PHOTOGRAPHIC INTERPRETATION REPORT

SUMMARY OF PROBABLE LONG RANGE SAM LAUNCH COMPLEXES USSR

(1 JULY 1967)

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SEPTEMBER 1967

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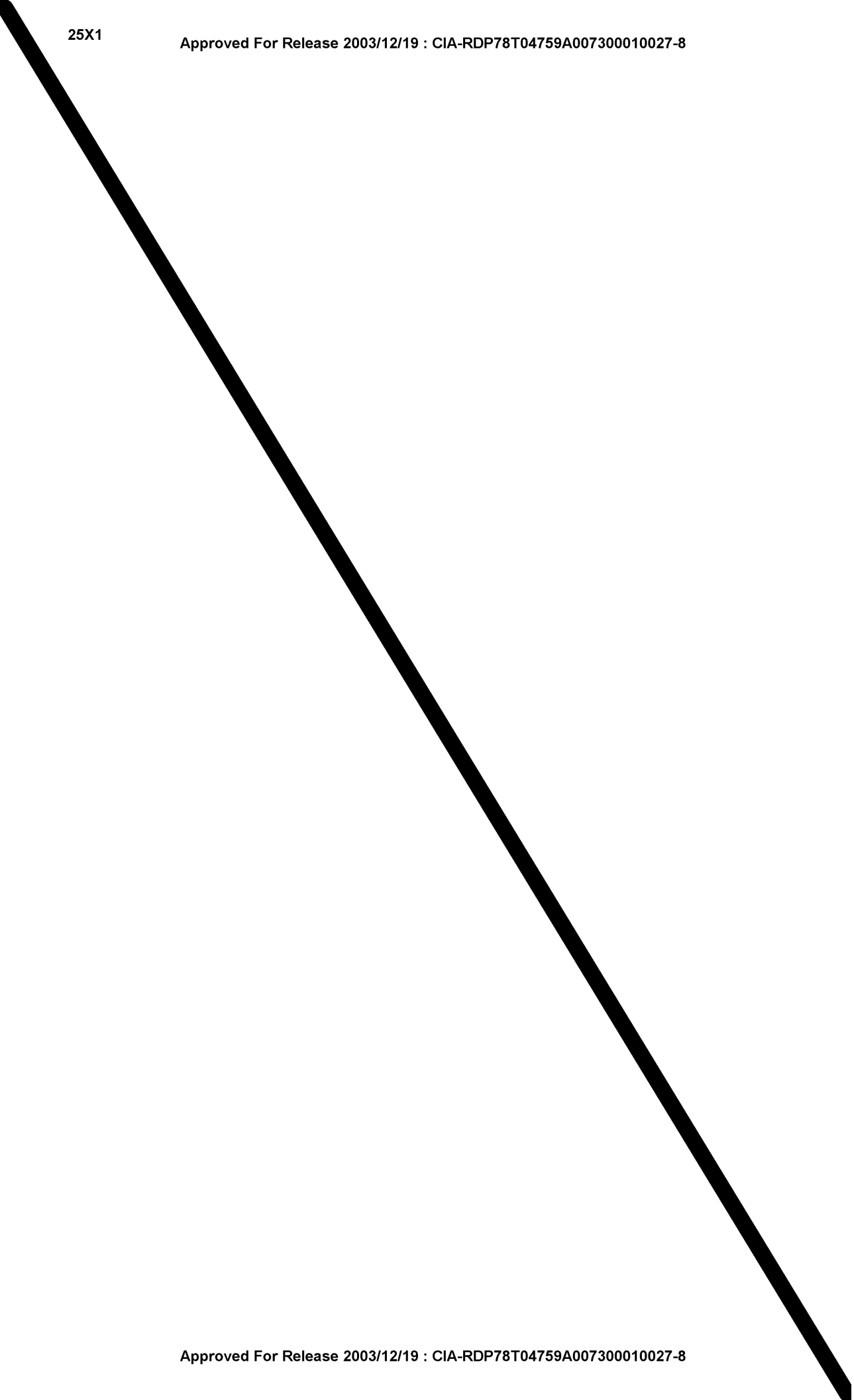

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SUMMARY OF PROBABLE LONG RANGE SAM LAUNCH COMPLEXES USSR

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NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

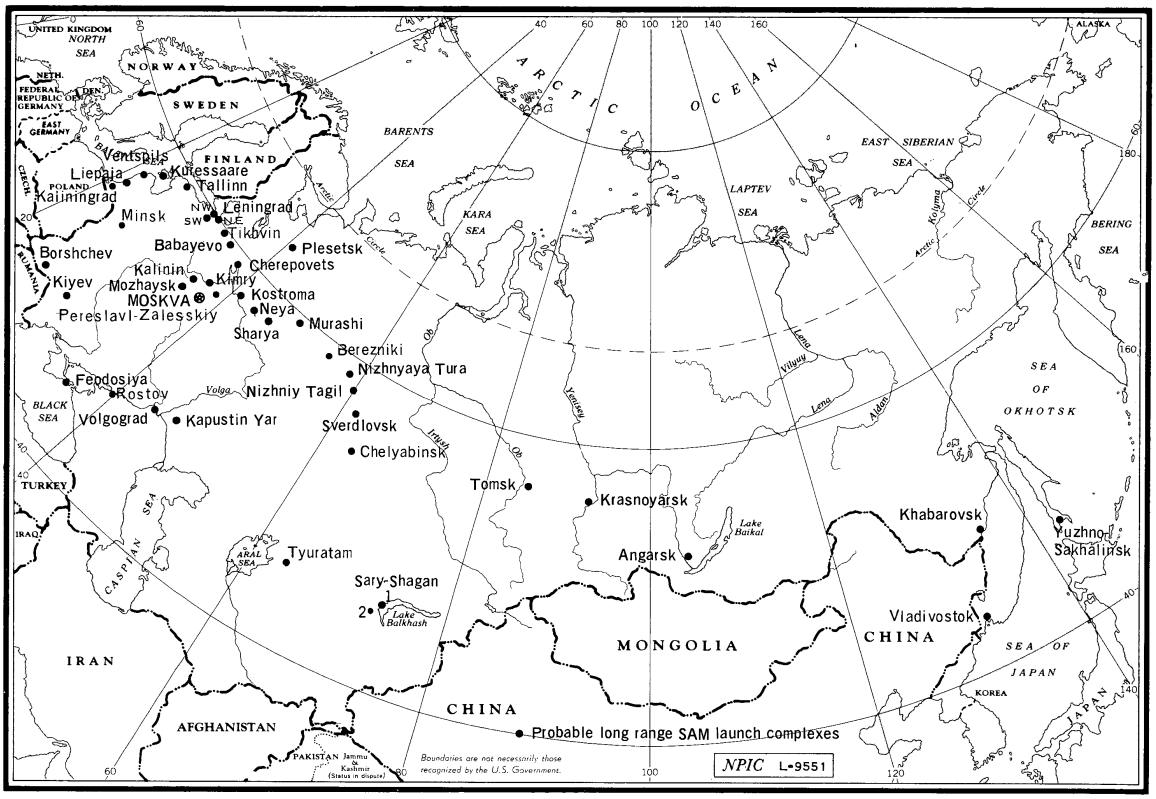


FIGURE 1. DEPLOYMENT OF PROBABLE LONG RANGE SAM LAUNCH COMPLEXES, USSR.

