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imagery analysis report

Missile-Related Activity at
Kapustin Yar Missile Range
Test Complex C Site 2, USSR (S)

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MISSILE-RELATED ACTIVITY AT KAPUSTIN YAR MISSILE RANGE TEST COMPLEX C SITE 2, USSR (S)

INTRODUCTION

1. (S/WN) Kapustin Yar Missile Range Test Complex C Site 2 (Site 2C; [redacted] Figure 1), USSR, was modified between January 1979 and November 1980. Activity and equipment observed since that time indicate that Site 2C may support the research and development (R&D) of a new liquid-propellant missile system. This report gives a brief history of Site 2C, describes the modifications and activities observed since January 1979, and updates information published in a 1981 NPIC report.¹

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DISCUSSION

Background

2. (S/WN) Site 2C has been used to support the development of missiles for both the Soviet Strategic Rocket Forces (SRF) and the Soviet Navy. Two launch pads, designated LP 2C-1 and LP 2C-2 (Figure 2), were constructed in the late 1950s to support the R&D program for the SS-4 medium-range ballistic missile and probably the SS-5 intermediate-range ballistic missile (IRBM). Launch pad 2C-1 was modified in September 1965 to support the R&D program for the SS-N-6. This same pad was subsequently modified in March 1968 to support the R&D program of the SS-NX-13, an antiship missile that was never deployed. From September 1976 through November 1978, Site 2C supported SS-20 mobile-IRBM crew training. Direct support for activity at Site 2C is provided by the Kapustin Yar Complex C Assembly/Checkout Area [redacted], which is 3.2 nautical miles west of the site.

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Recent Modifications

3. (S/WN) Additional modifications to Site 2C were begun in January 1979, when an excavation was initially observed at the northern edge of LP 2C-2. By November 1980, a complex, three-story buried building had been constructed in the excavation, and an A-frame structure had been built on it (Figure 3). The lower two (second and third) floors of the buried building (Figures 4 and 5) are approximately [redacted] while the first floor (belowgrade) is approximately [redacted]. The A-frame structure was built atop the first floor of the buried building. It is [redacted] high and has a base approximately [redacted]. The eastern (downrange) face of the A-frame structure is [redacted] square and inclined approximately 45 degrees. A [redacted] diameter dome protrudes from a [redacted] square aperture on the downrange face. The downrange face is oriented on an azimuth of approximately 95 degrees. An exhaust/personnel passageway extends upward at a relatively steep angle from the rear of the third floor of the buried building and emerges at ground level [redacted] behind the A-frame structure. The area to the rear of the third floor is stepped down before it attaches to the exhaust/personnel passageway. A cable trench extends from around the A-frame structure to the eastern edge of the site, where it terminates at three points outside the site security fences.

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4. (S/WN) Other modifications to Site 2C included construction of a new bunkered launch control building, installation of a concrete block apron in front of the A-frame structure, installation of five lightning arresters and two probable electronics/telemetry-related towers, and enlargement of the turn radii of the roads within the site. The new launch control building is [redacted] and is just northwest of the original launch control building (Figure 2). The new launch control building is cable connected to the site support area and is also connected by a linear excavation to an 18-meter-square building foundation. Construction of the building foundation had ceased by September 1979. The concrete block service apron, which is [redacted] was installed in front of the A-frame structure during November 1979. During the summer of 1980, the paving blocks were temporarily removed while the soil beneath the apron was repacked (Figure 6). After the concrete blocks were replaced, two 1-meter-square probable hardpoint/tiedown (HP/TD) positions were installed in the apron directly in front of the downrange face of the A-frame structure (Figure 7). One probable HP/TD position is on each side of the [redacted] dome on the downrange face. Three of the lightning arresters and the two probable electronics/telemetry-related towers were erected near the A-frame structure. The other two lightning arresters were installed at the south end of LP 2C-2. During mid-1979 the turning radii of the roads serving both pads were increased.

