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SA-10 SAM Deployment (S)

DEPLOYED SAM FACILITIES

BE: Various

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SA-10 SAM DEPLOYMENT (S)

ABSTRACT

1. (S/WN) This report provides a brief background on the Soviet SA-10 SAM system and updates information on modifications to system components, status of deployment, and expansion of troop training facilities.

2. (S/WN) A mobile version of the SA-10 launcher, the FLAP LID (SH-EL-02) radar, and a modified BIG BIRD (SH-EL-03) radar are under development at Sary-Shagan Missile Test Center; two new SA-10 launch sites, which will provide facilities for additional SA-10 troop training, are under construction at Kapustin Yar SAM Firing Range; SA-10 deployment or construction activity has been identified at 54 sites in eight areas of the USSR; and the recent deployment of up to 12 launchers per site at Moscow, Nikolayev, and Novosibirsk will increase the firepower of individual sites, but may slow the rate at which SA-10 units are deployed to new areas.

INTRODUCTION

3. (S/WN) The SA-10 is the newest Soviet strategic SAM system. The major SA-10 system components currently being deployed include a canister-launched missile, a towed launcher designed to hold four missile canisters, a CLAM SHELL (SH-EL-01) low-altitude target acquisition radar, a FLAP LID target engagement radar, and a BIG BIRD long-range acquisition radar. All SA-10 components are road transportable and are designed for greater mobility than earlier SAM systems. Fifty-four SA-10 SAM sites (Table 1) have been identified in eight areas of the USSR (Figure 1).

4. (S/WN) The SA-10 missile system was developed at Sary-Shagan Missile Test Center (MTC) Launch Complex G [redacted] where SA-10 components were first identified in 1973. By 1975, missile flight tests were underway. Troop training began in 1979 at Sary-Shagan MTC Launch Complex E and by late 1980, SA-10 troop training was in progress at Kapustin Yar SAM Firing Range [redacted] Deployment of the SA-10 was first identified in the firing area at four Moscow SA-1 sites in July 1980.

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5. (S/WN) In early 1981, an SA-10 transporter-erector-launcher (TEL) and a mobile version of the FLAP LID radar were observed for the first time at Launch Complex G in the MTC (Figure 2). Although this equipment has not yet been deployed, it demonstrates a Soviet commitment to further improve the mobility of the SA-10 system.



FIGURE 1. LOCATIONS OF SA-10 SAM DEPLOYMENT IN THE USSR

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BASIC DESCRIPTION

6. (S/WN) The SA-10 is a single-stage, canister-launched missile. Although the missile itself has not been observed, it is believed to be about [redacted] long and [redacted] in diameter, based on the size constraints of the missile canister. The SA-10 canister is [redacted] long and [redacted] in diameter. The upper [redacted] of the canister are removable, which probably facilitates the missile-loading process. The exterior of the canister is marked by ten raised bands that provide structural support. It has been postulated that the missile employs an onboard track-via-missile guidance system. This system allows a continuous exchange of targeting data between the missile's seeker, the ground-based guidance computer, and the engagement radar.¹ The SA-10 missile is manufactured at Leningrad Guided Missile Production Plant 458 [redacted] where series production has been underway since June 1980.²

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7. (S/WN) The two versions of the SA-10 launcher are a towed version, which is currently being deployed; and a mobile version, which is undergoing testing at the MTC. The towed SA-10 launcher (Figure 3A) is a twin-axle semitrailer, [redacted] that can transport and launch up to four SA-10 missiles.³ The launcher contains two pivoting support beams, one with a rectangular hitch plate, that join at the forward end when in the travel mode. In the launch mode, the beams are open, and a stabilizing jack under each beam extends to the ground. A probable hydraulic erecting mechanism is in the center of the launcher and attaches to the canister rack. The erecting mechanism is used to raise the SA-10 canisters to the vertical position for launch. The towed SA-10 launcher is manufactured at the Gorkiy Armaments Plant Novoye Sormovo Stalin 92 [redacted] where series production has been underway since August 1977.⁴

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8. (S/WN) The mobile version of the SA-10 launcher (Figure 3B) is a [redacted] TEL that consists of a MAZ-543 self-propelled chassis to which a hydraulic canister-erecting mechanism has been added. A [redacted] boxlike device, which may be a power generator, is mounted behind the cab. The SA-10 TEL is believed to be capable of functioning both as a launcher and as a resupply transporter. The production facility for this vehicle has not been identified.

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9. (S/WN) The transportable electronics tower (TET) is the largest component associated with the SA-10 system. The TET, an erectable platform used to elevate the CLAM SHELL radar, can also function as an optional platform for the FLAP LID radar. The TET is mounted on a dual-axle semitrailer that is towed by the MAZ-537 prime mover. The tower is 1 meter in diameter and approximately 20 meters high when fully erect on its chassis. The tower is erected hydraulically by a large piston near its base. Two telescoping stabilizer arms, which probably assist in erection, are attached between the tower and the chassis.

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Table 1.
Status of SA-10 SAM Sites, USSR