INTRODUCTION

This summary report presents a construction chronology and the status of 41 probable long range SAM (PLRS) complexes as of [redacted] (Figure 1). 25X1D
All complexes discovered following the cut-off date of this photography are reported in cables and photographic interpretation briefs, and will be included in subsequent summary reports. Figures 2 and 3 depict the construction starts and the categories of PLRS complexes. An annotated photograph of each complex is included in Figures 4-44, and 1 typical air-warning radar facility with associated unidentified areas is shown in Figure 45. Figure 46 depicts a PLRS launch position at Moskva SAM Site E24-3.

Discussion in this report, excluding current information, is limited to that information extracted from Table 1 and [redacted] photography. 25X1

Users of the table are cautioned that the dates listed are first observation on photography and should not be construed as the initial construction or equipment installation dates. Analysis of the chronology indicates various components were constructed simultaneously, i.e., missile-handling area, support area, air-warning radar facility. This conclusion should be tempered, as a complex may not have been observed in its initial stages but first identified in a mid-stage of construction. Some dates refer to modifications of existing facilities to accommodate the Tallinn system.

Each complex is listed by year and month when construction was first observed on photography.

CURRENT INFORMATION

PLRS equipment has been identified in storage at 10 locations. Eight storage areas are at SAM support facilities (Kirov, Chelyabinsk, Irkutsk, Vladivostok 2, Nizhniy Tagil, Nizhnyaya Tura, Tomsk, and Plesetsk); 1 at a SAM site (Kostroma B21-2); and 1 at a military barracks (Pidula Army Barracks). All storage areas are near known PLRS complexes.

DISCUSSION

Although construction chronologies vary at each complex, some generalizations can be made which are applicable for most complexes. Construction of the launch sites and the tracking/guidance facility is usually started first. The support area usually is constructed concurrently with the launch sites and the tracking/guidance facility, but extensive construction at the missile-handling area generally is not observed until other components at the complex are nearly complete. The air-warning radar facility may be constructed at virtually any stage of complex construction. Where coverage permits, it has been observed

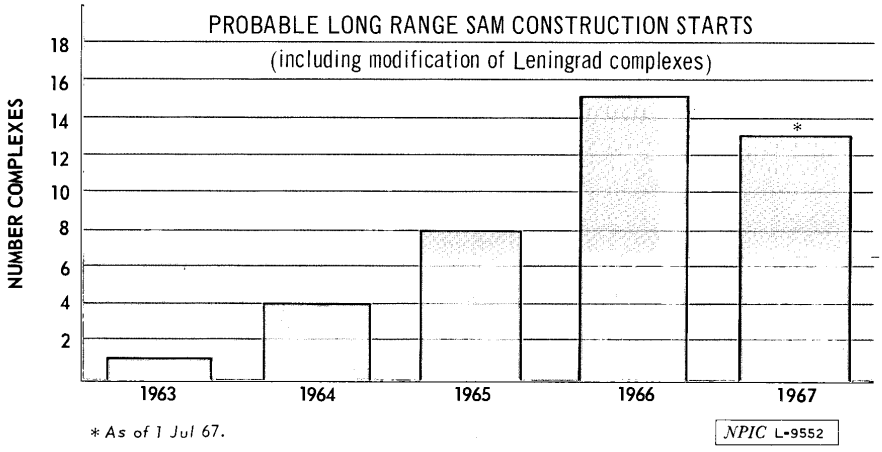


FIGURE 2. PLRS LAUNCH COMPLEX CONSTRUCTION STARTS, USSR.