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Ground Support Equipment

5. (S/WN) Several types of ground support equipment (GSE) and unidentified pieces of equipment have been seen at Site 2C since the modification began. Equipment included a new-type probable transporter-erector (TE), a load simulator/strongback, an unidentified cylinder, SS-9/-11 propellant transporters and nitrogen trucks (Figure 2), an unidentified framework, and a ramplike structure.

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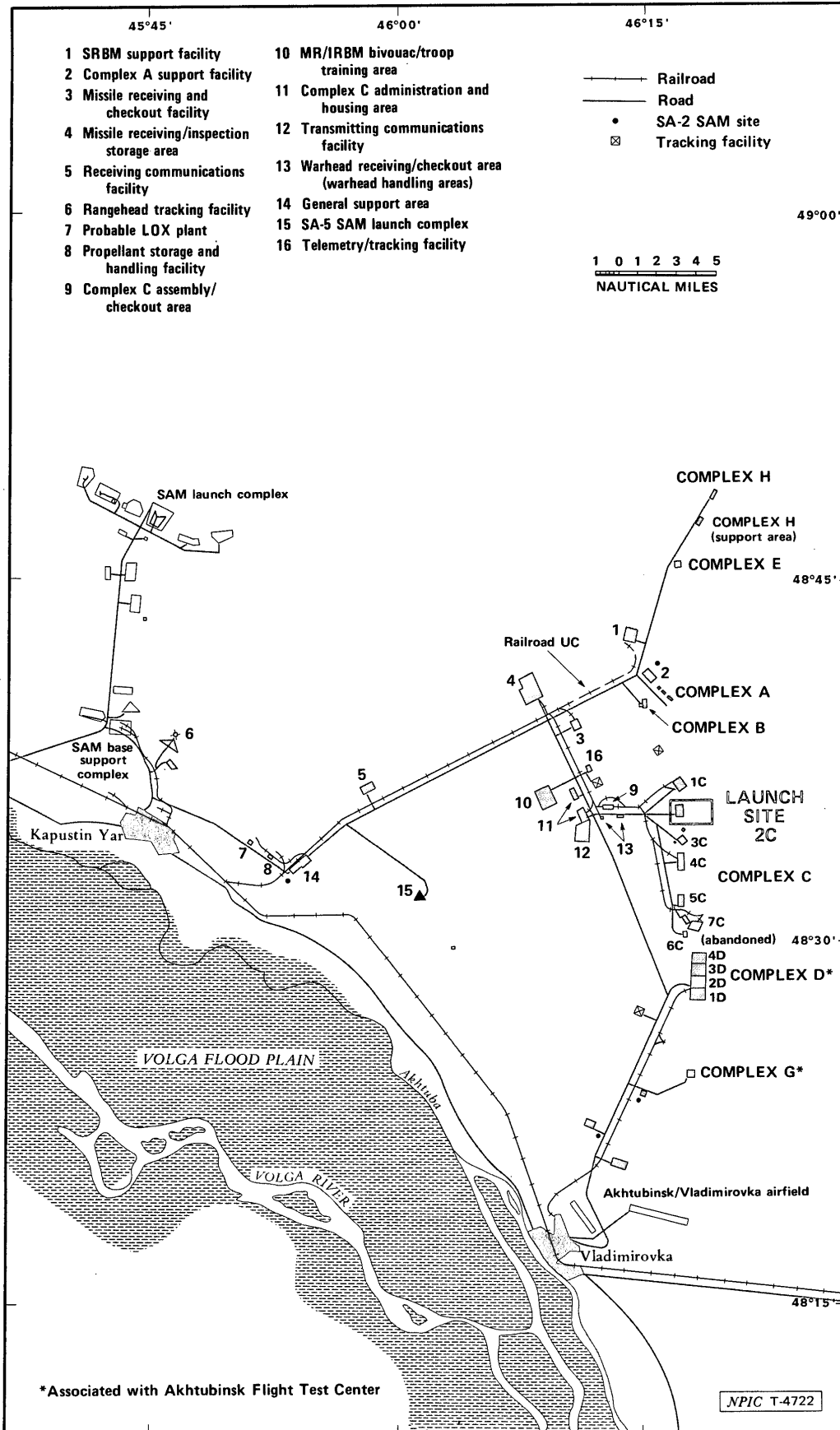
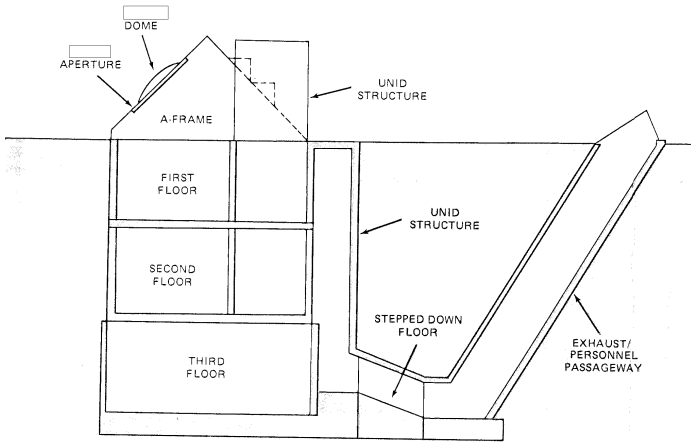


