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REPORT

SOVIET MRBM/IRBM WARHEAD-MATING AND HANDLING PROCEDURES, USSR

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JULY 1976

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SOVIET MRBM/IRBM WARHEAD-MATING AND HANDLING PROCEDURES, USSR

ABSTRACT

1. Soviet SS-4 SANDAL (MRBM) and SS-5 SKEAN (IRBM) warhead-mating, handling procedures, and equipment are discussed in this report. A description of warhead-mating techniques that have not been previously identified is given for MRBM/IRBM missile systems.

2. All photography of MRBM/IRBM launch sites was reviewed in the preparation of this report. It includes a location map, an artist's conception of a warhead-mating training device, and ten annotated photographs.

INTRODUCTION

3. The SS-4 and SS-5 missile systems have been deployed since 1958 and 1961, respectively, at both soft and hard launch sites in complexes situated principally within a 250-mile-wide strip along the western USSR border (Figure 1).[1] Since deployment began, much information has been compiled on the operational procedures of the SS-4 and SS-5 missile systems. Only a limited amount of photographically derived information has been accumulated on SS-4 and SS-5 warhead-handling procedures, however.

4. The warheads are first seen at MRBM/IRBM complexes They are probably delivered to the complexes by rail, loaded into type I warhead vans, and transported to the launch sites. At the launch site, they are unloaded and placed on storage dollies For delivery to the launch pad, the warhead is placed in a framework on the back of a flatbed truck. Once at the launch pad, the truck is backed up to the missile so that the warhead can be positioned for mating to the missile.

PHOTOGRAPHIC ANALYSIS

Soft Sites

5. A warhead-mating exercise was observed in progress at Lebedin IRBM Launch Site 3 . An SS-5 missile on a transporter was aligned with the SS-5 erector (not illustrated) in the normal position for a missile exercise. A flatbed truck, carrying an SS-5 warhead, was directly in front of the missile. The warhead appeared to be resting on pads beneath a framework consisting of two inverted U-shaped supports which are mounted on the truck. The framework may be moved vertically, horizontally, backward, and forward for accurate positioning of the warhead on the missile. It could not be determined from the photography whether the framework was operated manually or mechanically.

7. Warhead-mating training devices have been identified at five other IRBM sites. The device consists of a short cylinder open at both ends, , supported by two vertical braces. The short cylinder is used to simulate the end of an SS-5 missile. The top of the short cylinder is 4.0 meters (13.0 feet) above the ground. At ground level, two horizontal braces extend backward from the vertical braces to a possible counterweight (Figure 4). This training device appears to be almost identical to one used at SS-7 (ICBM) soft sites.[3]

8. At MRBM launch sites, a less sophisticated type of warhead-mating training technique has been identified. In this technique, a short missile segment is positioned on the end of an SS-4 missile transporter. The flatbed truck is then backed up to and aligned with the missile segment. The warhead is then mated to the missile. An example of a warhead-mating exercise at a soft MRBM site was observed at Taurage MRBM Launch Site 2 two rails can be seen on the bed of the flatbed truck, the framework is extended all the way to the rear of the truck, and the SS-4 warhead is being fastened to the missile.

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Hard Sites

9. At MRBM/IRBM hard sites, the warhead is mated to the missile only after it has been placed in the silo. For this operation, a warhead-mating framework is used (Figure 6). There is some evidence that there may be two methods for mating warheads to missiles at hard launch sites. The standard method of mating the warhead to the missile at hard sites probably involves using a truck-mounted crane and the warhead-mating framework. After the missile has been placed in the silo and the warhead fitted inside the framework, the framework is lowered by a truck-mounted crane and the warhead is fastened onto the missile. What may have been an example of the preliminary stages of this operation was seen at Sary-Ozek IRBM Launch Site 2 [redacted] on [redacted] All of the equipment needed for both a silo-loading and warhead-mating operation was on the silo apron. One silo was open and an SS-5 silo loader with its superstructure down in the silo was immediately in front of and aligned with the open silo door.