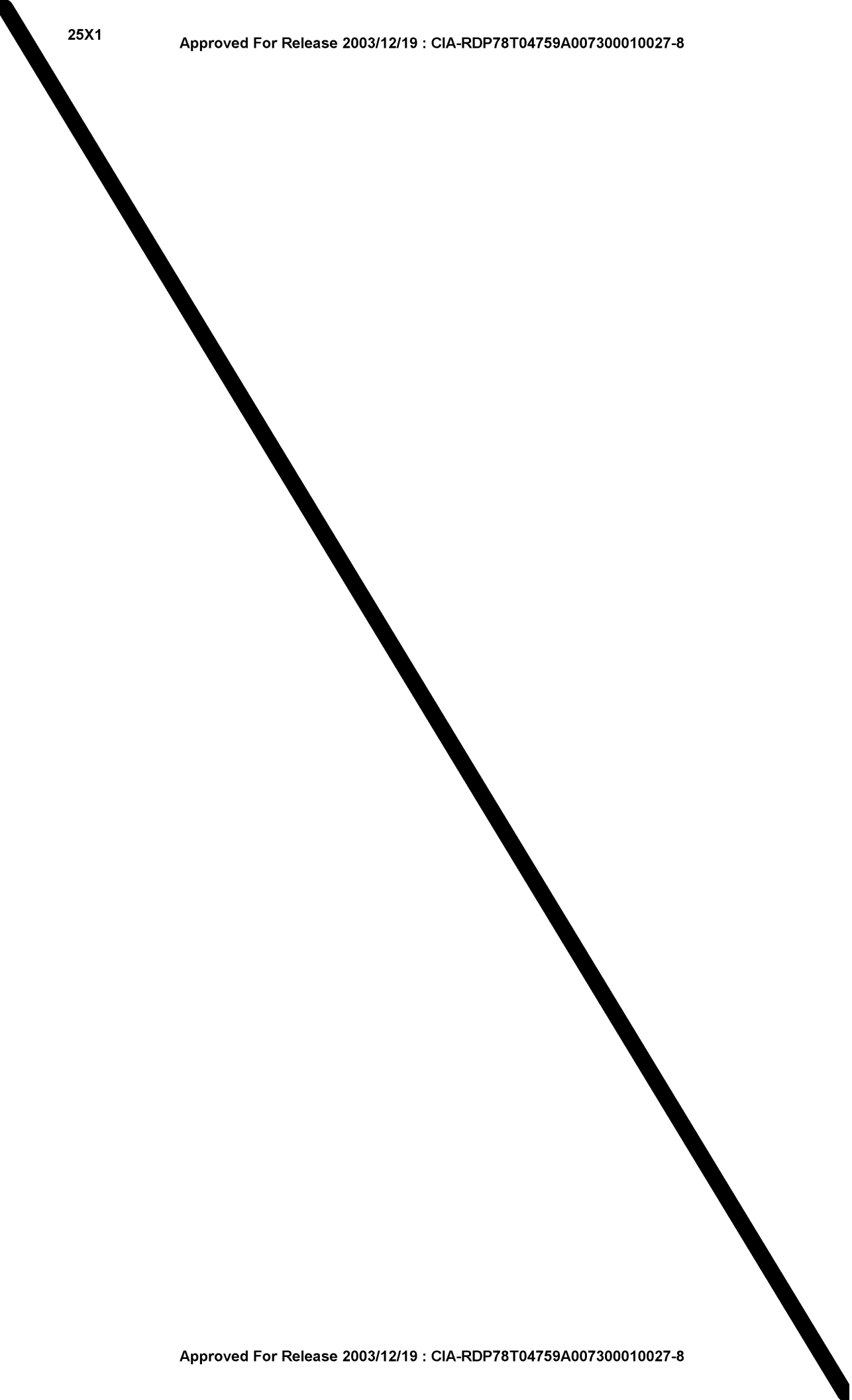
25X1

Table 1. Complex Status, as of 1 July 1967

Complex	Category	Orientation (degrees or direction)	Stage of Construction [1]	Launch Sites	Launch Positions Occupied	T/G* Positions Occupied	AW** Facility ID Near Complex	AW** Positions Occupied (if Total)	Year Started [2]	Negation	Initial Construction [3]	Support Area Construction	Launch Site Construction	T/G* Facility Construction	Missile-Handling Area Construction	Launch Positions Occupied	T/G* Positions Occupied	Air-Warning Radar Facility	Unidentified Areas at Air-Warning Radar Facility	Air-Warning Positions Occupied	Figure No
Cherepovets	3a		Complete	5	30	5	x	4													4
Leningrad NW [4]	1		Complete	5	30	5															5
Tallinn	2		Complete	5	30	5	x	4													6
Leningrad NE [4]	1		Complete	5	30	5															7
Liepaja	3a		Complete	5	30	5	x	4													8
Murashi	3a		Mid-Late	5	18	0	x	0													9
Leningrad SW [4]	1		Complete	5	30	5															10
Nizhniy Tagil	3d		Mid	3	0	0															11
Sary-Shagan 1	3d		Complete	3	18	3	x	4													12
Sary-Shagan 2	3d [9]		Complete	2	12	2	x	4													13
Feodosiya	3b		Mid-Late	3	9 [10]	3	x	0													14
Sverdlovsk	3d		Mid-Late	3	6	2	x	4													15
Nizhnyaya Tura	3b		Mid	3	0	0	x	4													16
Kalinin	4		Mid-Late	3	12	2															17
Kimry	3d		Mid	3	0	0	x	0													18
Pereslavl-Zalesskiy	4		Mid-Late	3	12	2	x	4													19
Babayevo	4 [8]		Mid	3	0	0															20
Volgograd	4		Mid	3	0	0	x	0													21
Mozhaysk	4		Mid	3	0	0	x [10]	0													22
Tomsk	3c		Early-Mid	3	0	0															23
Kapustin Yar	4 [9]		Mid	2	0	0	x [10]	0													24
Plesetsk	4		Mid	3	0	0	x	0													25
Angarsk	4		Early-Mid	3	0	0	x	0													26
Krasnoyarsk	3d		Mid	3	0	0															27
Chelyabinsk	4		Early	3	0	0															28
Khabarovsk	4		Mid	3	0	0															29
Kostroma	4		Mid-Late	3	12	2	x	4													30
Kuressaare	4		Mid	3	0	0															31
Sharya	4		Early	3	0	0															32
Vladivostok	4		Early	2	0																33
Kiyev	4		Early	3	0	0	x	0													34
Rostov	4		Early	3	0	0															35
Berezniki	4		Early	3	0	0	x [11]	0													36
Neya	4		Early	0																	37
Borshchev	4		Early	1	0																38
Minsk	4		Early	0																	39
Ventspils	4		Early	3	0	0															40
Kaliningrad	4		Early	3	0	0															41
Yuzhno-Sakhalinsk	4		Early	1	0																42
Tikhvin	4		Early	1	0																43
Tyuratam	4		Early	1	0	0															44

*Tracking/Guidance
**Air Warning

1. Early--survey lines, tree clearance, missile-handling and launch site service roads.
   Mid--rails, revetments, radar mounds, support buildings.
   Late--missile-associated equipment at complex; construction appears complete.
   Complete--radars, launchers, and dollies in operational positions.
2. Refers to year construction was first observed on photography at each complex.
3. Date refers to any construction observed before the complex could be identified.
4. Date refers to modifications of complex to accommodate Tallinn system.
5. Date refers to initial construction of the drive-through missile assembly/checkout building annotated on Figures 5, 7, and 10. This building probably serves as part of the missile-handling facility along with buildings in the support area which existed before construction of the drive-through building.
6. An active SA-2 SAM support facility 2.5 nm SE of the complex is probably used as the missile-handling area.
7. Modification of existing SAM support facility near the complex to possibly accommodate Tallinn system.
8. Complex consists of 2 circumferential-road launch sites and 1 loop-road launch site.
9. Complex consists of only 2 sites, but fits into this category because of general design.
10. Probable.
11. Suspect.



that launch sites A and C at three-site complexes usually are completed and equipped before site B; 3 sites at a five-site complex usually are completed and equipped before the other 2.

Construction time varies from 3 months to over 2 years. Launch Complexes 1 and 2 at Sary-Shagan ATC were constructed and equipped within 3 months, while Liepaja has taken over 2 years to reach the same status. Eighteen to 30 months appears to be an average construction period.

The number of construction starts of launch complexes identified from 25X1D
25X1D is shown in Figure 2. Because of the lack of photo coverage, some complexes may have been started the preceding year, rather than the year listed.

No five-site complexes were begun after The Ural complexes 25X1D
25X1D were started between mid- and late and surveyed in anticipation of 5 sites, but only 3 sites appeared.

PLRS Launch Complexes 1 and 2 at Sary-Shagan were constructed about the time of an apparent transition from five- to three-site-complexes. Launch Complex 1 was the first complex specifically designed as a three-site complex. Three sites were planned at PLRS Launch Complex 2, but only 2 sites were constructed.

For convenience in this report, the various categories of complexes and an example of each type are listed below.

Category 1: Leningrad
Category 2: Tallinn
Category 3a: Murashi
Category 3b: Feodosiya
Category 3c: Tomsk
Category 3d: Kimry
Category 4: Kalinin

Figure 3 contains a sketch of each category.

Excluding the Tallinn and Leningrad complexes as unique cases, 2 other launch complex designs remain. The first design (categories 3a through 3d) utilizes a loop-road pattern at the launch sites; the second design (category 4) has a circumferential-road pattern at the launch sites. Murashi, Cherepovets, and Liepaja, the 3 remaining five-site complexes (excluding Tallinn and Leningrad), utilize the loop-road pattern.

Evolving from the five-site complexes were 3 categories of three-site complexes with loop roads. The first category uses sites designated A, B, and C; the second category sites B, C, and D; and the third category sites C, D, and E. At the three-site complexes, the missile-handling area has not been relocated but remains in nearly the same relative position as if 5 sites had been constructed. At three- and five-site complexes, the complex access road and support area are usually located behind site A.

Only 1 category of launch complex uses the circumferential-road pattern. The launch sites at these complexes are arranged in an arc, about equal distance from the tracking/guidance facility, and are not staggered as at complexes with loop-road patterns. The missile-handling area is located opposite Launch Site B. The complex access road and support area are usually in the vicinity of Launch Site A.

Although Babayevo is designed for the circumferential-road pattern, 1 site has a loop-road pattern. Though unusual, this complex will not be considered as a separate category.

Twelve complexes have a loop-road pattern, 24 complexes use the circumferential-road pattern, and Babayevo has a combination of both patterns. Twelve
25X1D of the 15 complexes started in including Babayevo, and all of the com-
25X1D plexes started in use the circumferential-road pattern indicating that this will probably be the exclusive design in the future.

Six different revetment designs have been identified. They vary in protection of the launch position from the nearly totally enclosed revetments at Tallinn to complete absence of revetments at launch positions 3 and 4 at loop-

road pattern launch sites. Each launch position is revetted to some degree at launch sites with a circumferential-road pattern. At launch sites with a loop-road pattern, all launch positions are revetted except positions 3 and 4. No revetments have appeared at Murashi or the Ural complexes (Nizhniy Tagil, Nizhnyaya Tura, and Sverdlovsk), although they have been under construction for about 2 years.