This table in its entirety is classified SECRET//WNINTEL

Installation	Geographic Coordinates	BE No	Type of Site	Const First Iden	SA-10 Equip First Seen	SA-10 Equip Currently Deployed*	Remarks	Installation	Geographic Coordinates	BE No	Type of Site	Const First Iden	SA-10 Equip First Seen	SA-10 Equip Currently Deployed*	Remarks
Kaliningrad SAM Site 028-10	54-44-42N 020-04-10E		Scratch built			6 L, 1 CS, 1 FL 2 TETs		Moskva SAM Site E31-10	56-07-50N 036-29-38E		Collocated with SA-1 site				
Kaliningrad SAM Site B32-10	54-52-20N 020-17-00E		Scratch built			6 L, 1 CS, 1 FL 2 TETs	Addl site constr will allow deployment of extra SA-10 launchers	Moskva SAM Site E32-10	56-15-24N 036-29-40E		Scratch built				
Kaliningrad SAM Site C24-10	54-28-50N 019-54-56E		Reconfigured from SA-3 site			6 L, 1 CS, 1 FL 2 TETs		Moskva SAM Site E33-10	56-21-23N 036-45-54E		Reconfigured from SA-3 site				
Kaliningrad SAM Site C28-10	54-35-58N 019-50-56E		Reconfigured from SA-2 site			6 L, 1 CS, 1 FL 2 TETs		Moskva SAM Site E34-10	56-24-30N 037-00-20E		Collocated with SA-1 site				
Kaliningrad SAM Site C30-10	54-52-24N 019-57-11E		Reconfigured from SA-3 site			6 L, 1 CS, 1 FL 2 TETs		Moskva SAM Site E35-10	56-28-36N 037-12-01E		Collocated with SA-1 site				
Kuybyshev SAM Site B07-10	53-17-54N 050-34-07E		Reconfigured from SA-2 site			—	Slow rate of const	Moskva SAM Site E36-10	56-29-23N 037-29-25E		Collocated with SA-1 site				
Kuybyshev SAM Site C29-10	53-20-44N 049-26-01E		Reconfigured from SA-2 site			—	Slow rate of const	Nikolayev SAM Site A09-10	032-07-29E 46-54-05N		Reconfigured from SA-3 site			6 L, 1 CS, 1 FL 1 TET	FL on mound
Moskva SAM Site C07-10	55-55-13N 038-19-31E		Small clearing in SA-1 firing area			None	SA-10 equip removed by []	Nikolayev SAM Site A15-10	032-03-18E		Reconfigured from SA-3 site			9 L, 1 CS, 1 FL 2 TETs	Site being upgraded to contain 12 SA-10 launchers
Moskva SAM Site C09-10	55-47-55N 038-21-25E		Small clearing in SA-1 firing area			6 L, 1 CS, 1 FL 2 TETs	BIG BIRD on top of YO YO radar bunker	Nikolayev SAM Site A21-10	46-51-48N 031-55-16E		Reconfigured from SA-3 site			6 L, 1 CS, 1 FL 2 TETs	
Moskva SAM Site C10-10	55-40-37N 038-20-34E		Small clearing in SA-1 firing area			None	SA-10 equip removed by []	Nikolayev SAM Site A25-10	46-55-30N 031-53-54E		Reconfigured from SA-3 site			9 L, 1 CS, 1 FL 2 TETs	Site being upgraded to contain 12 SA-10 launchers
Moskva SAM Site C12-10	55-32-45N 038-21-35E		Small clearing in SA-1 firing area			6 L, 1 CS, 1 FL 2 TETs		Nikolayev SAM Site A33-10	47-01-29N 031-55-56E		Reconfigured from SA-3 site			6 L, 1 CS, 1 FL 2 TETs	
Moskva SAM Site E01-10	56-28-59N 037-41-55E		Collocated with SA-1 site			—	Ucon around YO YO radar bunker	Novosibirsk SAM Site B01-10	55-15-59N 082-58-43E		Reconfigured from SA-2 site			12 L, 1 CS, 1 FL 2 TETs	First site to receive 12 SA-10 launchers
Moskva SAM Site E02-10	56-31-55N 037-59-37E		Reconfigured from SA-3 site			—		Novosibirsk SAM Site B08-10	55-04-25N 093-18-42E		Reconfigured from SA-2 site			6 L, 1 CS, 1 FL 2 TETs	
Moskva SAM Site E03-10	56-22-05N 038-17-30E		Scratch built			—		Novosibirsk SAM Site B20-10	58-49-29E 052-04-48N		Reconfigured from SA-2 site			6 L, 1 CS, 1 FL 2 TETs	SA-10 equip not deployed in prepared revetments
Moskva SAM Site E04-10	56-20-25N 038-23-21E		Collocated with SA-1 site			—		Novosibirsk SAM Site B28-10	082-36-50E		Scratch built			6 L, 1 CS, 1 FL 2 TETs	
Moskva SAM Site E05-10	56-13-40N 038-32-12E		Collocated with SA-1 site			—	Ucon around YO YO radar bunker	Riga SAM Site A24-10	56-54-21N 023-56-19E		Scratch built			6 L, 1 CS, 1 FL 2 TETs	
Moskva SAM Site E06-10	56-07-24N 038-42-52E		Collocated with SA-1 site			—		Riga SAM Site A32-10	57-01-45N 023-59-24E		Reconfigured from SA-3 site			6 L, 1 CS, 1 FL 1 TET	FL on mound
Moskva SAM Site E16-10	55-05-25N 038-10-31E		Collocated with SA-1 site			—		Riga SAM Site B03-10	57-06-09N 024-14-23E		Reconfigured from SA-2 site			6 L, 1 CS, 1 FL 2 TETs	
Moskva SAM Site E17-10	55-02-50N 037-55-46E		Collocated with SA-1 site			—		Riga SAM Site C28-10	57-01-02N 023-30-20E		Reconfigured from SA-3 site			—	
Moskva SAM Site E22-10	55-09-35N 038-52-10E		Collocated with SA-1 site			12 L, 1 CS, 1 FL 2 TETs	Const at YO YO radar bunker. YO YO radars removed	Jelgava (Riga) SAM Site A03-10	56-44-56N 023-49-26E		Reconfigured from SA-2 site			6 L, 1 CS, 1 FL 2 TETs	
Moskva SAM Site E23-10	55-14-26N 038-38-07E		Collocated with SA-1 site			12 L, 1 CS, 1 FL 2 TETs	BIG BIRD on top of YO YO radar bunker	Severodvinsk SAM Site A02-10	64-38-50N 039-49-30E		Scratch built			6 L, 1 CS, 1 FL 2 TETs	
Moskva SAM Site E24-10	55-20-57N 036-27-28E		Reconfigured from SA-3 site			12 L, 1 CS, 1 FL 2 TETs		Severodvinsk SAM Site A02-10	039-49-30E 64-31-53N		Reconfigured from SA-3 site			6 L, 1 CS, 1 FL 2 TETs	Two dummy SA-10 launchers at edge of site
Moskva SAM Site E25-10	55-27-53N 036-24-36E		Collocated with SA-1 site			—		Severodvinsk SAM Site A24-10	039-38-50E 64-38-45N		Reconfigured from SA-3 site			6 L, 1 CS, 1 FL 2 TETs	
Moskva SAM Site E26-10	55-36-45N 036-19-13E		Collocated with SA-1 site			—	BIG BIRD on top of YO YO radar bunker	Severodvinsk SAM Site A36-10	039-49-49E 64-38-15N		Reconfigured from SA-2 site			6 L, 1 CS, 1 FL 2 TETs	Two dummy SA-10 launchers at site
Moskva SAM Site E27-10	55-44-25N 036-18-66E		Collocated with SA-1 site			12 L, 1 CS, 1 FL 2 TETs		Severodvinsk SAM Site B28-10	039-24-54E 64-38-58N		Reconfigured from SA-2 site			6 L, 1 CS, 1 FL 2 TETs	
Moskva SAM Site E28-10	55-52-55N 038-13-30E		Scratch built			—		Severodvinsk SAM Site A01-03 (dummy site)	039-50-41E		Reconfigured from SA-3 site			6 L, 1 CS, 1 FL 2 TETs	Dummy equip
Moskva SAM Site E29-10	56-01-19N 036-19-31E		Reconfigured from SA-3 site			—		Sverdlovsk SAM Site B05-10	57-01-15N 060-53-45E		Reconfigured from SA-2 site			—	
								Sverdlovsk SAM Site B13-10	56-43-47N 060-56-33E		Reconfigured from SA-2 site			—	

*L—SA-10 launcher(s); CS—CLAM SHELL; FL—FLAP LID

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Additional support is provided by two [redacted] outrigger beams that fold out from the base of the tower. Guy wires, suspended between the outrigger beams and the stabilizer arms, also provide support for the tower. The production facility for the TET has not been identified. 25X1

10. (S/WN) The CLAM SHELL is the low-altitude target acquisition radar for the SA-10 system (Figure 4A). It was first identified at Sary-Shagan Probable Electronics Test Facility [redacted] 25X1
The CLAM SHELL has two curved, vertically mounted reflectors that are separated by a radar frequency shield. The reflectors are mounted on a transceiver box that also functions as a counterweight. The fully extended antenna elements are [redacted] high and [redacted] wide. When operational, the CLAM SHELL radar is mounted on the TET and rotates 360 degrees. By elevating the radar, its range is increased, and the amount of ground clutter and interference is decreased. When in transit, the CLAM SHELL radar is carried on the same transporter as the SA-10 canisters. Upon arrival at a site, the transporter is parked perpendicularly to the lowered TET. The folded radar is then rotated 90 degrees for alignment with and attachment to the TET. The production facility for the radar has not been identified. 25X1

11. (S/WN) The FLAP LID is the target engagement radar for the SA-10 system. It was first observed at Launch Complex G in the MTC on [redacted] The radar has a boxlike body, [redacted] meters wide, and about [redacted] high. A planar aperture screen, [redacted] long and [redacted] wide, is mounted on top of the body and hinged at the forward end. Two small hydraulic pistons are used to raise the screen. The radar is space fed from one or two rear-mounted feed structures. 25X1
25X1

12. (S/WN) Like the SA-10 launcher, the FLAP LID radar is configured in two versions—a towed model, which is usually mounted on a TET when deployed (Figure 4B); and a mobile version (Figure 4C), which has been under development at Launch Complex G in the MTC since early 1981. The only visible difference between the towed and mobile versions of the radar is the number of feed structures. The mobile radar has only one feed structure, while the towed version may have either one or two. The towed radar was originally seen with two feed structures. However, in mid-1981, towed FLAP LID radars with one feed were identified at the MTC and at Kapustin Yar SAM Firing Range and have recently been seen at deployed SA-10 sites. The mobile FLAP LID is mounted on a self-propelled MAZ-type vehicle, between the cab and a large, probable electronics box. When operational, the radar is usually perpendicular to the rest of the vehicle. In the travel mode, the radar screen is folded down and aligned lengthwise with the vehicle. Although use of a TET is optional for the FLAP LID, it can probably be removed from the MAZ-type vehicle and mounted on a TET. The FLAP LID radar is manufactured at Gorkiy Plant 92, where series production was underway by [redacted] 25X1

13. (S/WN) The BIG BIRD is the long-range target acquisition radar for the SA-10 system (Figure 4D). It was first observed at Sary-Shagan Probable Electronics Test Facility on [redacted] but was not associated with the SA-10 system until [redacted] The BIG BIRD radar consists of two planar arrays mounted back to back on the top of a computer van. A feed structure for each array is attached to a framework that joins to the top of the radar screen. Each array is [redacted] high and [redacted] wide; the upper corners are clipped at a 45-degree angle. When operational, the radar rotates 360 degrees in azimuth. A CATS EYE-type antenna is probably used to relay targeting information to nearby SA-10 sites. 25X1
25X1

14. (S/WN) Efforts to improve the mobility of the BIG BIRD radar are underway. On [redacted] a trailer-mounted BIG BIRD radar was identified at the Sary Shagan Probable Electronics Test Facility. The radar appeared to be mounted on a flatbed trailer and towed by a MAZ-type prime mover. The trailer-mounted radar screen was [redacted] lower than the currently deployed van-mounted version (Figure 5). Also, two probable electronics boxes, each [redacted] were behind the screen and may have been mounted on the same trailer as the radar. [redacted] 25X1
25X1
25X1
25X1

15. (S/WN) One BIG BIRD radar serves several SA-10 sites and is set up in a location which is central to the sites, such as at an air warning radar facility or a SAM support facility. Deployed in this way, the radar can provide advanced targeting data to four or five SA-10 sites.

16. (S/WN) The SA-10 transporter is a dual-axle trailer that can transport up to four SA-10 missile canisters or one CLAM SHELL radar. The transporter, [redacted] utilizes the MAZ-938 longbed chassis and is towed by the KRAZ-258 prime mover. The transporter is manufactured at Gorkiy Plant 92 and at Orel Road Machinery and Missile Support Equipment Plant [redacted] Between three and six transporters are at each SA-10 site. 25X1
25X1

17. (S/WN) A mobile crane that is used to transfer SA-10 missile canisters from the transporter to the launcher is also at each SA-10 site.

