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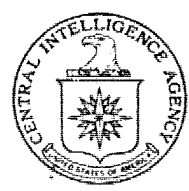
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NPIC/R-132/63
July 1963

PHOTOGRAPHIC INTERPRETATION REPORT

S-9353

PRELIMINARY STUDY, SA-2 SAM SUPPORT FACILITIES, USSR & SATELLITES



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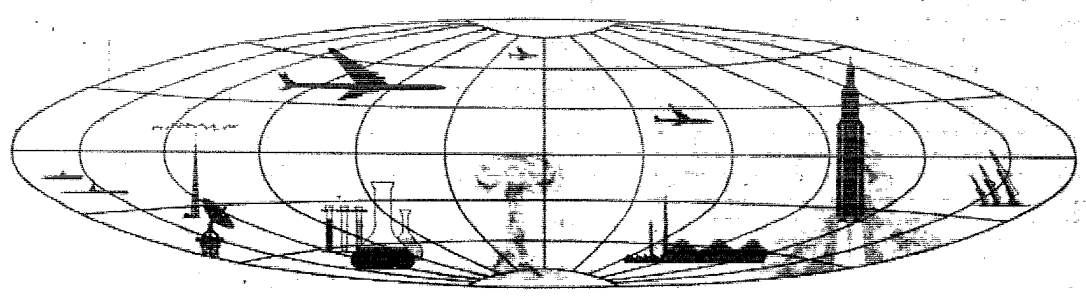
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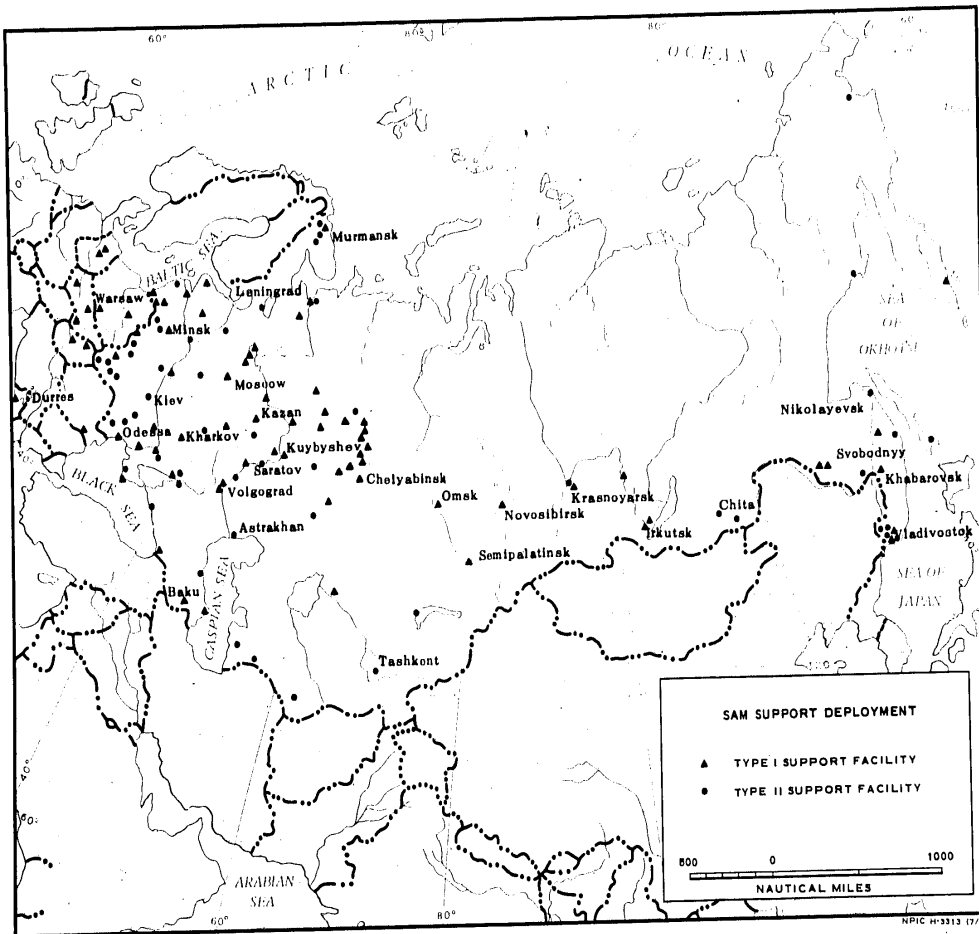


FIGURE 1. SAM SUPPORT DEPLOYMENT IN USSR AND CERTAIN SATELLITES.

