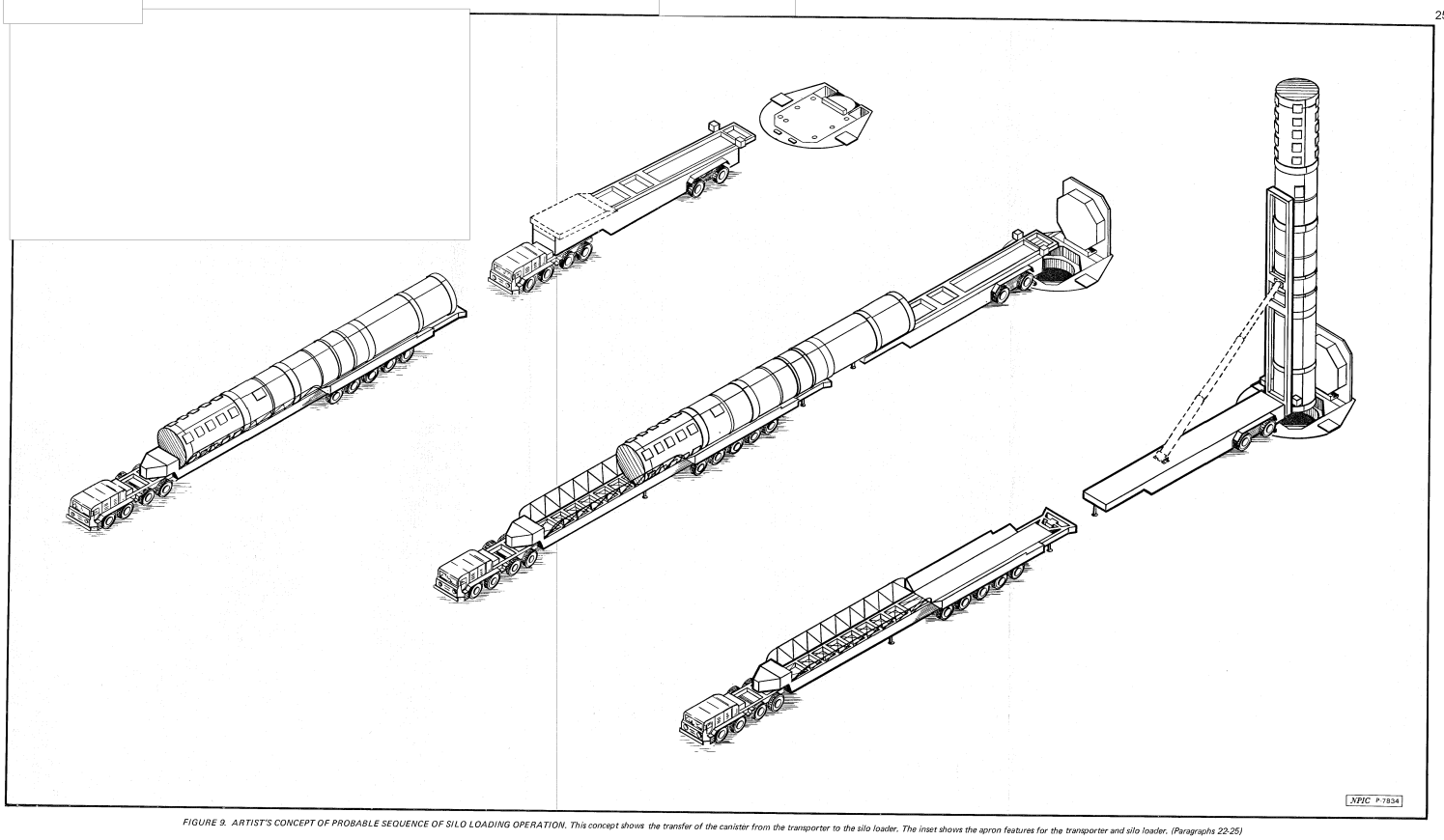

FIGURE 9. ARTIST'S CONCEPT OF PROBABLE SEQUENCE OF SILO LOADING OPERATION. This concept shows the transfer of the canister from the transporter to the silo loader. The inset shows the apron features for the transporter and silo loader. (Paragraphs 22-25)

Silo Loading Operation

22. The actual transfer of a canister or capsule between the can/cap transporter and silo loader has not been seen. The probable sequence for a silo-loading operation has been derived from the observation of the silo apron features (Figure 9) and the position of the silo loader seen at one site.

23. The silo apron features have been constructed at all the type IIIF launch sites at TTMTC, probably at both type IIIX probable control sites, and are now being built at the deployed launch sites. These features consist of tiedown positions and hardstands for the silo loader and two sets of two hardstands for the transporter. The hardstands are used for leveling and stabilizing jacks on the two pieces of equipment. The hardstands for the transporter from the edge of the silo. These hardstands and their separation are identical to those seen at the can/cap transloading facility.

24. The configuration and the spacing of the apron features indicate that the transporter is driven to the site and positioned at the end of site apron furthest from the silo. The silo loader would be driven in behind the transporter with the prime movers facing away from the silo. The silo loader would then be backed up to the silo and positioned on the hardstands. The prime mover would be detached to allow for the lowering of the inclined supporting section of the silo loader, permitting the beds of the two pieces of equipment to be leveled and aligned with each other. The transporter would be backed up toward the silo and positioned on its hardstands in tandem with the silo loader.

25. The canister would then be transferred from the transporter to the silo loader. The loader would be erected and the canister placed in the silo. The bed of the silo loader would be lowered and both pieces of equipment would be removed from the site. A similar operation would be expected for the handling of the capsule at the type IIIX probable control sites.

26. After a test firing, the spent SS-X-18 canister is removed from the silo by the silo loader, probably transferred to the transporter, and returned to the C/H support area. During the early phase of testing, the spent canisters were loaded onto the three-car train and probably shipped out of TTMTC. Recently some of the spent canisters have been observed (Figure 10) along the northern fenceline at launch complex H. These spent canisters are moved from the transporter or railcar to the fenceline by a mobile crane.

REFERENCES

MAPS OR CHARTS

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REQUIREMENT

Project 143402NH

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