18. (S/WN) Eight chamfer-roofed electronics vans are deployed at each site. Two are used with the CLAM SHELL radar, four are connected to the FLAP LID radar, and two are connected to the launchers. The vans are [redacted] long, [redacted] wide, and [redacted] high. A smaller van, [redacted] long and [redacted] meters wide, is also at each SA-10 site and is connected to the FLAP LID radar. 25X1

19. (S/WN) A probable electric power generator is also associated with the SA-10 system and has been connected to SA-10 electronics vans at Launch Complex G in the MTC and in the SA-10 storage yard at Kapustin Yar Marshalling Area [redacted]. The generator is [redacted] long by [redacted] meters wide and has corners clipped at a 30-degree angle. 25X1

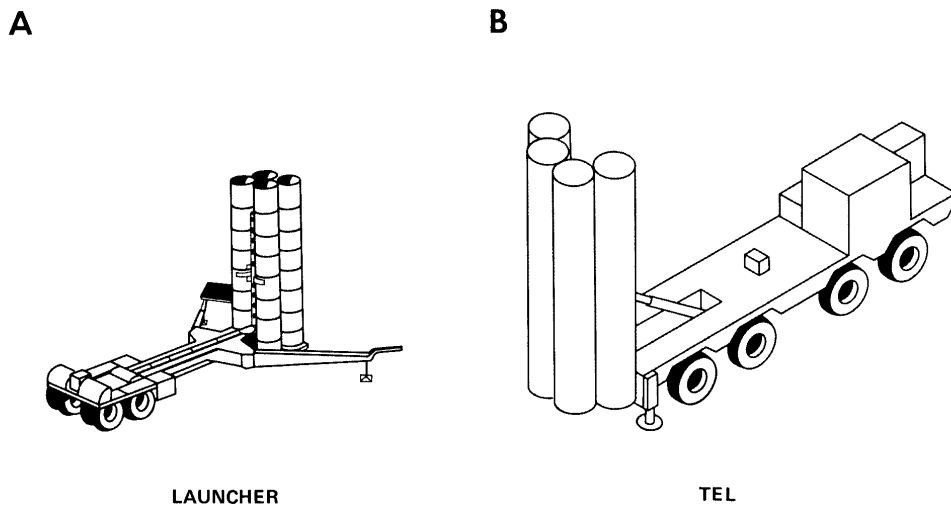
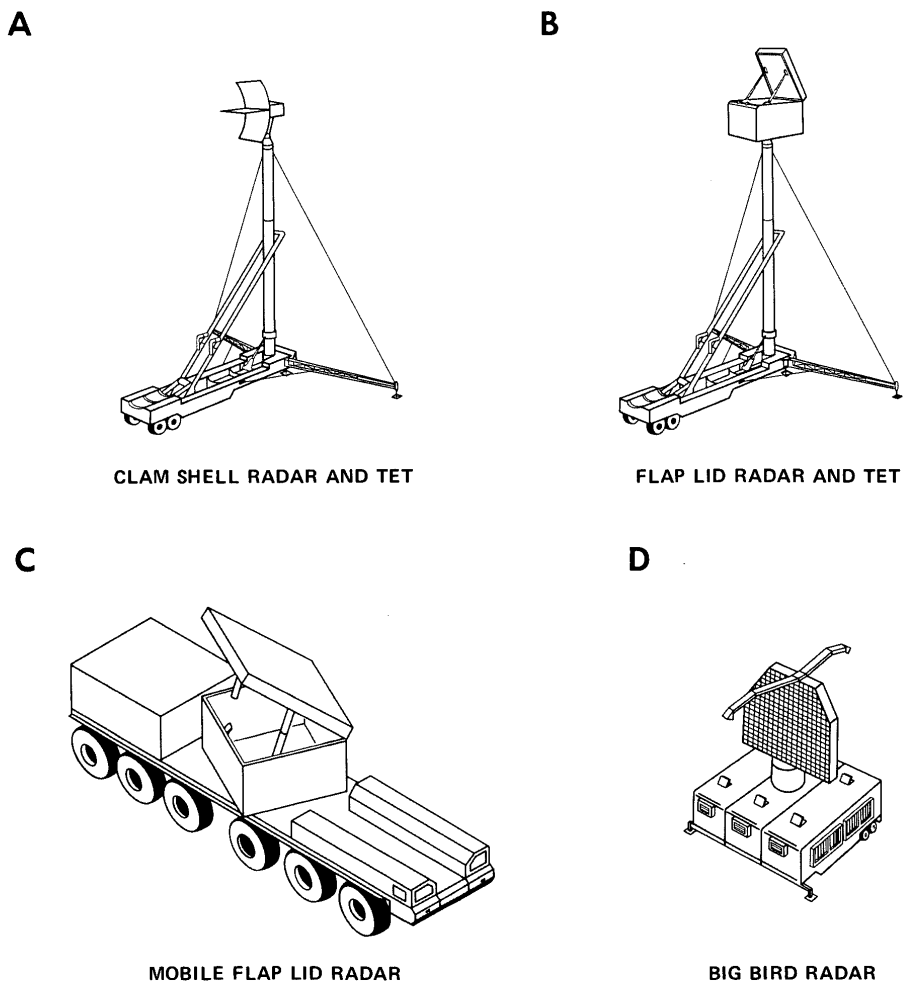


FIGURE 3. CONCEPTUAL DRAWINGS OF THE TOWED SA-10 LAUNCHER AND SA-10 TEL



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FIGURE 4. CONCEPTUAL DRAWINGS OF SA-10-ASSOCIATED COMPONENTS

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20. (S/WN) A possible communications antenna, similar to a discone, is adjacent to SA-10 sites near Kaliningrad, Nikolayev, Novosibirsk, and Riga. The antenna is mounted on top of a 20-meter-high mast that is adjacent to a [redacted] van. The van and antenna are outside the sites, approximately 150 meters from the central guidance area.

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SA-10 Site Construction and Deployment

21. (S/WN) The SA-10 is currently deployed for point defense near eight Soviet military/industrial centers (Figure 1 and Table 1). Fifty-four deployed SA-10 sites have been identified in various stages of construction since May 1980. Twenty-seven of the sites are SA-2 and SA-3 sites that have been reconfigured to support the SA-10, 19 sites are collocated with SA-1 sites around Moscow, and eight sites have been built from scratch. One dummy site has also been identified.

22. (S/WN) When SA-2 and SA-3 sites are converted to operational SA-10 sites, the reconfiguration process begins with the removal of the SA-2 or SA-3 missile launchers and the razing of the revetments. New, larger revetments are then constructed for the SA-10 launchers, radars, and support equipment. During reconfiguration, the original SAM equipment usually remains nearby and operational and is not removed until the SA-10 equipment is fully deployed. Arch-roofed bunkers that house the SA-10 electronics vehicles and provide shelter for site personnel have been constructed at Kuybyshev, Moscow, Novosibirsk, and Severodvinsk.

23. (S/WN) SA-10 deployment at the Moscow SA-1 sites has not resulted in the complete reconfiguration seen at SA-2 and SA-3 sites. The collocated SA-10 site occupies only a small portion of the SA-1 site, thus allowing both systems to remain operational. However, SA-10-related construction activity, either for BIG BIRD radars or an SA-10 site, at Moscow SA-1 SAM sites E22-01, E23-01, and E26-01, has resulted in the deactivation of the YO YO guidance radars at these sites. At sites E22-01 and E23-01, the YO YO radars have been dismantled, their guidance plates have been earth covered, and a triple-arch-roofed addition has been built onto the front of each YO YO bunker (Figure 6). Construction in the YO YO radar area of site E26-01 has also resulted in the removal of the YO YO radar but without a triple-arch-roofed addition to the bunker. This may be the first step toward the deactivation of the SA-1 system. Although the SA-1 missiles and launch stands are still present, the removal of the guidance radars has rendered these sites inoperative.

24. (S/WN) Of the eight SA-10 sites that have been built from scratch, three are adjacent to SAM support facilities and five are on points of high elevation in respect to the surrounding terrain.

25. (S/WN) The type of launch revetment constructed at an SA-10 site determines the number of launchers it can support. Five types of SA-10 revetments have been identified: a small, U-shaped revetment capable of supporting one SA-10 launcher; a trapezoidal revetment that can contain two SA-10 launchers; a rectangular revetment that can contain three SA-10 launchers; a larger trapezoidal revetment that can contain three SA-10 launchers; and a dual, rectangular revetment that can contain six SA-10 launchers. The last two types of revetments have been seen only around Moscow. Since the number of revetments at each site varies, the number of SA-10 launchers a site can support also varies. A recent trend toward increasing the number of SA-10 launchers from six to 12 per site has been observed. During mid-1981, calibration of the SA-10 launchers in groups of 12 began at Kapustin Yar Marshalling Area. Shortly after this increased calibration activity was identified, construction of new SA-10 sites with space for 12 launchers each began around Moscow. Since SA-10 equipment appears to be calibrated as a unit, the deployment of 12-launcher SA-10 sites will probably continue.