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INTRODUCTION

A preliminary study of SA-2 support facilities in the USSR and certain European satellite countries was undertaken in order to determine the types and deployment of these installations (Figure 1). Because of the immediate need for additional intelligence regarding SA-2 support facilities, only a cursory interpretation has been accomplished, and the findings stated herein should be considered tentative.

The SA-2 support facilities identified to date are believed to fall into two general types: rectangular and square. For the purpose of this report, they will be referred to as Types

I and II, respectively. Of the 128 facilities considered, 76 are classified as Type I and 52 as Type II, as shown in Table 1.

Type I was first observed deployed in [redacted] while the Type II facility was not observed until the fall of [redacted]. There have been no Type I facilities observed under construction in the USSR since the first Type II deployment, while the latter has been observed under construction as recently as the summer of [redacted]. It is, therefore, logical to assume that the Type I has been phased out in favor of the Type II facility.

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TYPE I SUPPORT FACILITIES

Type I facilities (Figures 2 and 3) are generally enclosed by a rectangular fence line and have a similar basic internal road network. The road network consists of two main interconnecting roads, which in most cases are parallel to the long axis of the facility.

The servicing of the missiles (assembly, checkout and fueling) probably is performed in the various structures situated on or along one of the main roads, while the component storage areas are served by the second road.

The largest building in the facility (200 by 70 feet) is designated as the receiving/maintenance building and has a drive-through capability. It is positioned on the service road with its long axis perpendicular to the road. Low altitude photography of the support facility at [redacted] revealed missile canisters being off-loaded in an area adjacent to this building. This observation, coupled with the fact that the building is always positioned near the main entrance, indicates a definite receiving capability. The building also was felt to have a maintenance capability be-

cause of its size, its numerous entrances, and the fact that heavy equipment was identified in the immediate vicinity.

A smaller drive-through building (55 by 30 feet) is located on the service road near the receiving/maintenance building. A number of van-type vehicles have been observed next to this building suggesting checkout operations of an undetermined nature.

Located on a turnoff midway along the service road is an open shed 40 by 30 feet. Because of its construction and positioning within the facility, it is considered to be a good candidate for liquid storage and transfer, either fuel or oxidizer.

The final structure on the service road is a drive-through building 60 by 25 feet which is designated as the assembly building. Low level coverage of the Ladeburg SAM Support Facility at one time revealed two GUIDELINE missiles in various states of assembly situated at either end of this building. The assembly operations observed included the attachment of the stabilizer fins to the missile and the

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probable mating of the booster and sustainer. In addition, a partially attached nosecone was observed on one missile which also indicates final assembly.

Observation of the support facilities in Cuba bears out the assumption that the assembly functions are performed in either an open area or in a building other than the receiving/maintenance building.

One significant feature found only at the Type I facilities is that after the service road passes through the assembly building, it doubles back on itself to form a loop. This loop road indicates that after final missile assembly the unit may then be brought back in the direction

of the receiving/maintenance building.

At some of the facilities where photo quality permits, a probable buried tank has been observed within the loop of the service road. At other facilities, a drainage ditch has been observed extending from the loop to a sump located beyond the fence line of the facility. Therefore, it is believed that the area may be used for some type of fueling operations and as a disposal area in connection with the recycling of missiles.