Control center revetments are U-shaped at launch sites with a loop-road pattern and are drive through at sites with a circumferential-road pattern. The exception appears to be at Babayevo where the loop-road site has a drive-through control center revetment.

Two probable, 1 suspect, and 16 confirmed air-warning radar facilities have been identified between 2.5 and 5.0 nm from each of 19 launch complexes. A typical facility consists of 4 mounded radar positions upon which 2 BACK NET and 2 SIDE NET radars have been seen. A central revetment, a probable control building, and 2 nearby, associated, unidentified areas are also present at a typical air-warning radar facility.

Each of 6 air-warning radar facilities has 2 associated unidentified areas. The 2 unidentified areas are located about 3,000 to 5,000 feet from the air-warning radar facility. Each of the 2 areas contains 1 to 3 probable bunkers/mounded structures with a small apron or road in front of each. Figure 45 is a photograph of a typical PLRS air-warning radar facility with the associated unidentified areas.

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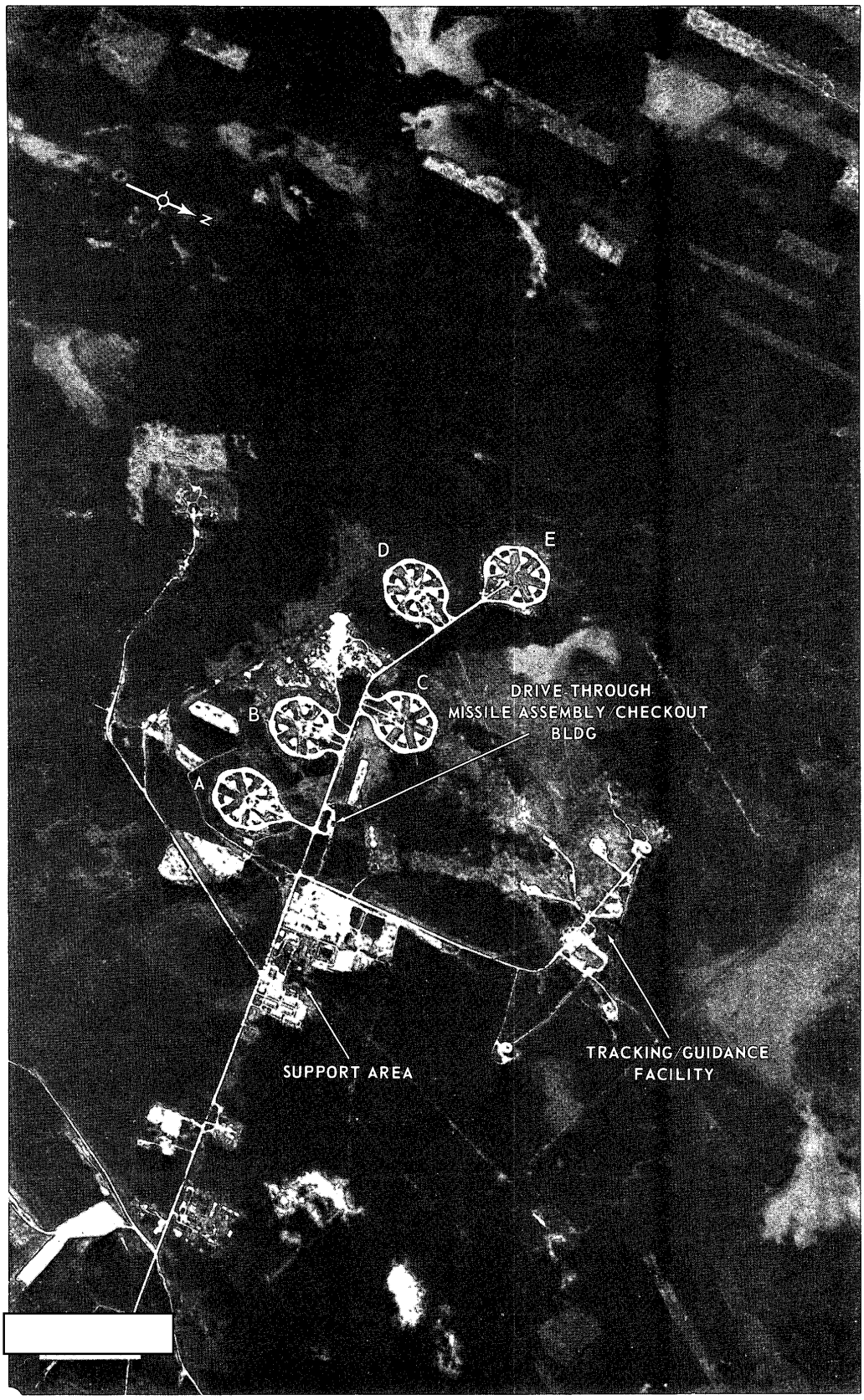

25X1D

FIGURE 10. LENINGRAD SOUTHWEST PLRS LAUNCH COMPLEX.