FIGURE 1. LOCATION OF LAUNCH SITE 2C AT KAPUSTIN YAR MISSILE/SPACE TEST CENTER SSM, USSR

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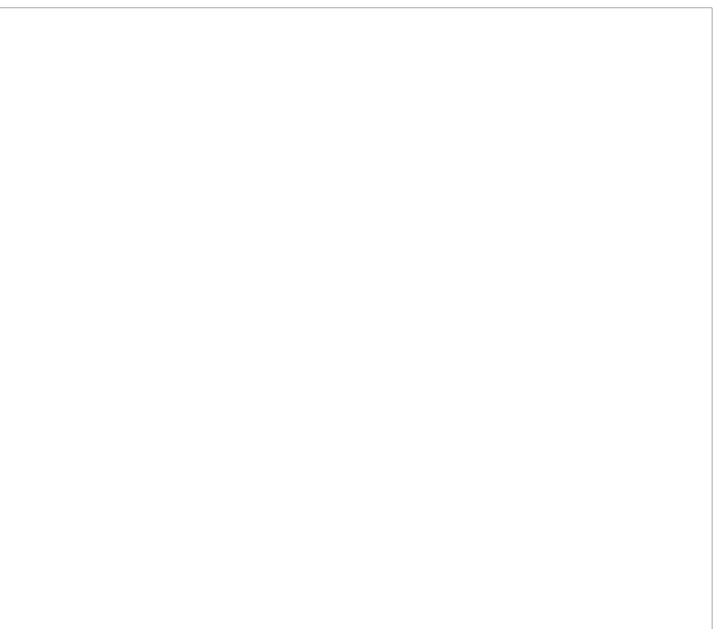
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Not Drawn To Scale

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FIGURE 3. CONCEPTUAL DRAWING OF NORTH SIDE OF BURIED BUILDING AND A-FRAME STRUCTURE



6. (S/WN) The probable TE was first observed on imagery of [redacted] and was positioned directly in front of the downrange face of the A-frame structure (Figure 8). It has since been seen in front of the A-frame structure on six other occasions. The probable TE consists of a [redacted] possibly three-axle trailer with a MAZ-537 prime mover (Figure 9). A slightly inclined, [redacted] cradle-like structure (Figure 10) is mounted behind a [redacted] boxlike structure at the forward end of the trailer. A [redacted] ring is vertically mounted on the rear end of the cradlelike structure. A [redacted] structure with a [redacted] possible aperture is mounted at the rear of the probable TE (Figure 11). This structure appears to be hinged and can be raised, lowered, and possibly detached. When in a horizontal position, it may serve as an interface between the probable TE and the downrange face of the A-frame structure. It may provide the missile-handling function necessary for a missile transfer between the probable TE and the A-frame structure. When connected to the A-frame structure, it could also serve as a launch stand. A MAZ-543 truck-mounted crane (TMC) has usually been observed near the probable TE.