Regional SA-10 Deployment

Kaliningrad

26. (S/WN) SA-10 deployment near Kaliningrad was first identified in September 1981; five sites are deployed along the Gulf of Danzig, between 28 and 45 kilometers (km) west of Kaliningrad (Figure 7). Three sites are reconfigured SA-2 or SA-3 sites, and two sites are scratch built. Four sites contain three rectangular launch revetments each (inset, Figure 7), and the fifth site contains three trapezoidal launch revetments. All the sites are equipped with six SA-10 launchers; however, the installation of extra hard points at site B32-10 indicates that additional SA-10 launchers will be deployed. The BIG BIRD radar serving the five sites is at Baltiysk Air Warning Radar Facility TALL KING [redacted]

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Kuybyshev

27. (S/WN) SA-10 activity was first identified around Kuybyshev in September 1981. Two SA-2 sites, one 25 km east and one 50 km west of the downtown area of Kuybyshev, are slowly being modified for the SA-10 (Figure 8). At both sites, the SA-2 equipment has been rearranged; large, U-shaped launch revetments are being graded; and arch-roofed bunkers are under construction (inset, Figure 8). The slow rate of construction may be caused by a higher priority effort at Moscow. The new round of Moscow SA-10 construction coincided with the start of SA-10 construction at Kuybyshev. SA-10 equipment has not been identified at Kuybyshev.

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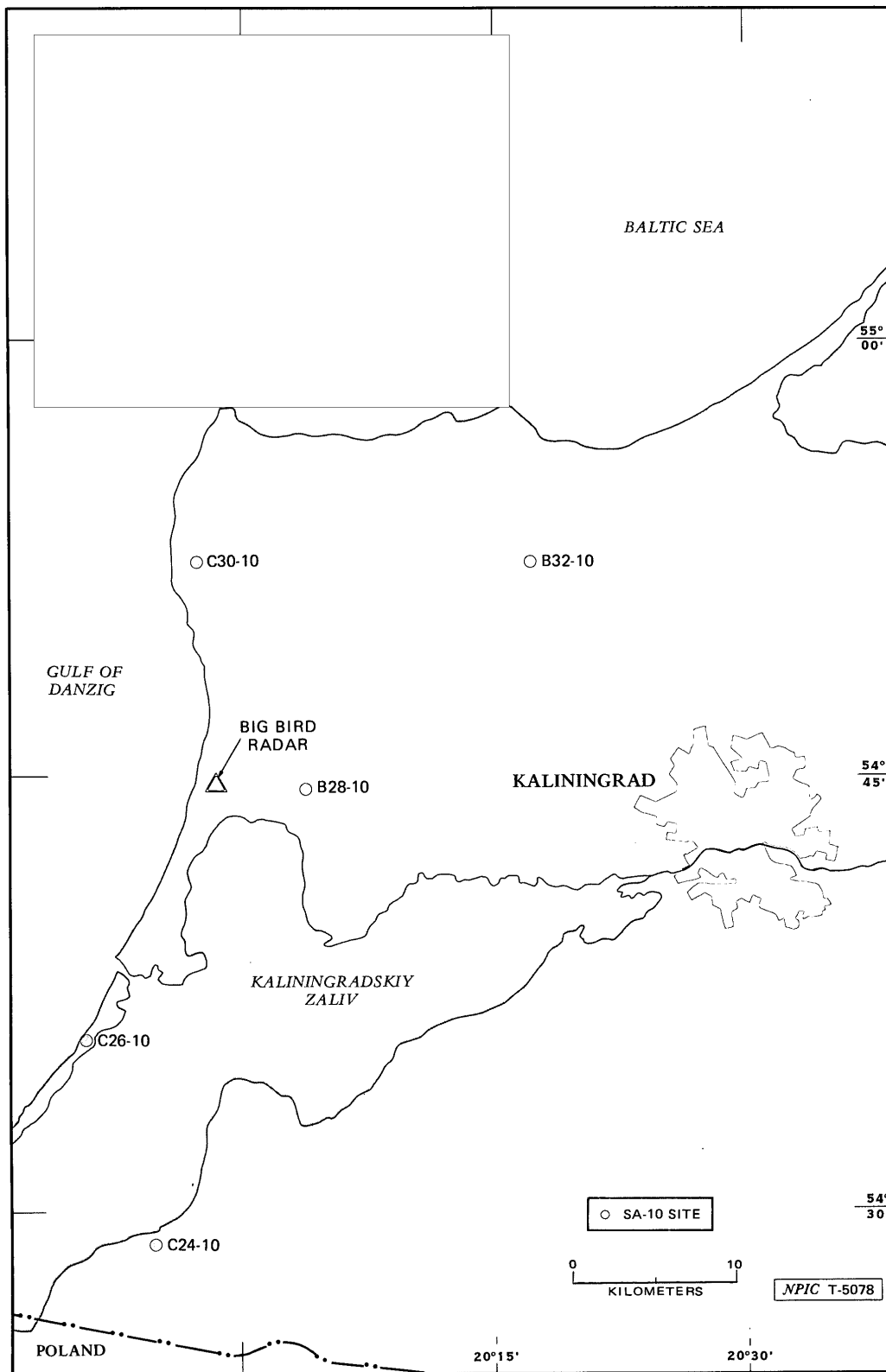


FIGURE 7. SA-10 SAM SITES AND BIG BIRD RADAR NEAR KALININGRAD. Inset shows Kaliningrad SAM Site C24-10, which is typical of four of the five sites around Kaliningrad.

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Moscow

28. (S/WN) Twenty-six SA-10 sites are deployed around Moscow, which was the initial SA-10 deployment area (Figure 9). SA-10 equipment was first identified at four Moscow SA-1 sites on [redacted]. These sites—C07-10, C09-10, C10-10, and C12-10—are approximately 45 km east of Moscow. Although SA-10 equipment was present for two years, no SA-10 site construction has taken place within the SA-1 area of these sites.

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29. (S/WN) During October 1981, a second round of SA-10 deployment began at the sites on the "E" ring around Moscow, approximately 85 km outside the city (Figure 9). The 22 SA-10 sites on the "E" ring are each designed to contain 12 SA-10 launchers, and each site contains or will contain an arch-roofed bunker (Figure 10).

30. (S/WN) Three BIG BIRD radars have also been identified around Moscow. A BIG BIRD radar is on top of the YO YO radar bunker at SA-1 sites C09-01, E23-01, and E26-01.

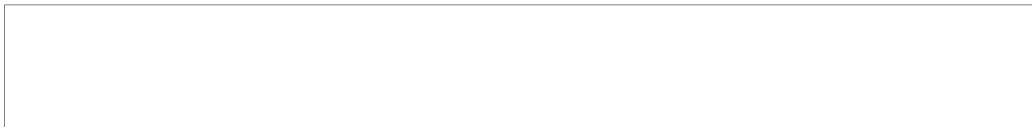
Nikolayev

31. (S/WN) SA-10 deployment was first identified around Nikolayev in June 1980; five sites are deployed around the city (Figure 11). Four sites are deployed around the southern half of the city, and one site is deployed north of the city; all are within 13 km of the downtown area. Each site is a reconfigured SA-3 site that contains six trapezoidal launch revetments—three complete and three incomplete (inset, Figure 11). The complete revetments contain inner walls that are lined with concrete blocks and two buried cable conduits for a pair of SA-10 launchers. Two arrowhead-shaped radar revetments are also at each site.