The second main road serves three revetted storage buildings (85 by 30, 35 by 30, and 20 by 15 feet) which house the various components of the missile. It can be assumed that a supply

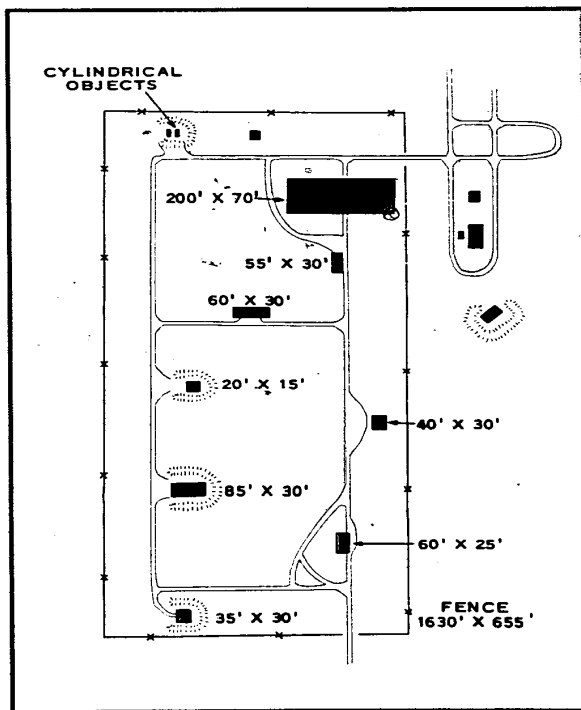


FIGURE 2. VOLGOGRAD SAM SUPPORT FACILITY (TYPE I).

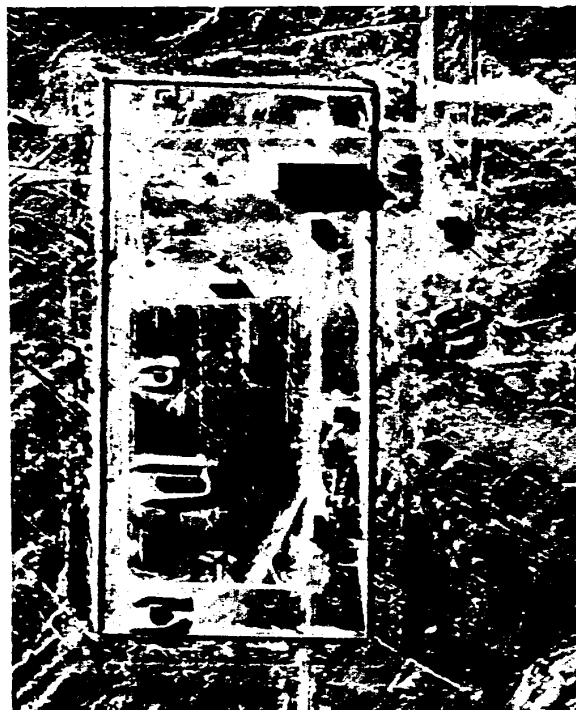


FIGURE 3. VOLGOGRAD SAM SUPPORT FACILITY

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of all components is maintained at the facility; and the sustainer unit, being the largest component, is probably stored in the largest of the three buildings. The other two would then be used to house other components such as warheads, boosters, and fuzes.

There are two additional features which are requisite to the Type I facility. The larger of these is a probable vehicle shed which is positioned along one of the interconnecting roads between the service and storage roads. This shed measures 60 by 30 feet at the Volgograd facility which is used as an illustration in this report. However, these dimensions are not as constant as those of the other buildings in the facility.

A small revetment, enclosing two or more cylindrical objects, has also been observed at the Type I facilities. This area is generally located near the main entrance and may be conventional POL storage.

At all SA-2 SAM support facilities, both Type I and Type II, there are buildings located outside of the fence line which are associated with the installation. Because of variation in the number and size of these buildings, an estimate has not been made as to the number of personnel employed at the facilities. In many cases facilities are located near existing military garrisons which could be used for housing and logistical support.