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7. (S/WN) A 12-meter-long load simulator/strongback was first observed at Site 2C on [redacted] 25X1
[redacted] 11 months prior to the first observation of the probable TE. Since then, it has usually been seen near 25X1
the probable TE (Figure 11).
8. (S/WN) On [redacted] an unidentified, [redacted] cylinder was in front of the 25X1
downrange face of the A-frame structure, which was in a late stage of construction at the time (Figure 12).
A crane was positioned at each end of the cylinder. On [redacted] the cylinder was not present, 25X1
suggesting that it had been inserted through the aperture in the downrange face of the A-frame and into
the buried building. The cylinder would not fit in the buried building at an angle perpendicular to the 45-
degree downrange face of the A-frame structure. However, the cylinder would fit if it were installed at a
steeper angle than that of the face of the A-frame structure. The cylinder would then extend from the
aperture into the third floor area. If the [redacted]-long cylinder was installed, it may function as a launch 25X1
tube. In addition, on [redacted] a second unidentified cylinder similar in size to that seen on 25X1
[redacted] was on a trailer at the north end of LP 2C-2 near the A-frame structure. On [redacted] 25X1
[redacted] this cylinder was being canvas covered (Figure 13). 25X1
9. (S/WN) An unidentified framework was angled out from the bottom of the [redacted] 25X1
aperture on the downrange face of the A-frame structure on [redacted] 25X1
(Figures 6, 7, and 8). On [redacted] the framework had been lowered to a horizontal position and 25X1
appeared to be connected to the rear end of the probable TE. It may serve as a locking/spacing device
for positioning the probable TE in front of the A-frame structure. It is not known how the framework on
the A-frame structure interfaces with the [redacted] structure on the probable TE. 25X1
10. (S/WN) Three SS-9/-11 propellant transporters and two nitrogen trucks were at Site 2C on [redacted] 25X1
[redacted]. As many as five SS-9/-11 propellant transporters and three nitrogen trucks have been at the site 25X1
since [redacted]. Although these vehicles are normally parked at LP 2C-1 (Figure 2), as many as two 25X1
nitrogen trucks have been observed near the A-frame structure. On [redacted] one SS-9/-11 25X1
propellant transporter and two nitrogen trucks were adjacent to the probable TE aligned with the A-
frame structure (Figure 14). The presence of these propellant-associated vehicles, also observed at this site
during the SS-N-6 and SS-NX-13 programs, suggests that the new missile has stages that use liquid
propellants. Prior to [redacted] these propellant vehicles had not been observed at Kapustin Yar since 25X1
the termination of the SS-NX-13 program in 1973. These vehicles are not known to be associated with any
other missile system at Kapustin Yar.
11. (S/WN) A ramplike structure (Figure 15) was at LP 2C-2 on [redacted]. The structure consisted 25X1
of two parallel rails [redacted] and [redacted] apart with a slope of approximately [redacted]. 25X1
The structure had been removed by [redacted]. The function of this structure, which was fastened 25X1
to the apron with tiedown points, is not known. During April and May 1981, a similar, if not identical,
structure was present during the construction of a new propellant-handling facility at Balaklava Naval
Missile Test Center ([redacted] inset, Figure 15). 25X1

Support Facility

12. (S/WN) A large, high-bay assembly/checkout building in the Kapustin Yar Complex C Assembly/Checkout Area was refurbished between March and October 1977. The roof was resurfaced, the large equipment doors were replaced, and the interior of the structure was refurbished. Between November 1981 and June 1982, an 18-meter-long extension was added to the east end of one of the two low-bay sections of the building. Nitrogen trucks and a MAZ-543 TMC have also been observed at this facility. In addition, between September 1980 and April 1981, a TT-EL-01 telemetry antenna was ground-mounted on a pedestal east of the assembly/checkout building, and its associated calibration device was mounted on the roof of the assembly/checkout building (Figure 16). The TT-EL-01 antenna has only been associated with ballistic missile system launch activity. The presence of the TT-EL-01 antenna and the timing of its installation at this facility suggest that modifications to this facility are related to activity at Site 2C and that the activity at Site 2C is related to a ballistic missile system.