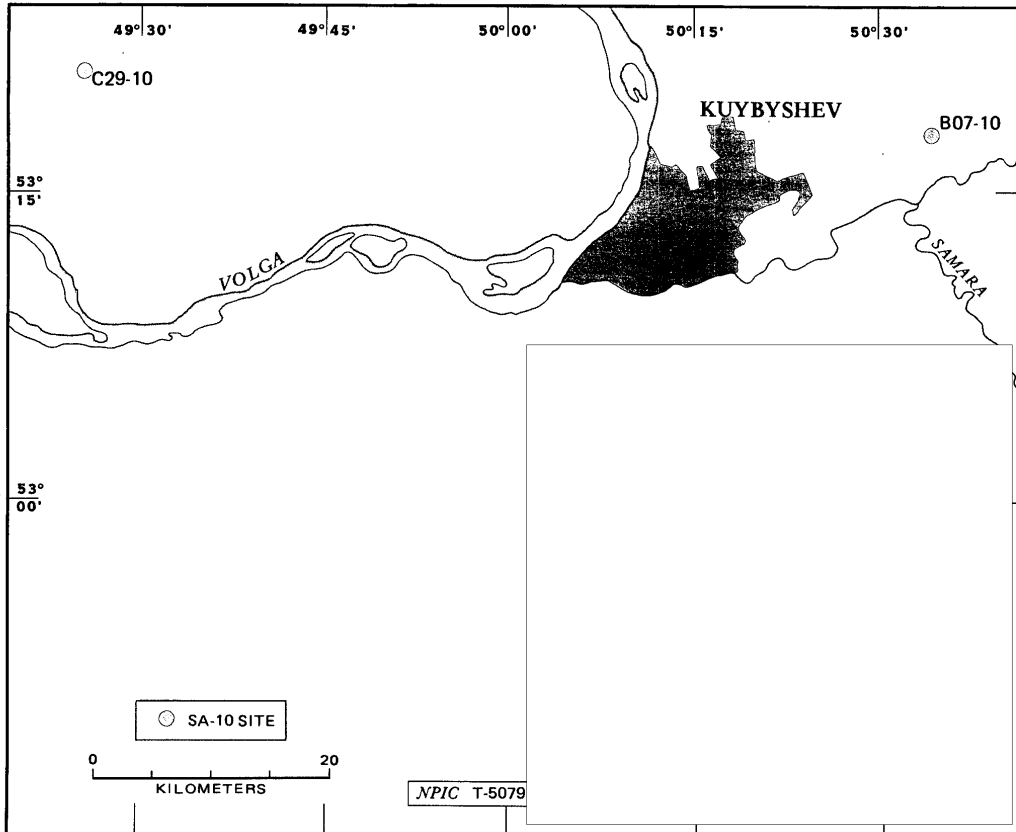
32. (S/WN) Six SA-10 launchers were originally deployed at each site, but preparations are underway at at least two sites to increase the number of launchers to 12. During the spring of 1982, construction of the three unfinished revetments at sites A15-10 and A25-10 resumed. By [redacted] three additional SA-10 launchers had been delivered to these sites, and three more launchers will probably be delivered soon.

25X1

25X1



(Continued p. 12)



25X1

FIGURE 8. SA-10 SAM SITES AROUND KUYBYSHEV. Inset shows Kuybyshev SAM Site B07-10.

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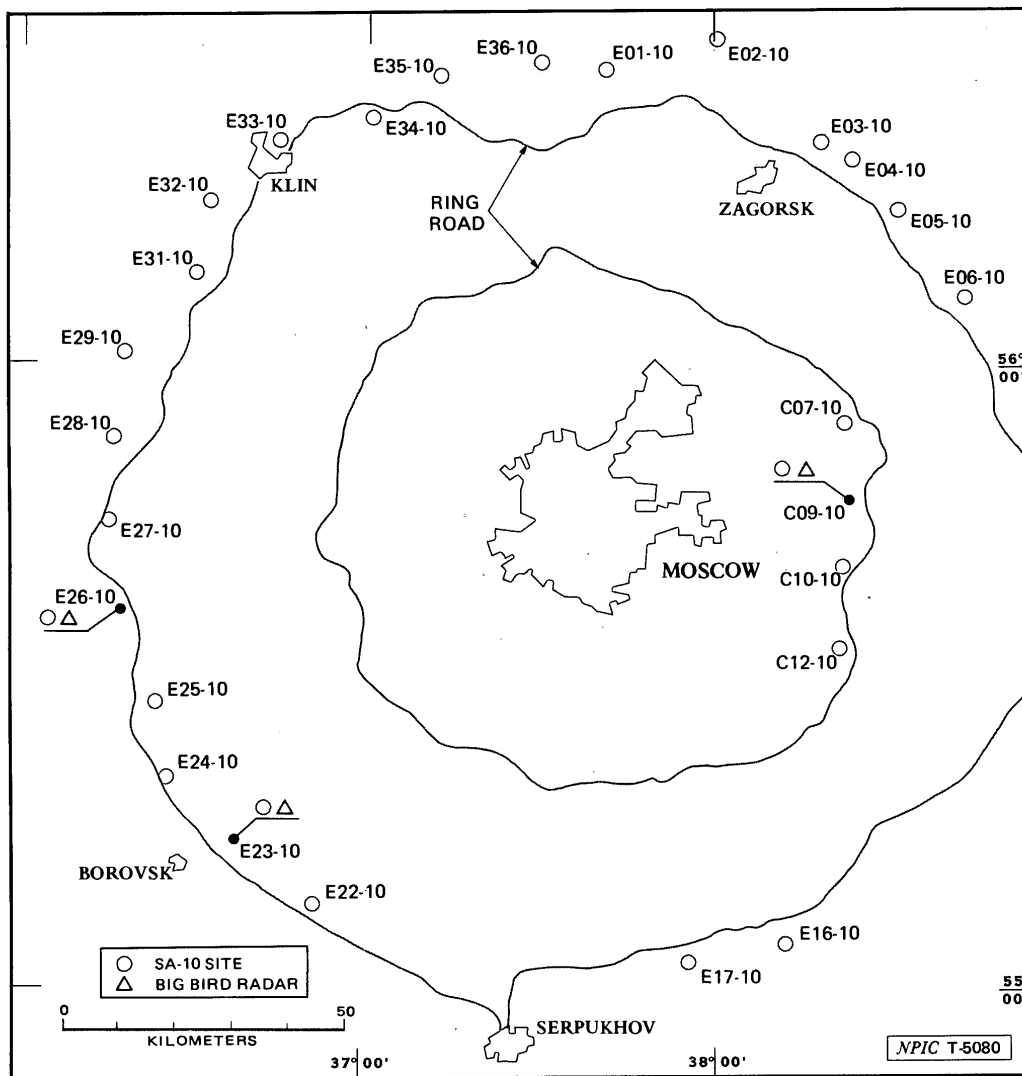
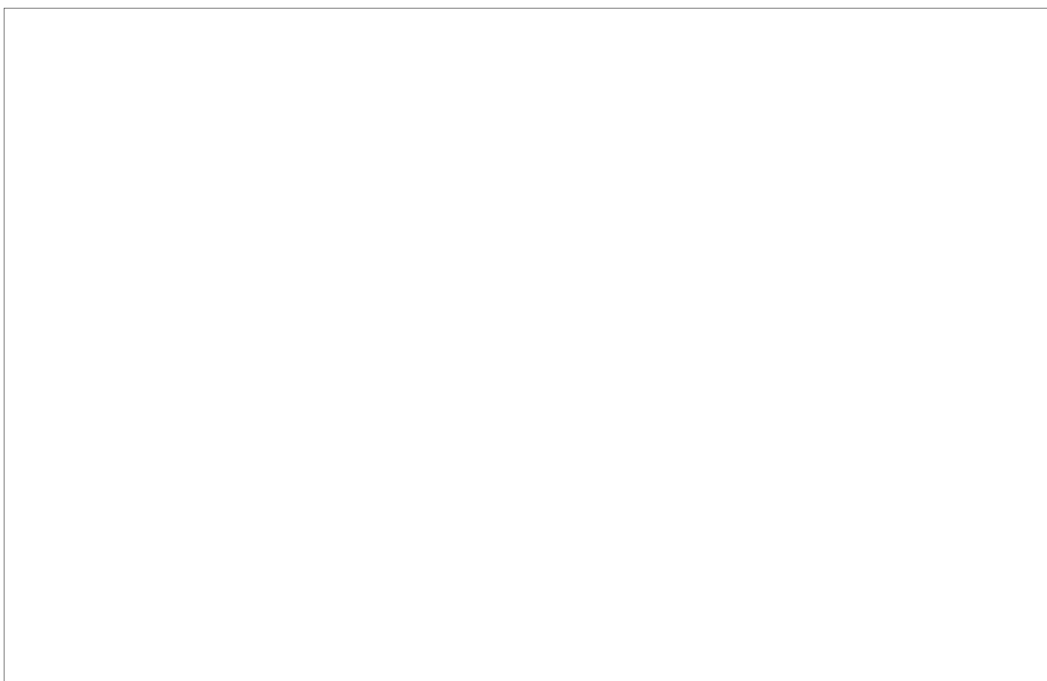