TYPE II SUPPORT FACILITIES

Type II facilities have been covered only by KEYHOLE photography; therefore, the interpretation is somewhat limited. The most obvious differences between the Type I and Type

II facilities are the internal road network and the perimeter fence line which are square rather than rectangular (Figures 4 and 5). There does, however, appear to be a correlation be-

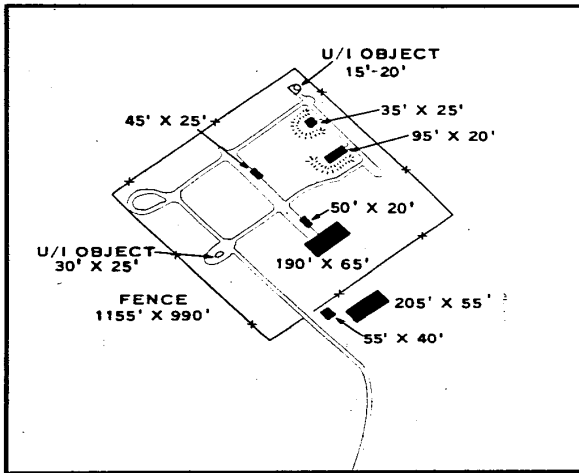


FIGURE 4. ORSK SAM SUPPORT FACILITY (TYPE II).

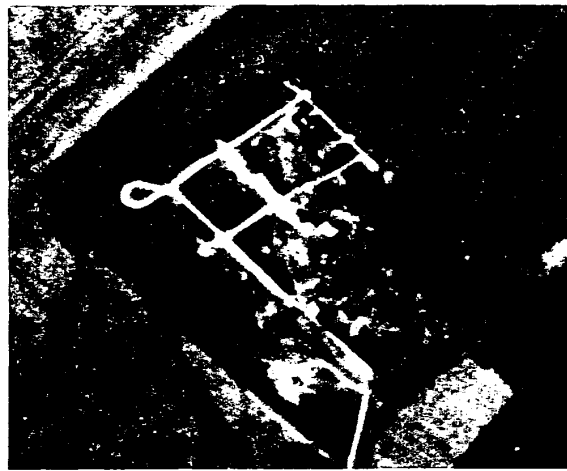


FIGURE 5. ORSK SAM SUPPORT FACILITY

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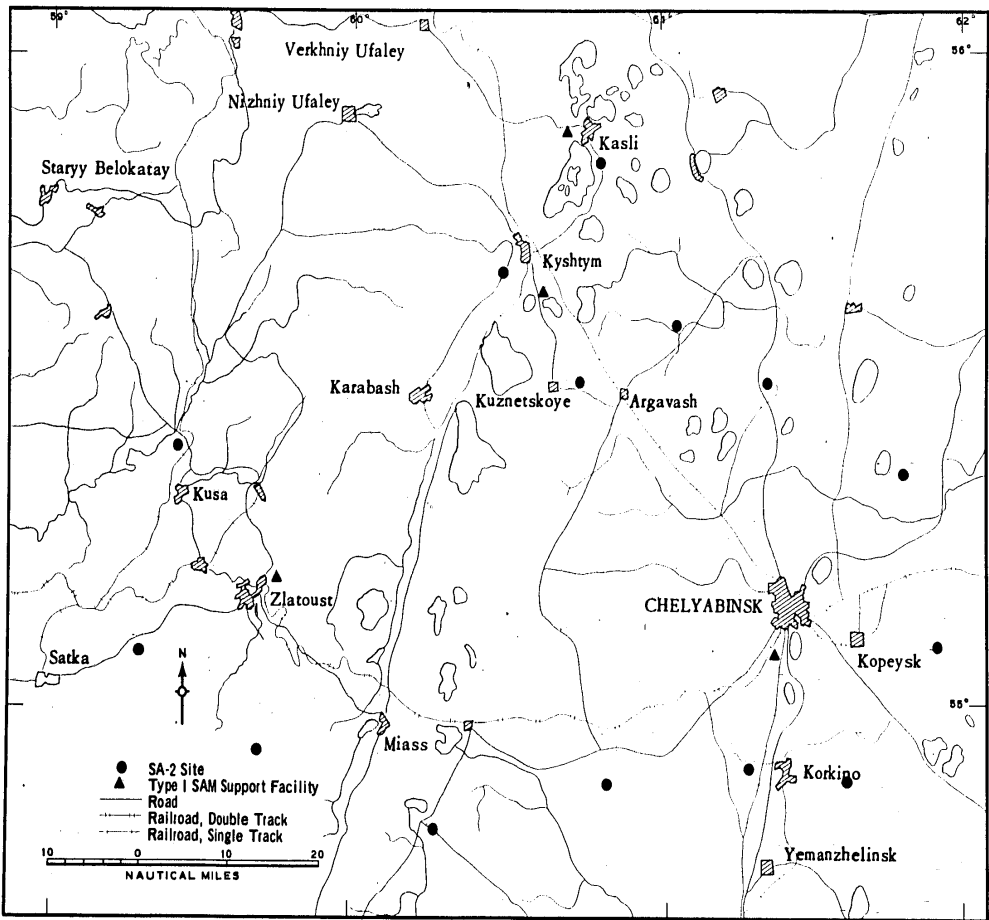
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FIGURE 6. DEPLOYMENT OF SAM SUPPORT FACILITIES, CHELYABINSK AREA.