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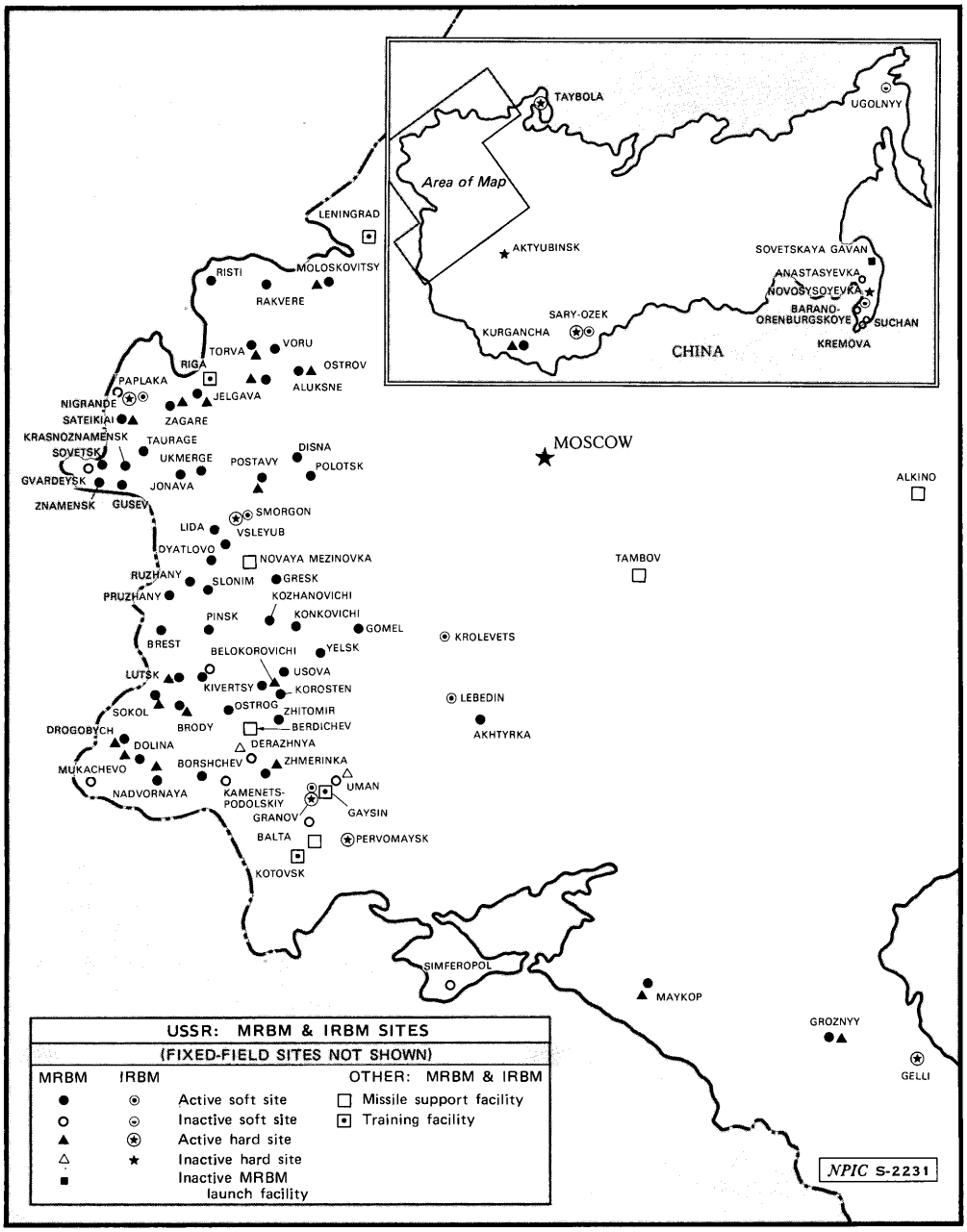

FIGURE 1. LOCATION OF SOVIET MRBM AND IRBM FACILITIES, USSR

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A type I warhead van was beside the open silo; an SS-5 missile on a transporter was parked a short distance away; and a truck-mounted crane was being used to load an SS-5 missile onto a silo loader. On the other side of the apron, another truck-mounted crane was positioned in front of a warhead-mating framework with a type I warhead van parked nearby. Another warhead-mating framework was also nearby.

10. Evidence of a possible alternate method for mating a warhead to a missile inside a silo was seen at Pervomaysk IRBM Launch Site 1 25X1 an SS-5 silo loader was parked on the apron in 25X1 front of a closed silo, and a warhead-mating framework was within the SS-5 silo loader superstructure. This observation suggests the possibility that a silo loader is used to lower the warhead onto the missile. For example, once the missile has been placed in the silo, a warhead-mating framework with the warhead fitted inside could be lifted onto and attached to the silo loader superstructure with a truck-mounted crane. Then, the silo loader, already in place and properly aligned with the missile, could lower the warhead onto the missile. Once the warhead has been fastened to the missile, the silo loader could then remove the framework. This procedure would require about the same amount of time and eliminate any alignment problem.