Imagery Analyst's Comments

13. (S/WN) The presence of missile GSE and the type and repetitive nature of activity at Site 2C strongly indicate R&D of a missile. What is not clear is what type of missile is being developed, what type of launch mode it will use, and for which military service it is being developed.

14. (S/WN) Although the missile has not been seen, handling equipment associated with it suggests that it is 11 to 13 meters in length and less than 2 meters in diameter. This is based on the size of the cradlelike structure on the probable TE, the length of the load simulator/strongback, and the size of the cylinders seen in front of the A-frame structure and on a trailer near the A-frame structure. The judgment that the missile uses liquid propellants is based on the presence of the SS-9/-11 propellant transporters. This, however, does not rule out the possibility of a hybrid missile that also uses a solid-propellant stage.

15. (S/WN) The unusual configuration of the A-frame structure seems to rule out its use as a launcher. However, the presence of a concrete service apron with two probable HP/TD positions in front of the A-frame structure and repeated observation of the probable TE on the apron strongly suggest that the A-frame structure is a launcher. Additionally, a framework that may serve as a loading tray is occasionally seen extending from the downrange face of the A-frame structure. A framework such as this

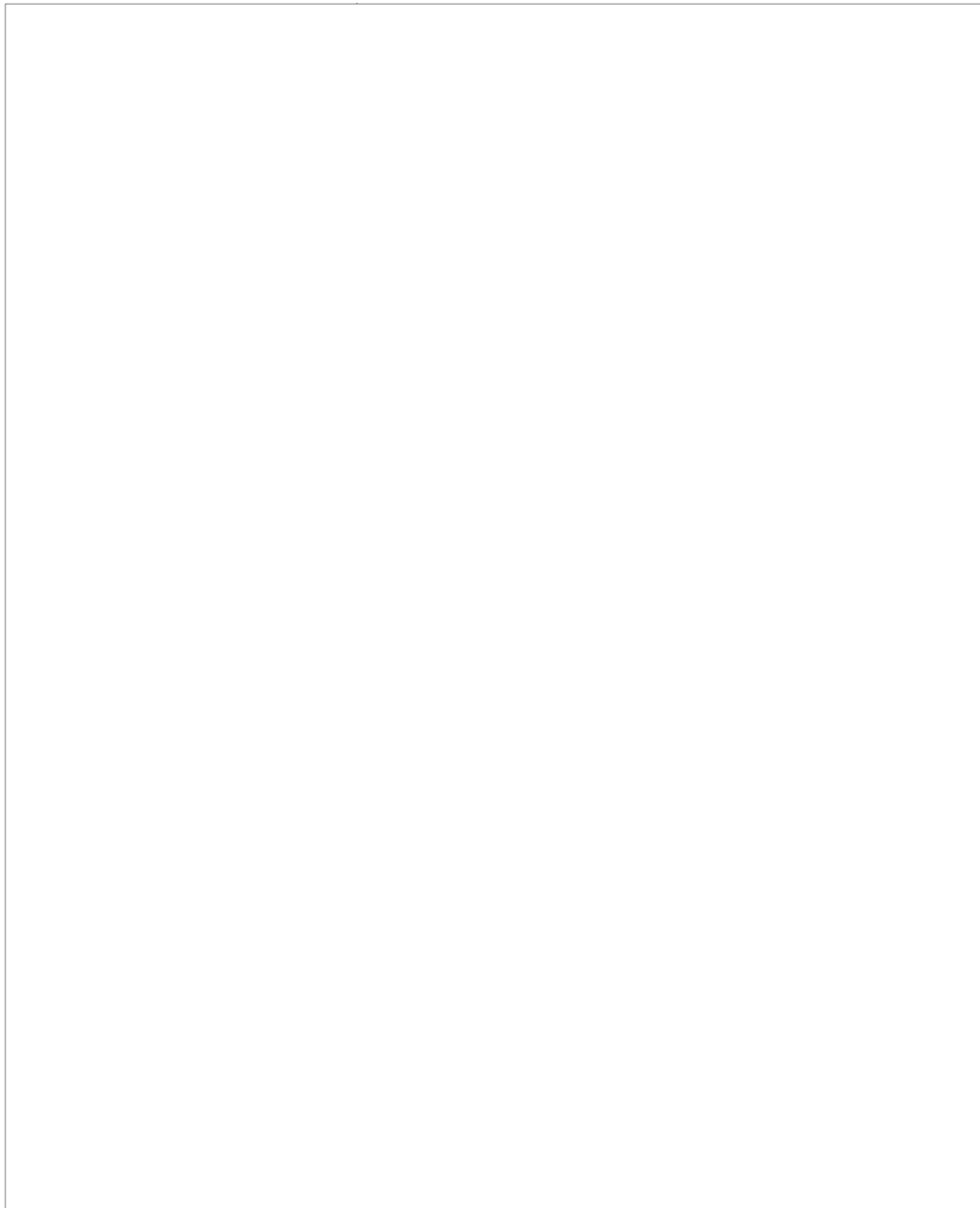
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would be necessary to align/guide the loading of a missile into a launch tube. The cylinder seen in front of the A-frame structure may have been the launch tube. Moreover, the stepped-down floor at the rear of the third floor of the A-frame structure seems designed more to channel exhaust into an exhaust conduit than to serve as a personnel passageway. If a missile were launched from the A-frame structure, it would have to be launched at a steeper angle than the 45 degrees of the face of the A-frame structure.