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tween many of the structures observed at both types.

The most prominent feature of the Type II facilities is a straight road on which are located the receiving/maintenance building and the probable assembly building. The receiving/maintenance building (190 by 65 feet) is again the largest structure within the facilities, and dimensionally it is similar to its counterpart in the Type I. At some of the square support facilities, however, this building is not used as a drive-through building.

The probable assembly building is located at the opposite end of the main road within the facility; and although it is smaller (45 by 25 feet) than the assembly building of the Type I facility, its relationship to the receiving/maintenance is the same. It is important to note that there is no loop road associated with the probable assembly building in this facility.

The small drive-through checkout building (50 by 25 feet) located near the receiving/maintenance building in the Type I facility has been identified at some of the Type II facilities but is absent at others.

In addition, the open shed located at the midpoint of the service road of the Type I facility has not been seen in a corresponding position within the Type II.

There is no apparent conformity in the arrangement of the other internal roads in relation to the main road. The component

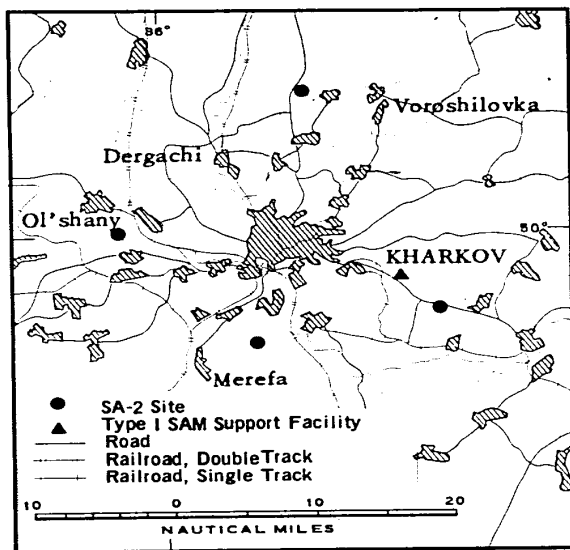


FIGURE 7. DEPLOYMENT OF SAM SUPPORT FACILITIES, KHARKOV AREA.