11. This alternate method of warhead mating may also be used with other missile systems, such as the SS-4, SS-7, SS-8, and SS-9, which use similar types of silo loaders. A warhead-mating framework was observed within an SS-8 silo loader at Omsk ICBM Launch Site 1 25X1) and at Kozelsk ICBM Launch Site 5 25X1 25X1

Training or Practice Silo

12. A training or practice silo for simulated mating of a warhead with a missile has been identified at only one hard MRBM/IRBM launch site, Kurgancha MRBM Launch Site 3 25X1 25X1

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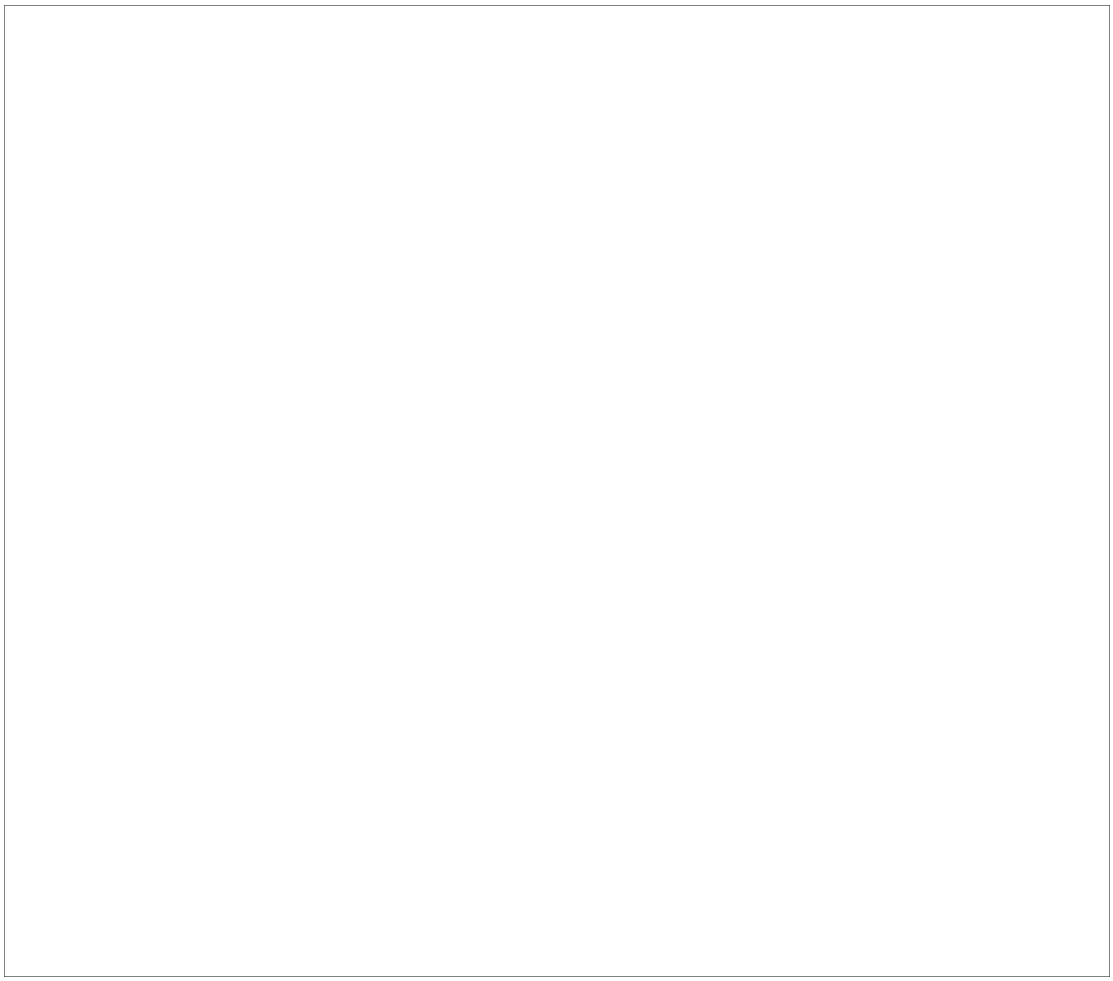

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