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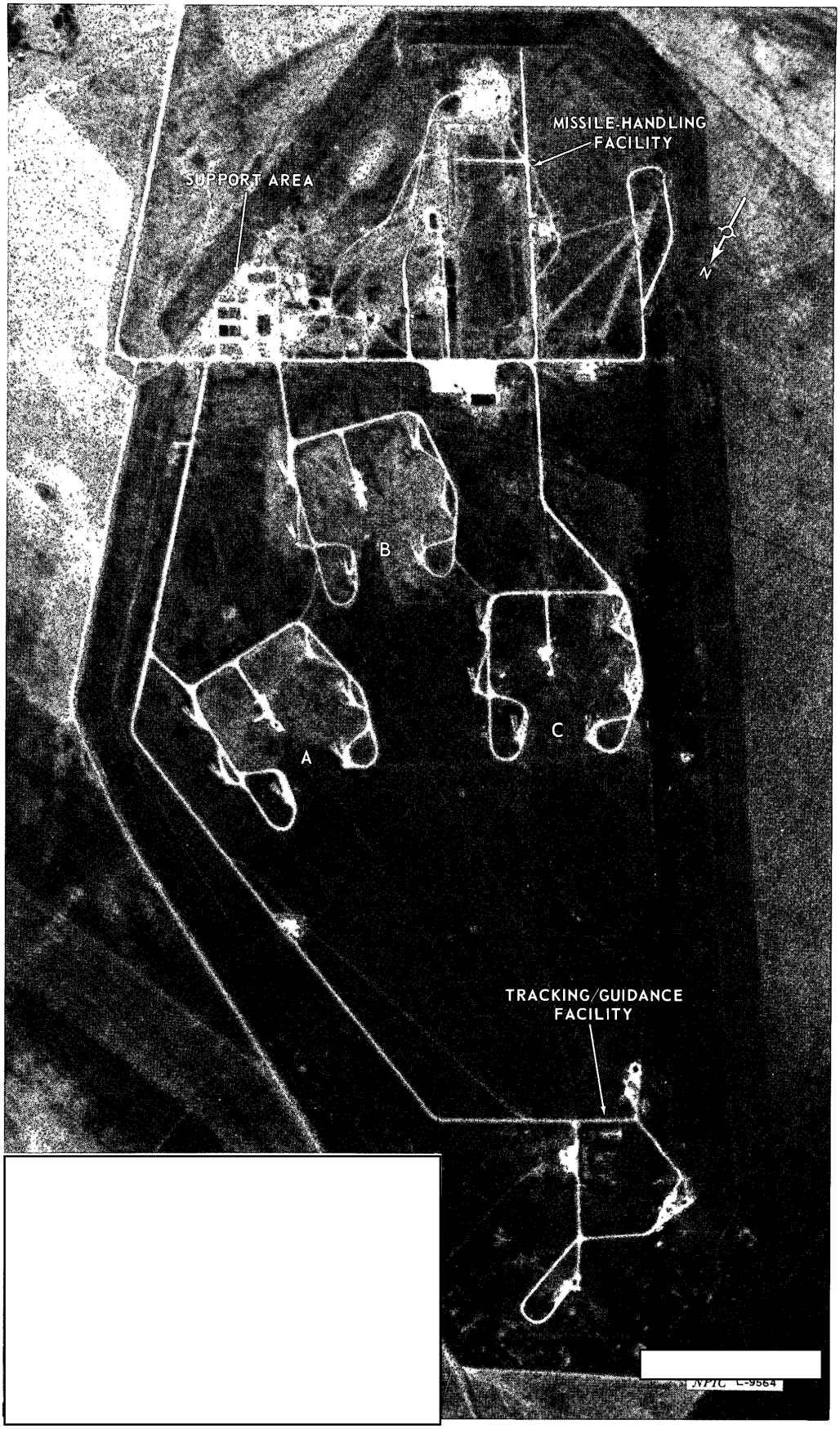
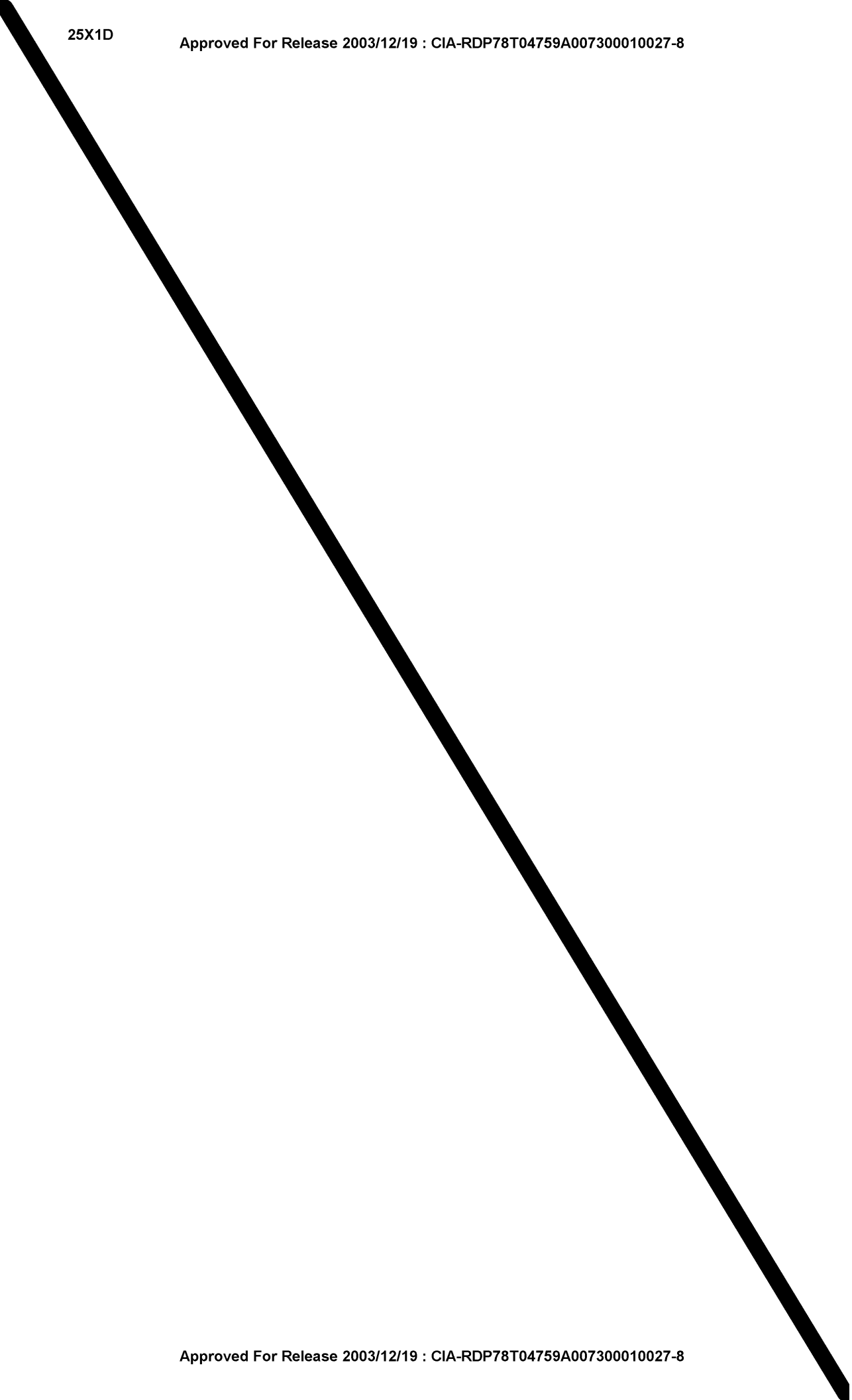
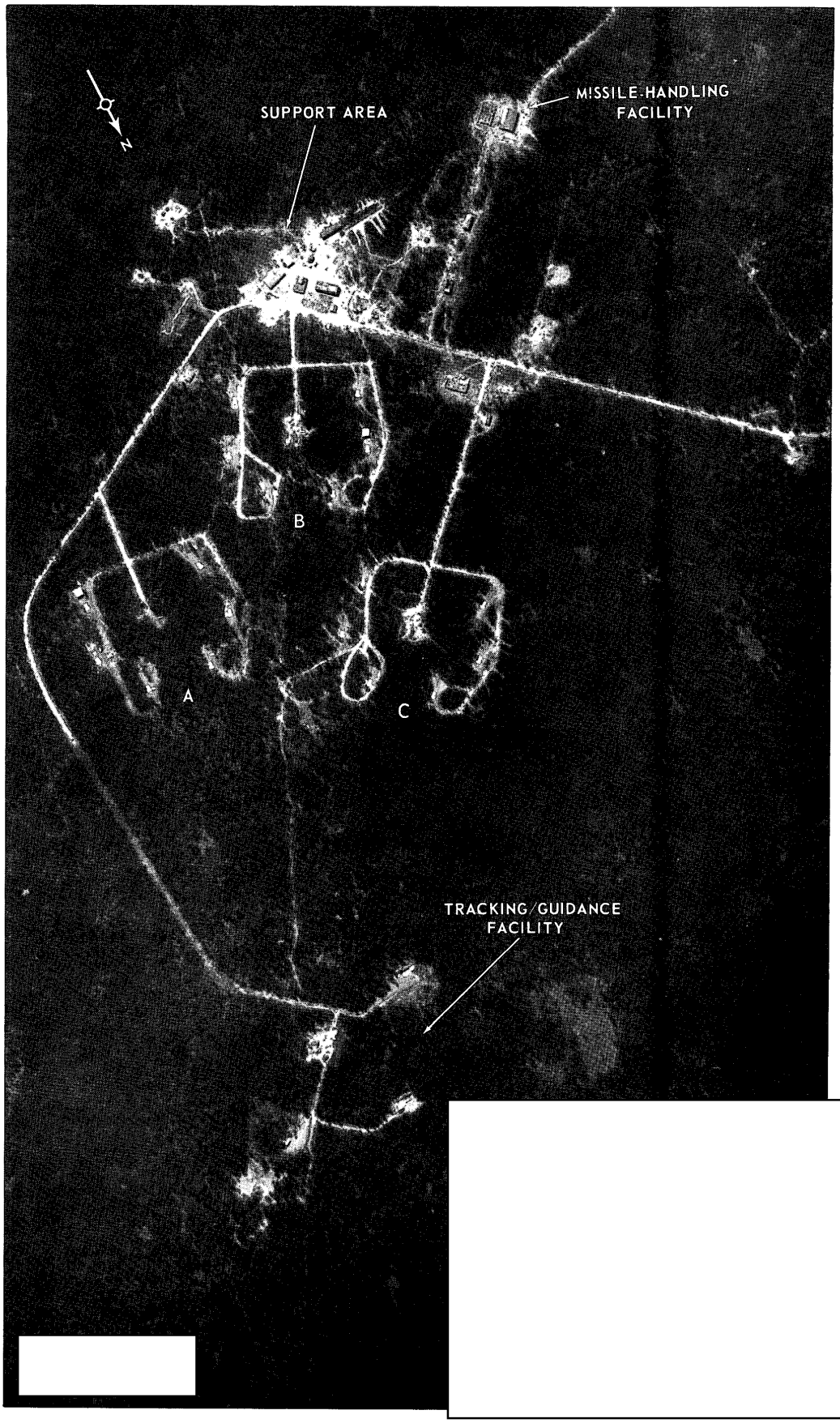