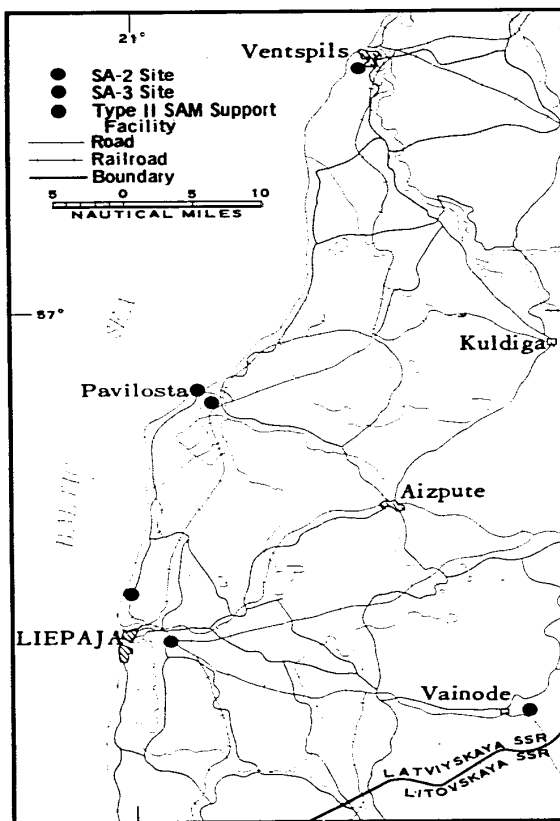


FIGURE 8. DEPLOYMENT OF SAM SUPPORT FACILITIES, LIEPAJA AREA.

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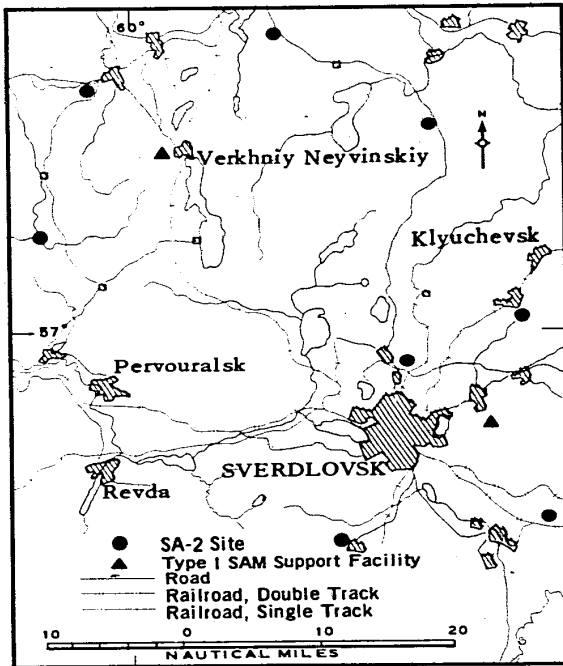


FIGURE 9. DEPLOYMENT OF SAM SUPPORT FACILITIES, SVERDLOVSK AREA.

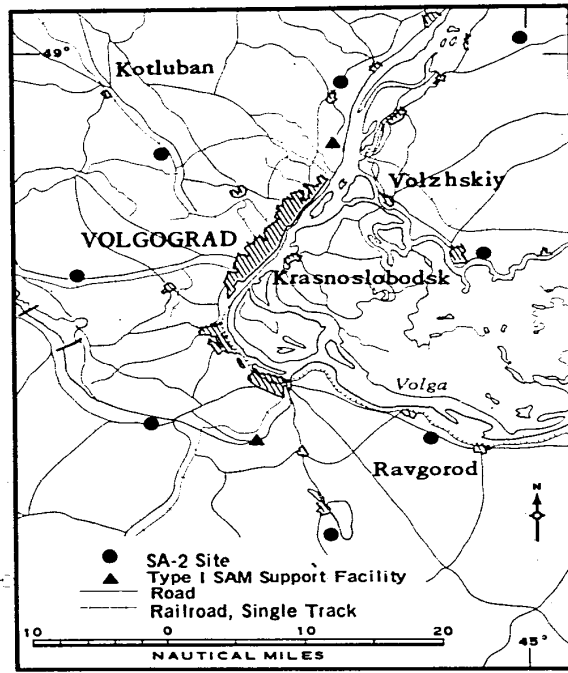


FIGURE 10. DEPLOYMENT OF SAM SUPPORT FACILITIES, VOLGOGRAD AREA.

storage buildings of the Type II facilities are usually strung out along one of the supplemental roads. Each Type II facility contains a component storage building (95 by 20 feet) that is comparable to the largest storage building in the Type I (85 by 30 feet). At least one other revetted storage building is present at the Type II. The second storage building at the Orsk facility measures 35 by 25 feet. It cannot be determined if the same size structure

is present at all Type IIs because of the limitations of KEYHOLE photography.

There are two additional objects at the Orsk facility which are probably present at all of the square support facilities. The function and shape of these unidentified objects has not been determined. As shown on Figure 4, one object occupies an area of approximately 30 by 25 feet and the other measures approximately 20 to 15 feet.