16. (S/WN) The probable TE could be a launcher, although it has never been seen elevated. If it is a launcher and not a loader for the A-frame structure, it would probably erect a missile on one of the concrete surfaces near the A-frame structure, as this vehicle is not designed for offroad use.

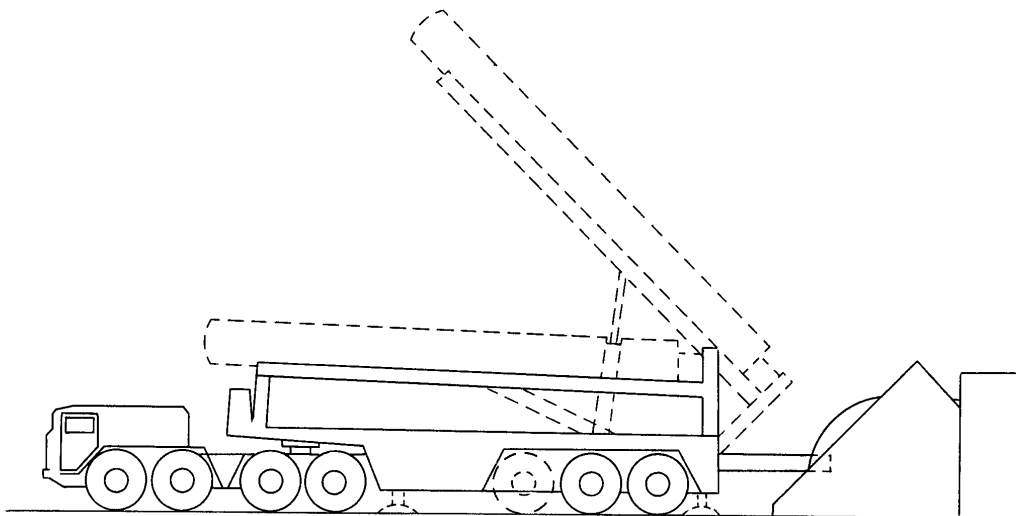
17. (S/WN) If the above judgments are correct, and a relatively small missile is being developed at Site 2C, then the missile is probably being developed for the Soviet Navy rather than the SRF. The development of a naval missile however, would not be unusual since both the SS-N-6 and SS-NX-13 were flight tested from Site 2C. Naval involvement with the ongoing activities at Site 2C is also supported by the return of the SS-9/-11 propellant transporters, which have been used only for naval missile systems at Kapustin Yar, and the appearance of a unique type of ramplike structure at Balaklava Test Center shortly after the same type of structure had been removed from Site 2C.