FIGURE 9. SA-10 SAM SITES AND BIG BIRD RADARS AROUND MOSCOW

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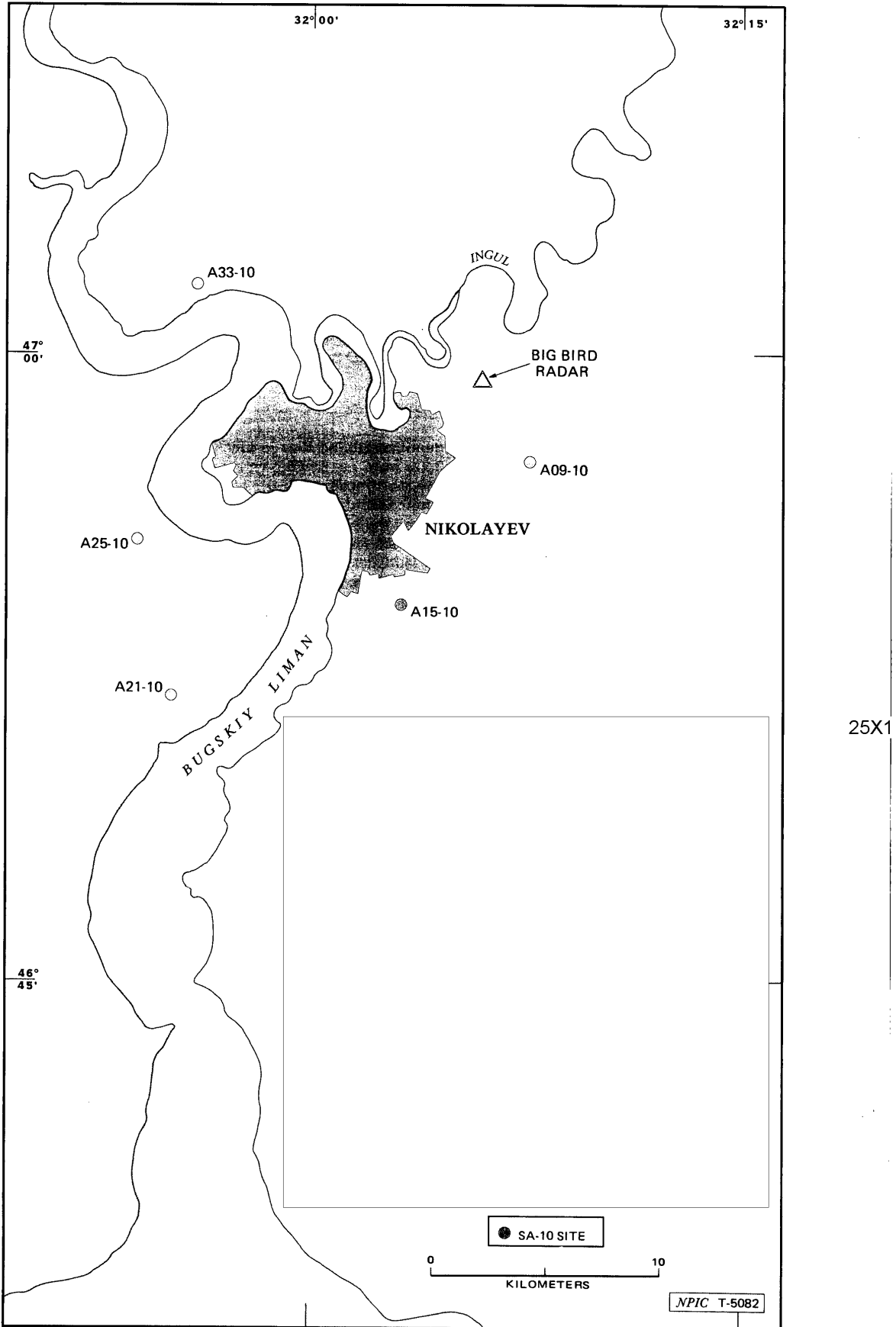


FIGURE 11. SA-10 SAM SITES AND BIG BIRD RADAR AROUND NIKOLAYEV. Inset shows Nikolayev SAM Site A25-10, which is typical of the sites around Nikolayev.

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34. (S/WN) The BIG BIRD radar serving the Nikolayev SA-10 sites is at the Nikolayev Air Warning Radar Facility TALL KING [redacted] 25X1

Novosibirsk

35. (S/WN) SA-10 deployment was first identified around Novosibirsk in 1980; four sites are deployed around the city, between 19 and 27 km from the downtown area (Figure 12). One site, B20-10, was scratch built and contains launch revetments in a unique, V-shaped configuration (inset, Figure 12). The site appears to have been designed to conform to the shape of a treed area that completely surrounds it.

[redacted] The other three SA-10 sites were reconfigured from existing SA-2 sites. At one of these sites, B28-10, the SA-10 equipment has been deployed in an unusual manner. When the SA-10 equipment arrived at this site in March 1981, it was placed in the prepared revetments. However, in April 1981, all SA-10 equipment was removed and set up adjacent to the prepared site, where it has remained.⁶ This configuration is compact, with all the launchers parked in a tight row. This site could be involved with training, or it may be an example of how a field-deployed site can be configured. Another site, B01-10, was the first SA-10 site in the USSR to contain 12 deployed launchers. By [redacted] the six additional SA-10 launchers had been deployed at the site. The 12 SA-10 launchers were parked, two per revetment, in the six trapezoidal revetments. The BIG BIRD radar serving the Novosibirsk SA-10 sites is at Novosibirsk SAM Support Facility [redacted] 25X1

Riga

36. (S/WN) SA-10 deployment was first identified around Riga in July 1980. Five sites are deployed north and west of the city, between 11 and 40 km from the downtown area (Figure 13). One site, Riga A24-10, was scratch built adjacent to Riga SAM Support Facility 2 [redacted], and the other four sites are reconfigured SA-2 or SA-3 SAM sites. The four reconfigured sites were originally constructed with three or four trapezoidal launch revetments. During the summer of 1981, the revetments at three of the sites were reconfigured into enlarged rectangles (inset, Figure 13). Although the rectangular revetments provide space for additional launchers, only six launchers have been deployed per site. The fifth and newest site, C28-10, was constructed with four rectangular revetments. The BIG BIRD radar serving the Riga area SA-10 sites is adjacent to Riga Air Warning Radar Facility A20-5 [redacted] 25X1

Severodvinsk

37. (S/WN) SA-10 deployment was first identified around Severodvinsk in July 1980. One scratch-built and four reconfigured sites are deployed around the city, all within 20 km of the downtown area (Figure 14). The scratch-built site, A02-10, is adjacent to Severodvinsk SAM Support Facility 1 [redacted] and consists of three trapezoidal revetments that contain two SA-10 launchers each. The four reconfigured sites each have six small, U-shaped launch revetments that can contain only one SA-10 launcher (inset, Figure 14). Arch-roofed bunkers are at all the sites. The BIG BIRD radar serving the Severodvinsk area SA-10 sites is adjacent to Severodvinsk Air Warning Radar Facility A13-5 (BE [redacted]) This is the only BIG BIRD radar site where the electronics support vans are housed in an arch-roofed bunker. 25X1

38. (S/WN) In addition to the deployment of operational SA-10 equipment, dummy SA-10 equipment has been deployed at two SA-10 sites around Severodvinsk, and a dummy SA-10 site has been constructed.⁷ Two additional launch revetments have been constructed adjacent to Severodvinsk SAM Sites A12-10 and A36-10. Each revetment is occupied by a dummy SA-10 launcher with two vertically mounted dummy missile canisters. A third SAM site, Severodvinsk Site A01-03, is a dummy SA-10 site equipped with dummy equipment. The site was quickly converted from an operational SA-3 site to a complete dummy SA-10 site between [redacted] Six new launch revetments were constructed and occupied by dummy SA-10 launchers. Two dummy TETs with dummy radars are also at this site. 25X1

[redacted] Severodvinsk is the only area where a dummy SA-10 site and dummy SA-10 equipment have been identified. 25X1

Sverdlovsk

40. (S/WN) SA-10 activity was first identified around Sverdlovsk during July 1982. Two SA-2 sites are being reconfigured for the SA-10; the sites are northeast and southeast of the city, 25 km from the downtown area (Figure 15). Both sites contain six trapezoidal launch revetments and excavations in the central guidance area that are probably for arch-roofed bunkers (inset, Figure 15). No SA-10 equipment is at either site.