CONCLUSIONS

The evolution from the Type I to the Type II SAM support facility indicates a change in the missile handling procedures or a new concept in SAM support deployment.

As shown in Figures 6 to 10 a general ratio has been established between the support facilities and the number of sites they service. At present this ratio is considered

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to be 4-6 SAM sites per Type I facility and 2-4 SAM sites per Type II facility.

Although the ratio given implies a lesser handling capability for the Type II facilities, this supposition is not borne out by a physical comparison of the two types. In terms of square footage, the area occupied by the Type II facility at Orsk actually exceeds that of the Type I facility at Volgograd.

In addition, the similarity in the number and size of structures at the two facilities leads to the conclusion that the Type II facilities may in fact be capable of supporting an equal number of SAM sites. The transition from the Type I to the Type II is, therefore, most probably the result of a change in missile handling or the adoption of a new flow pattern within the facilities.

Table 1. SA-2 SAM Support Facilities in USSR and European Satellites

Country	Place Name	Coordinates	BE Number
	Type I (rectangular)		
USSR			
	Angarsk SAM Support Facility	52-32N 104-04E	
	Baku SAM Support Facility	40-24N 50-01E	
	Bratsk Dam SAM Support Facility	56-17N 101-40E	
	Brest SAM Support Facility	52-07N 23-37E	
	Chelyabinsk SAM Support Facility	55-04N 61-22E	
	Cherepovets SAM Support Facility	59-07N 38-02E	
	Dnepropetrovsk SAM Support Facility	48-23N 34-56E	
	Dodonovo SAM Support Facility	56-09N 93-21E	
	Dolon Airfield SAM Support Facility	50-37N 79-13E	
	Donetsk SAM Support Facility	47-53N 37-47E	
	Glazov SAM Support Facility	56-06N 52-40E	
	Gomel SAM Support Facility	52-25N 30-55E	
	Gorkiy SAM Support Facility	56-19N 43-44E	
	Irkutsk SAM Support Facility	52-24N 103-59E	
	Izhevsk SAM Support Facility	56-46N 53-23E	
	Kaliningrad SAM Support Facility 1	54-44N 20-04E	
	Kaliningrad SAM Support Facility 2	54-36N 21-05E	
	Kasli SAM Support Facility	55-33N 60-41E	
	Kasli SAM Support Facility (Kyshtym)	55-36N 60-36E	
	Kazan SAM Support Facility	55-46N 49-13E	
	Khabarovsk SAM Support Facility	46-22N 135-09E	
	Kharkov SAM Support Facility	49-56N 36-27E	
	Komsomolsk SAM Support Facility	50-33N 136-53E	
	Kremenchug Dam SAM Support Facility	48-59N 33-12E	
	Kuybyshev SAM Support Facility 1	53-17N 50-17E	
	Kuybyshev SAM Support Facility 2	53-30N 49-31E	
	Lvov SAM Support Facility	49-47N 24-05E	
	Magnitogorsk SAM Support Facility	53-21N 59-04E	
	[REDACTED] SAM Support Facility	[REDACTED]	
	Mingechaur SAM Support Facility	40-45N 47-00E	
	Minsk SAM Support Facility	53-54N 27-40E	
	Moscow (Probable) SAM Support Facility (Odintsovo)	55-42N 37-18E	
	Murmansk SAM Support Facility 1	69-02N 33-14E	
	Nikolayev SAM Support Facility	46-59N 32-09E	
	Nizhny Tagil SAM Support Facility	57-52N 60-02E	

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Table 1. (Continued)