25X1D

25X1D

FIGURE 14. FEODOSIYA PLRS LAUNCH COMPLEX. (Inset: air-warning radar facility 3.5 nm NW).





25X1D

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FIGURE 16. NIZHNYAYA TURA PLRS LAUNCH COMPLEX. (Inset: air-warning radar facility 3.5 nm NE).

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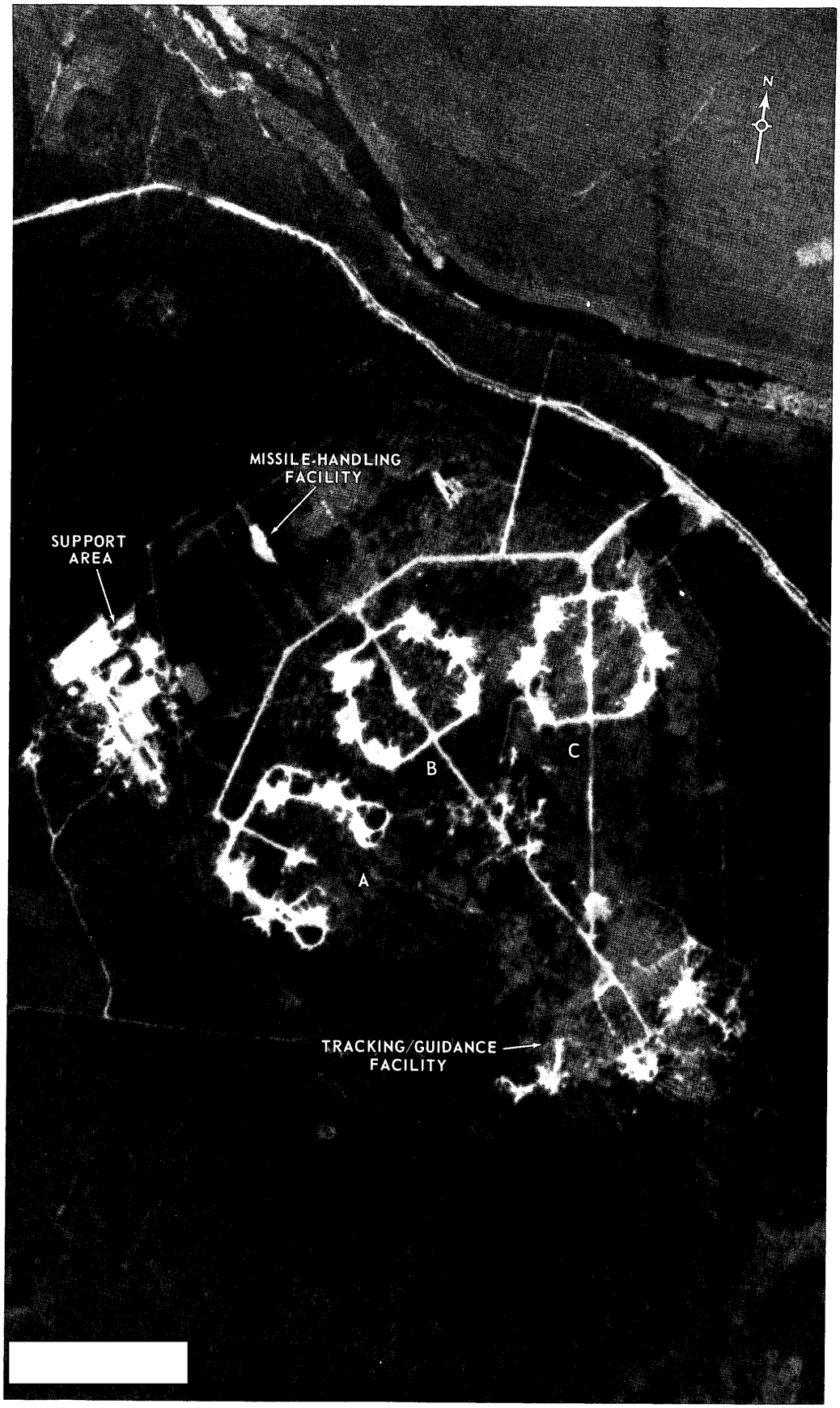

25X1D

FIGURE 20. BABAYEVO PLRS LAUNCH COMPLEX.

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FIGURE 23. TOMSK PLRS LAUNCH COMPLEX.