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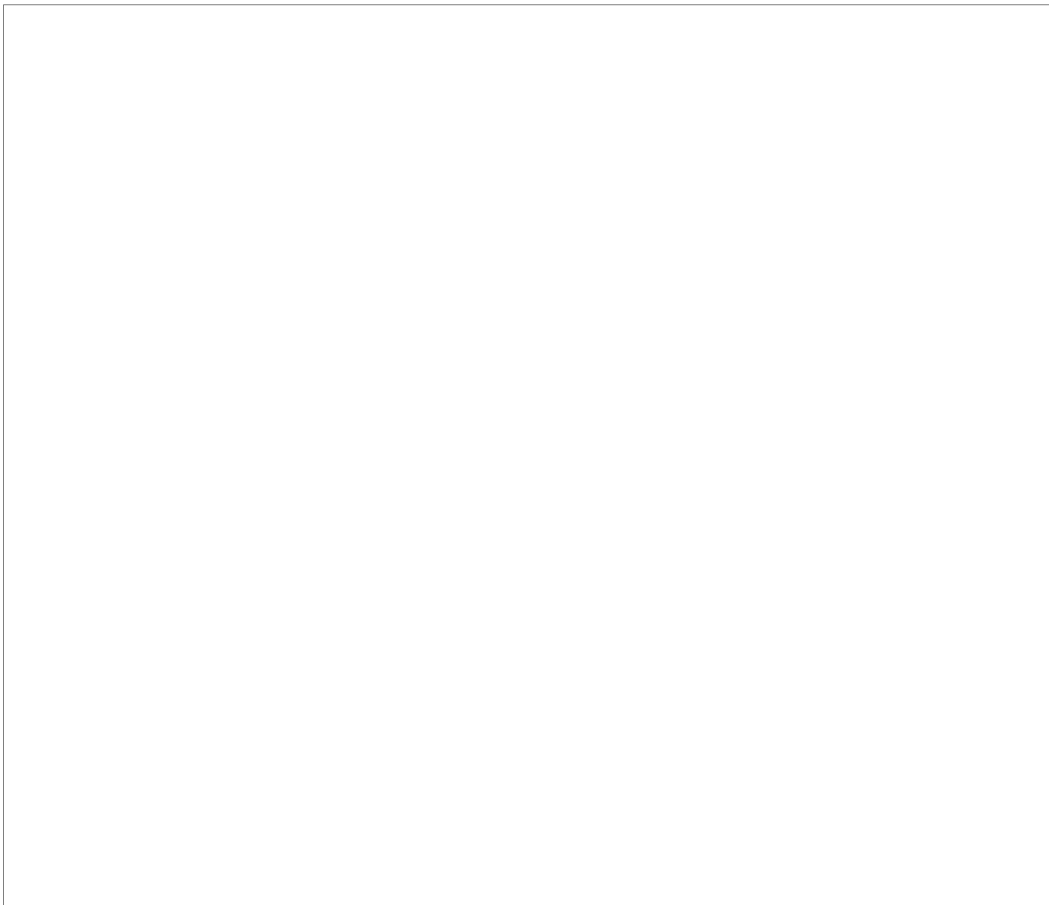
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FIGURE 9. CONCEPTUAL DRAWING OF PROBABLE TE IN FRONT OF A-FRAME STRUCTURE