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25X1

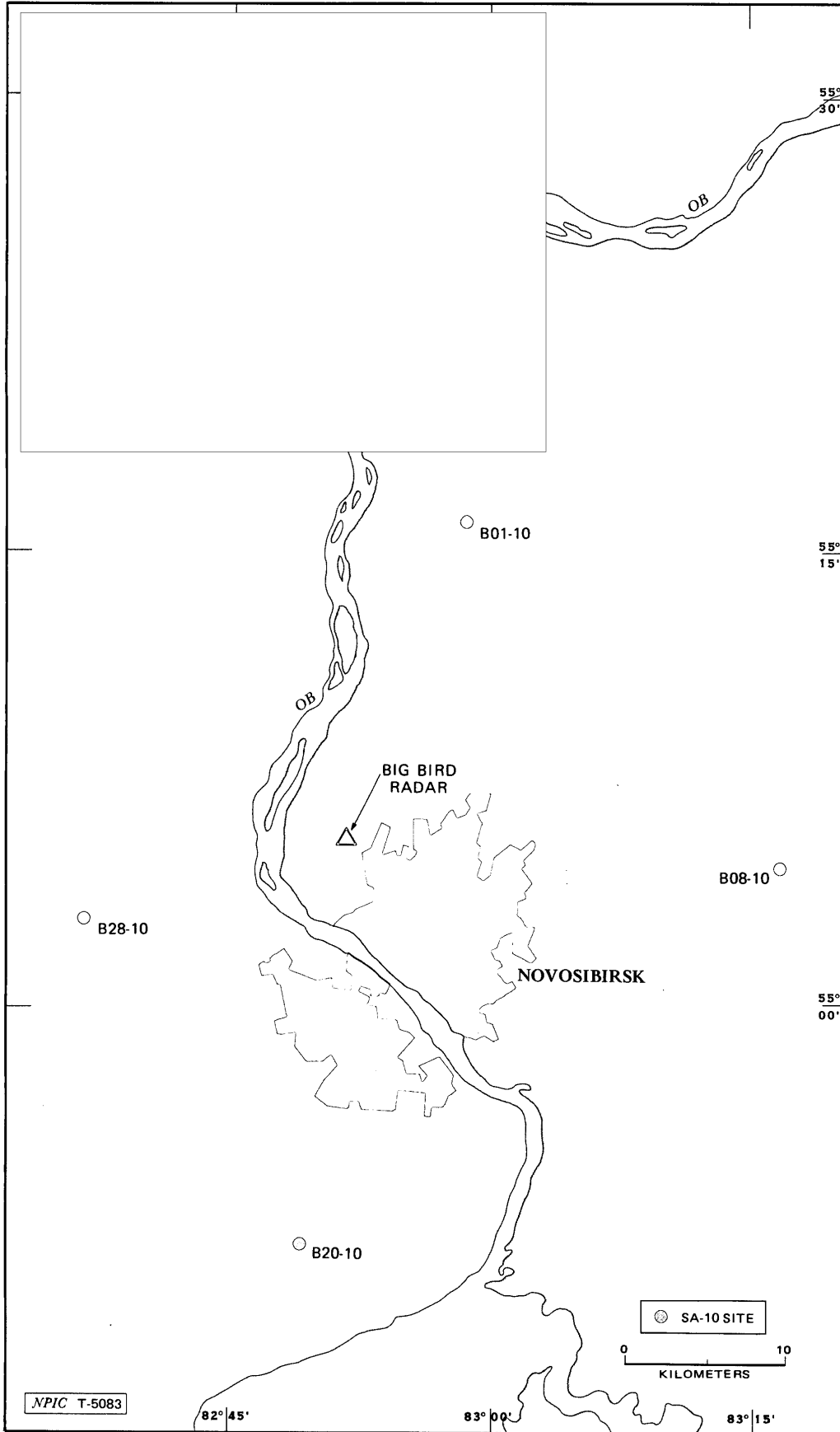


FIGURE 12. SA-10 SAM SITES AND BIG BIRD RADAR AROUND NOVOSIBIRSK. Inset shows Novosibirsk SAM Site B20-10.

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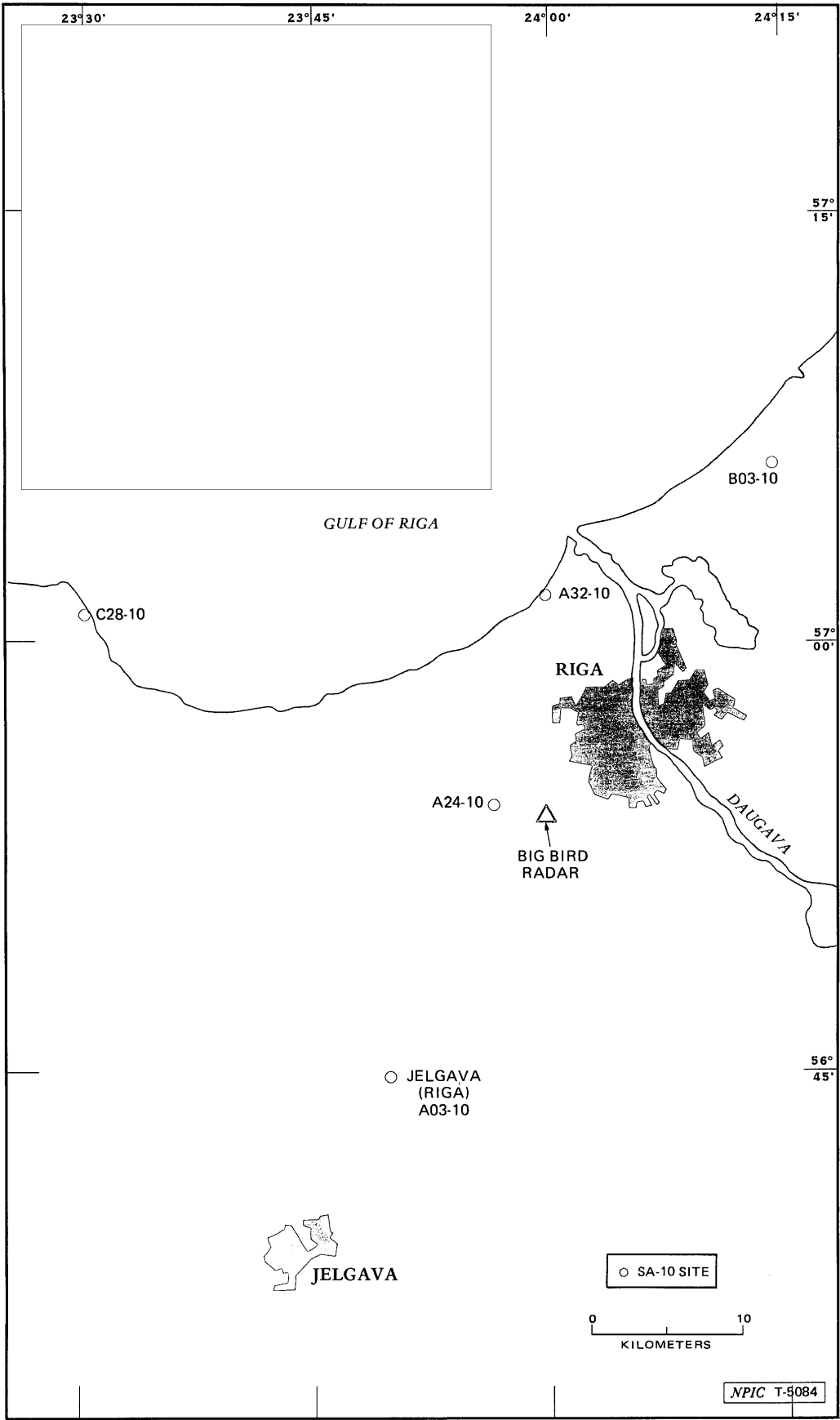
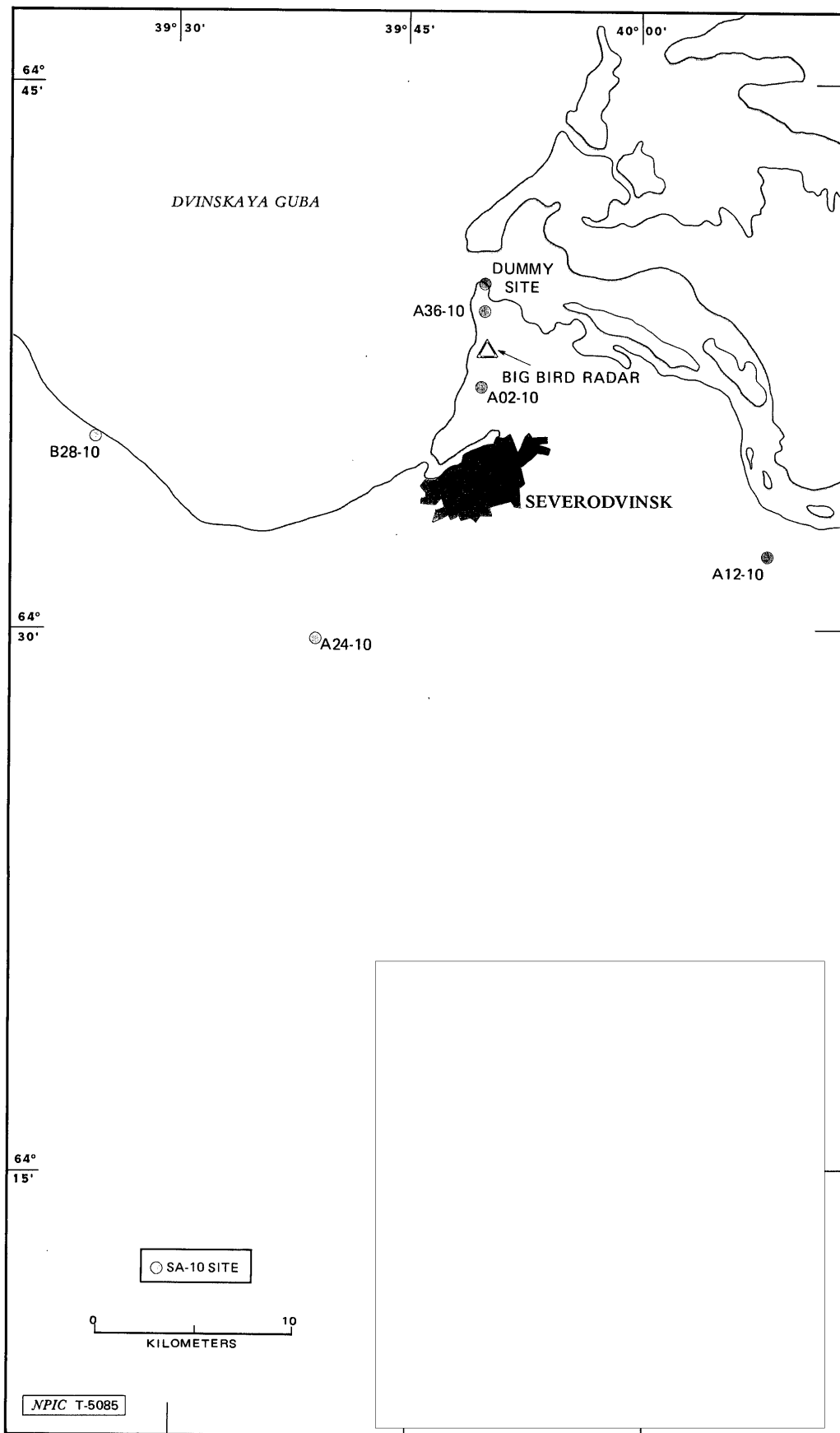


FIGURE 13. SA-10 SAM SITES AND BIG BIRD RADAR AROUND RIGA. Inset shows Riga SAM Site A32-10, which is typical of the sites around Riga.