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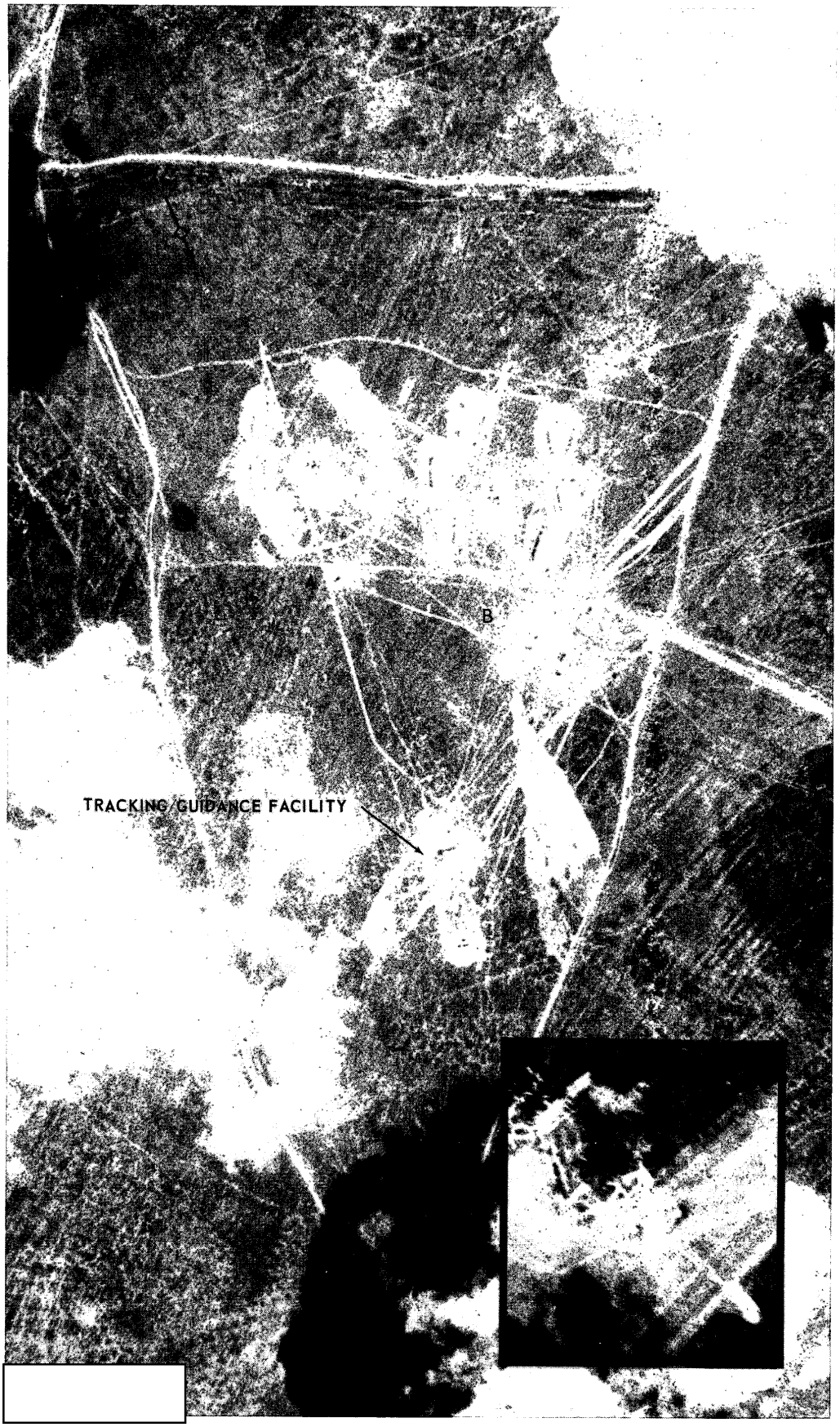

25X1D

FIGURE 24. KAPUSTIN YAR PLRS LAUNCH COMPLEX. (Inset: air-warning radar facility 3.5 nm NW).

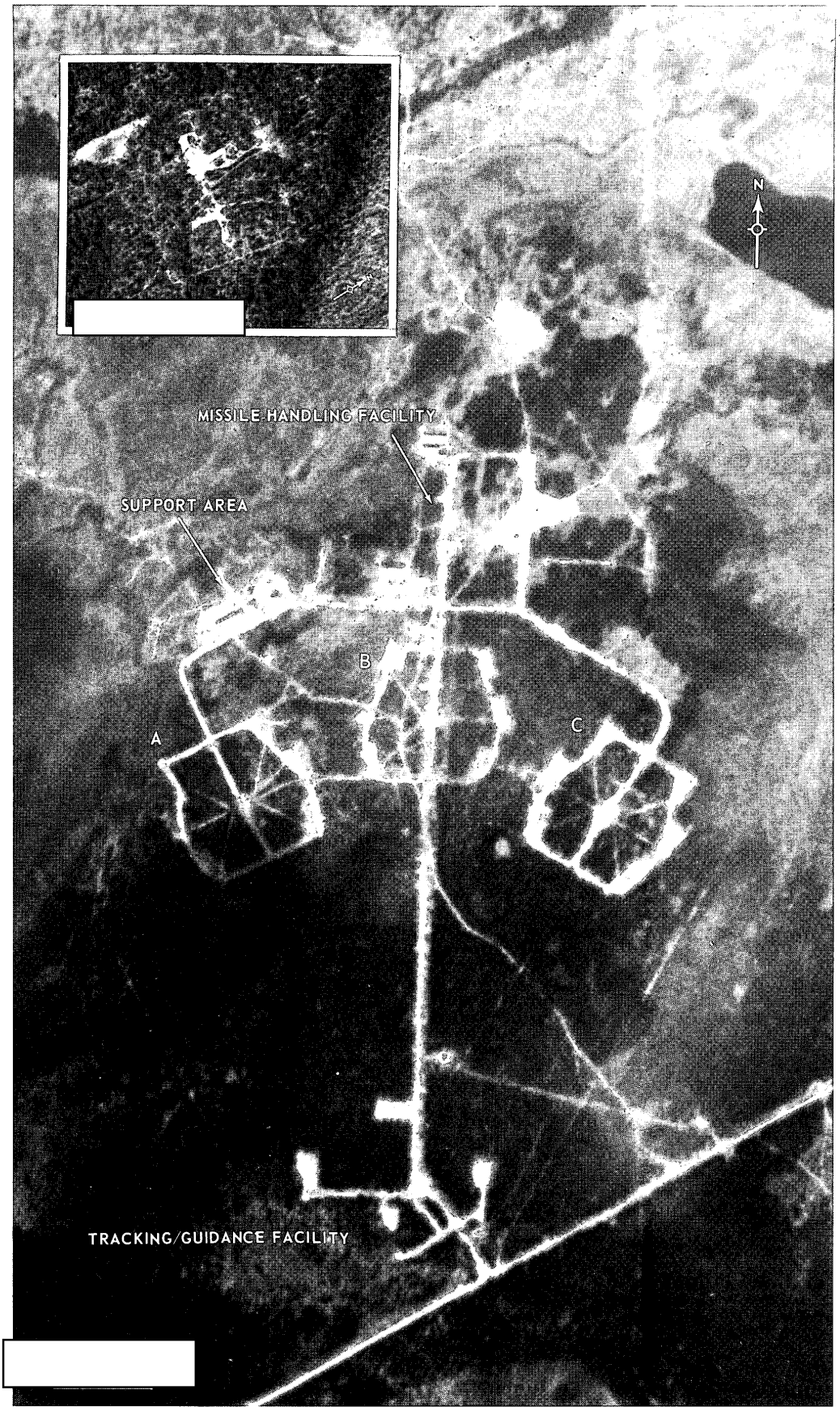

FIGURE 25. PLESETSK PLRS LAUNCH COMPLEX. (Inset: air-warning radar facility 4.5 nm SSW).