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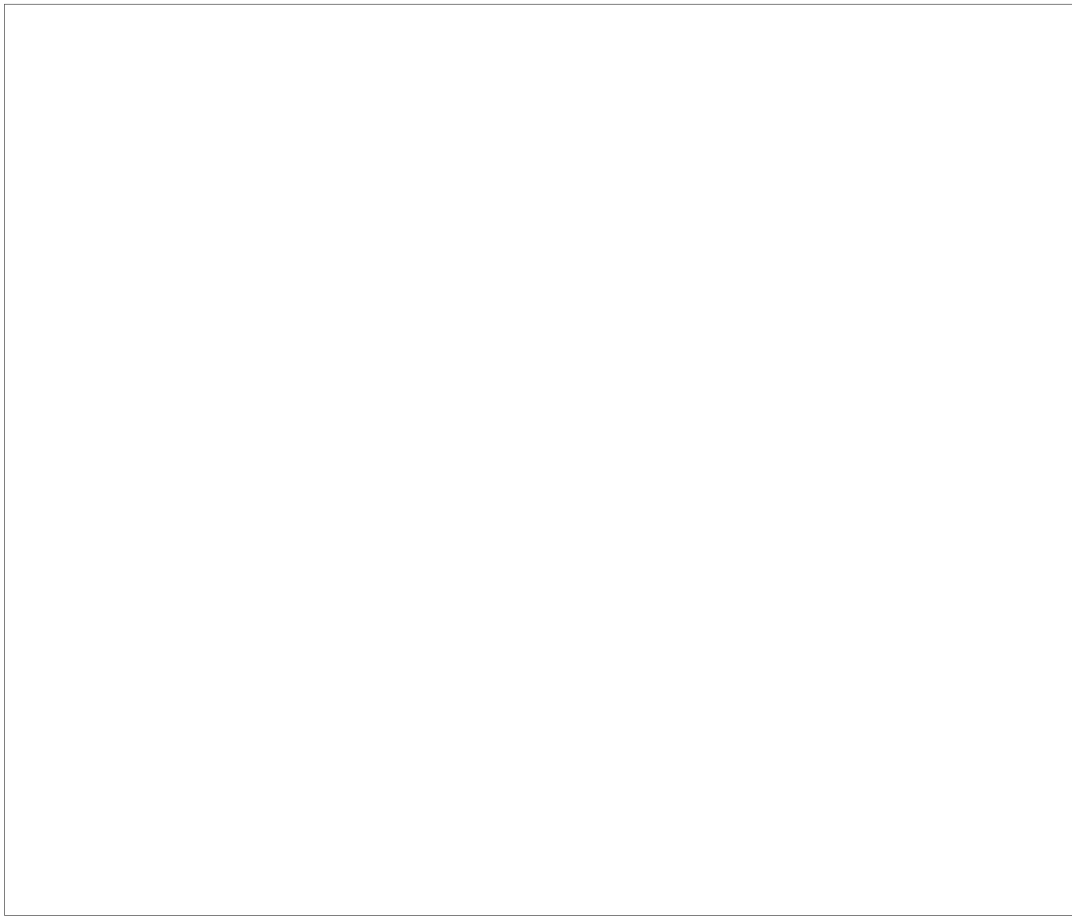


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REFERENCES

IMAGERY

(S/WN) All applicable imagery acquired through [redacted] was used in the preparation of this report. 25X1

DOCUMENT

1. NPIC. Z-20179/81, RCA-15/0002/81, *Kapustin Yar Missile Range Test Complex C Site 2 (S)*, Dec 81 (SECRET/
[redacted]) 25X1

(S) Comments and queries regarding this report are welcome. They may be directed to [redacted] Soviet
Strategic Forces Division, Imagery Exploitation Group, NPIC, [redacted] 25X1
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