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25X1

FIGURE 14. SA-10 SAM SITES AND BIG BIRD RADAR AROUND SEVERODVINSK. Inset shows Severodvinsk SAM Site A24-10, which is typical of the sites around Severodvinsk.

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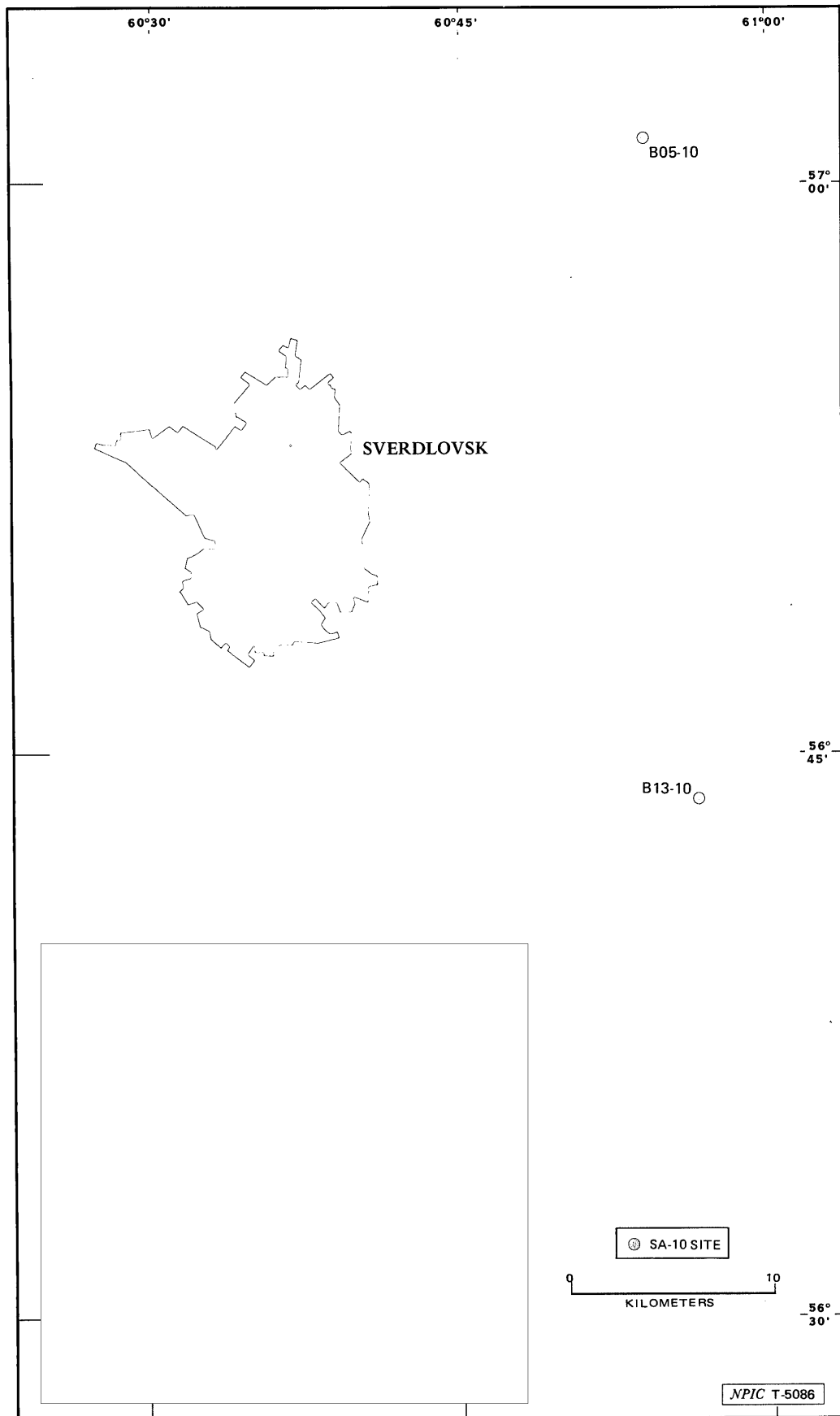


FIGURE 15. SA-10 SAM SITES AROUND SVERDLOVSK. Inset shows Sverdlovsk SAM Site B05-10, which is typical of the sites around Sverdlovsk.

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Troop Training Facilities

41. (S/WN) SA-10 troop training exercises have been conducted at Kapustin Yar since 1980 and at Sary-Shagan since 1979. However, deployment of the SA-10 SAM system has resulted in an expansion of these troop training facilities. Two new launch sites are under construction at Kapustin Yar SAM Firing Range, and an additional SA-10 launch site was recently completed at Sary-Shagan MTC Launch Complex D19-5 [redacted]

25X1

Kapustin Yar

42. (S/WN) New SA-10 launch site construction was identified in June 1981, adjacent to site D in launch area D and site C in launch area C at Kapustin Yar SAM Firing Range. Both sites, designated site E and site F, respectively, have similar configurations consisting of two large, rectangular pads at the rear of the site that are road-connected to two small, square pads about 200 meters away (Figure 16). The two small pads extend through the site security fences but are not separately secured. The sites are oriented in a northerly (downrange) direction and are about 2 km apart. Paving blocks had been partially installed on one of the large pads at site E by [redacted] but all subsequent imagery has shown no further construction. The configuration of these sites is unusual because it deviates from the typical ring or fan pattern seen at other launch sites on the firing range. However, since these new sites are intended for SA-10 troop training, and since the SA-10 is a vertically launched missile, the sites do not need directionally oriented launch pads.

25X1

43. (S/WN) Site E of launch area D was the first new site to be used for troop training. On [redacted] a FLAP LID radar and two SA-10 launchers were engaged in a training exercise that appeared to be a spillover of activity at site D (Figure 17). Since then, SA-10 equipment has usually been present at site E. No SA-10 training activity has been observed at site F in launch area C.

25X1

25X1

Sary-Shagan

44. (S/WN) SA-10 troop training has been conducted at Launch Complex D19-05, where two former SA-5 launch sites, B and C, have been reconfigured for the SA-10 (Figure 18). Site B was reconfigured between September and October 1979 and was supporting SA-10 troop training by [redacted]. Site C was reconfigured between [redacted] and troop training was first observed on [redacted]. Since then, simultaneous SA-10 training at both sites has frequently occurred. Site A has not been reconfigured; however, no SA-5 equipment is present, and the site is inactive.

25X1

25X1

25X1

45. (S/WN) A large-scale strategic/tactical air defense exercise, which included the SA-10, began at Launch Complex E during August 1982. As part of this exercise, two new, field-deployed SA-10 sites had been set up 4 km north of Launch Complex D19-05 by [redacted]. The SA-10 equipment deployed at the two new sites probably came from Moscow SAM Sites C07-10 and C10-10. By [redacted] the SA-10 equipment at both these Moscow SAM sites had been removed. If this equipment came from the Moscow sites, it will probably be returned.

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REFERENCES

IMAGERY

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

MAPS OR CHARTS

SAC. US Air Target Chart, Series 200, Various Sheets, scale 1:200,000 (UNCLASSIFIED)

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 - 2. NPIC. Z-20084/80, IAR-0212/80, *Probable SA-X-10 Series Production at Leningrad Guided Missile Production Plant 458, USSR (S)*, Sep 80 (SECRET, [redacted]) 25X1
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 - 5. CIA/NFAC. [redacted] IS 81-10129K, *Deployment of the Soviet SA-10 System*, Nov 81 (TOP SECRET [redacted]) 25X1
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 - 6. NPIC. Z-14552/82, IAR-0035/82, *Unusual SA-10 Site Configuration, Novosibirsk, USSR (S)*, Apr 82 (SECRET/[redacted]) 25X1
 - 7. NPIC. Z-20138/81, IAR-0183/81, *Dummy SA-10 SAM Sites and Equipment at Severodvinsk, USSR (S)*, Sep 81 (SECRET [redacted]) 25X1
- *Extracted information is classified SECRET [redacted] 25X1

REQUIREMENT

COMIREX D99
Project 542029D

(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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