Country	Place Name	Coordinates	BE Number
USSR	Type II (square)		
	Anadyr SAM Support Facility	64-48N 177-45E	25X1A
	Arkhangelsk SAM Support Facility	64-31N 40-43E	
	Astrakhan SAM Support Facility	46-26N 47-56E	
	Balakovo SAM Support Facility	52-00N 47-48E	
	Balta Regional Military Storage Installation SAM Support Facility	47-44N 29-57E	
	Barano-Orenburgskoye MRBM Complex SAM Support Facility	44-27N 131-22E	
	Berezniki SAM Support Facility	59-23N 56-52E	
	Borshchev MRBM Complex SAM Support Facility	48-46N 26-02E	
	Bryansk SAM Support Facility	53-21N 34-17E	
	Chita SAM Support Facility (Probable)	52-04N 113-30E	
	Kalinkovichi SAM Support Facility	52-11N 28-55E	
	Kamyshin SAM Support Facility	50-03N 45-21E	
	Khada Bulak SAM Support Facility	50-43N 116-07E	
	Kishinev SAM Support Facility	46-57N 28-52E	
	Kiyev SAM Support Facility	50-19N 30-24E	
	Kizyl-Arvat SAM Support Facility	38-57N 56-18E	
	Kovel SAM Support Facility	51-10N 24-36E	
	Krasnoyarsk SAM Support Facility	56-10N 92-58E	
	Liepaja SAM Support Facility	56-31N 21-06E	
	Lutsk MRBM Complex SAM Support Facility	50-45N 25-09E	
	Lugansk Possible SAM Support Facility	48-32N 39-10E	
	Magadan SAM Support Facility	59-36N 150-48E	
	Makhachkala SAM Support Facility	42-56N 47-33E	
	Mukachevo SAM Support Facility	48-21N 22-42E	
	Murmansk SAM Support Facility 2	68-50N 33-08E	
	Nakhodka SAM Support Facility	42-54N 133-05E	
	Nebit Dag SAM Support Facility	39-28N 54-19E	
	Nikolayevsk-Na-Amure SAM Support Facility	53-07N 140-52E	
	Novaya Mezinovka Regional Military Storage SAM Support Facility	53-31N 26-56E	
	Novorossiysk SAM Support Facility	44-40N 37-46E	
	Olenya SAM Support Facility	68-13N 33-49E	
	Orsha SAM Support Facility	54-29N 30-25E	
	Orsk SAM Support Facility	51-24N 58-02E	
	Pechenga SAM Support Facility	69-45N 32-06E	
	Penza SAM Support Facility	53-12N 44-56E	
	Petrozavodsk SAM Support Facility	61-48N 34-04E	
	Sary Shagan AMM Complex SAM Support Facility	46-03N 73-28E	
	Shuchuchin Airfield SAM Support Facility	53-35N 24-59E	
	Sovetskaya Gavan SAM Support Facility	48-58N 140-12E	
	Spassk Dalniy SAM Support Facility	44-12N 133-10E	
	Stanislav SAM Support Facility	48-35N 24-36E	
	Sterlitimak SAM Support Facility	53-39N 55-49E	
	Stry SAM Support Facility	49-14N 23-53E	
	Tashkent SAM Support Facility	41-20N 69-24E	
	Uman MRBM Complex SAM Support Facility	48-43N 30-17E	
	Ussuriysk SAM Support Facility	43-51N 132-02E	
	Vladivostok SAM Support Facility	43-01N 131-47E	
	Voronezh SAM Support Facility	51-33N 39-08E	
	Yevpatoriya SAM Support Facility	45-12N 33-23E	
	Yuzhno-Sakhalinsk SAM Support Facility	46-52N 142-46E	
	Zaporozhye SAM Support Facility	47-44N 35-15E	

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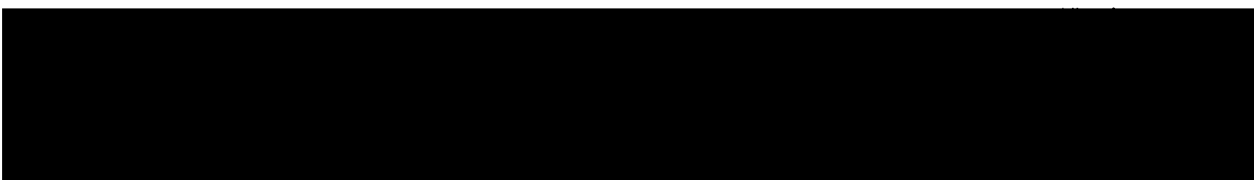
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