25X1D

25X1D

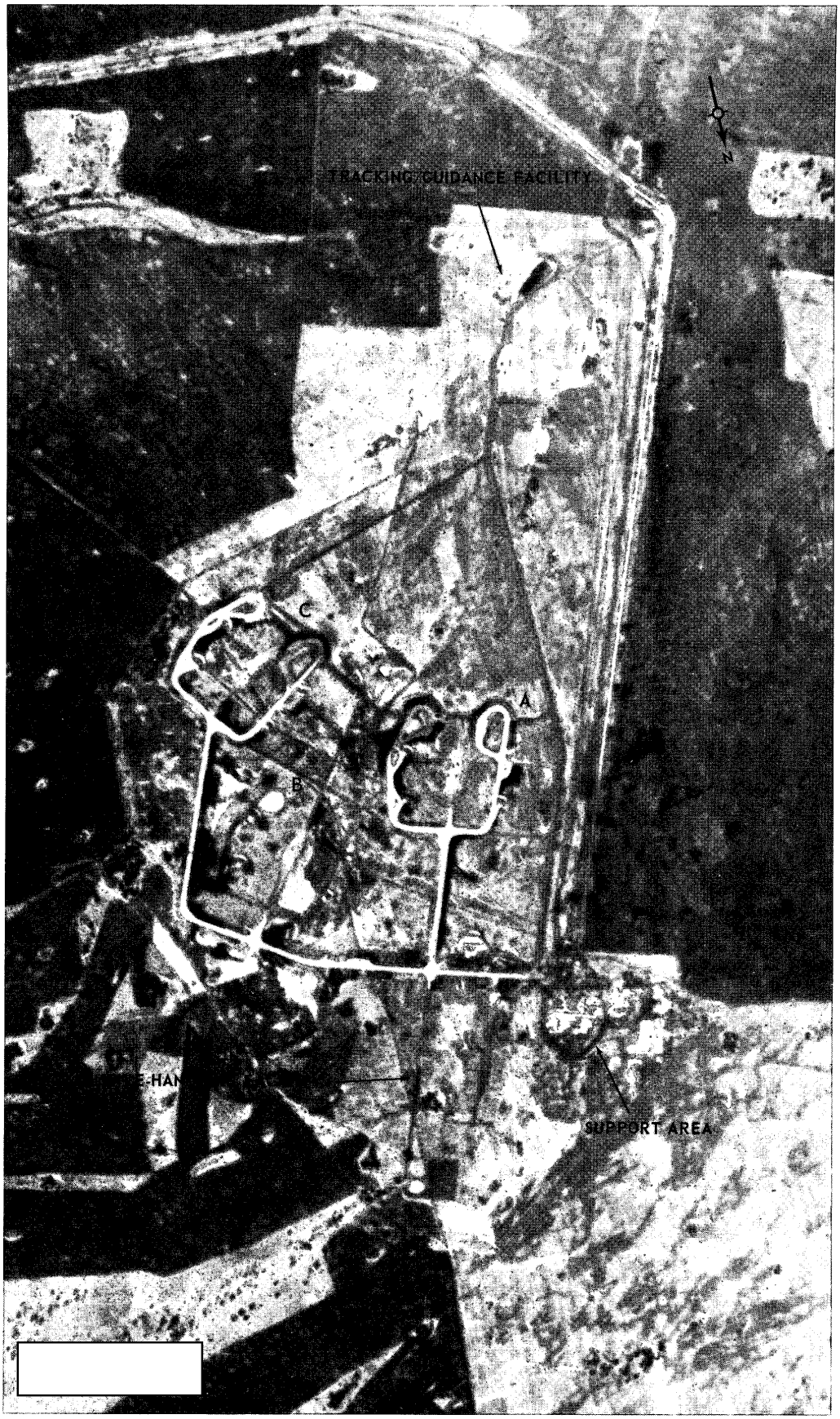

FIGURE 27. KRASNOYARSK PLRS LAUNCH COMPLEX.

25X1D

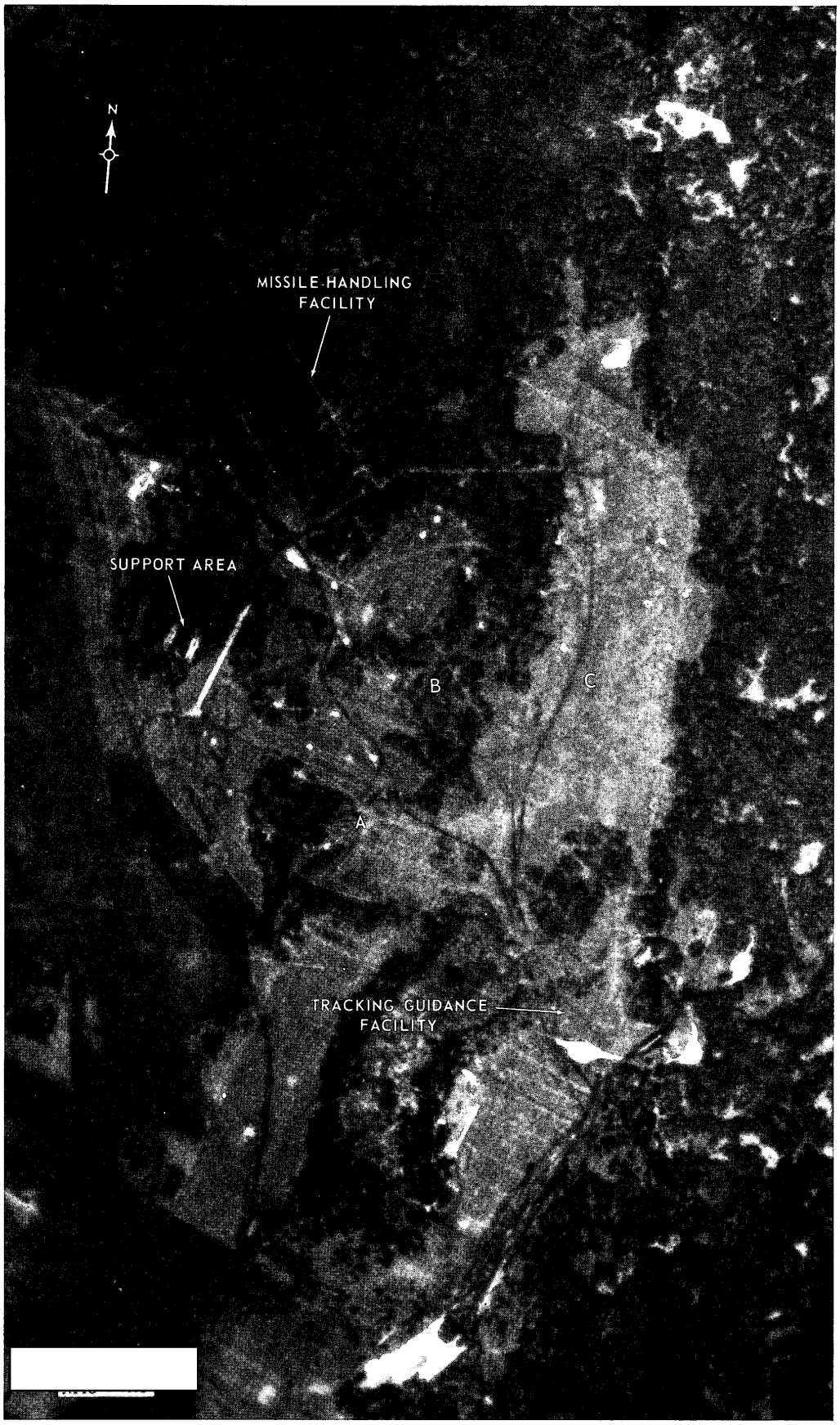

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FIGURE 28. CHELYABINSK PLRS LAUNCH COMPLEX.

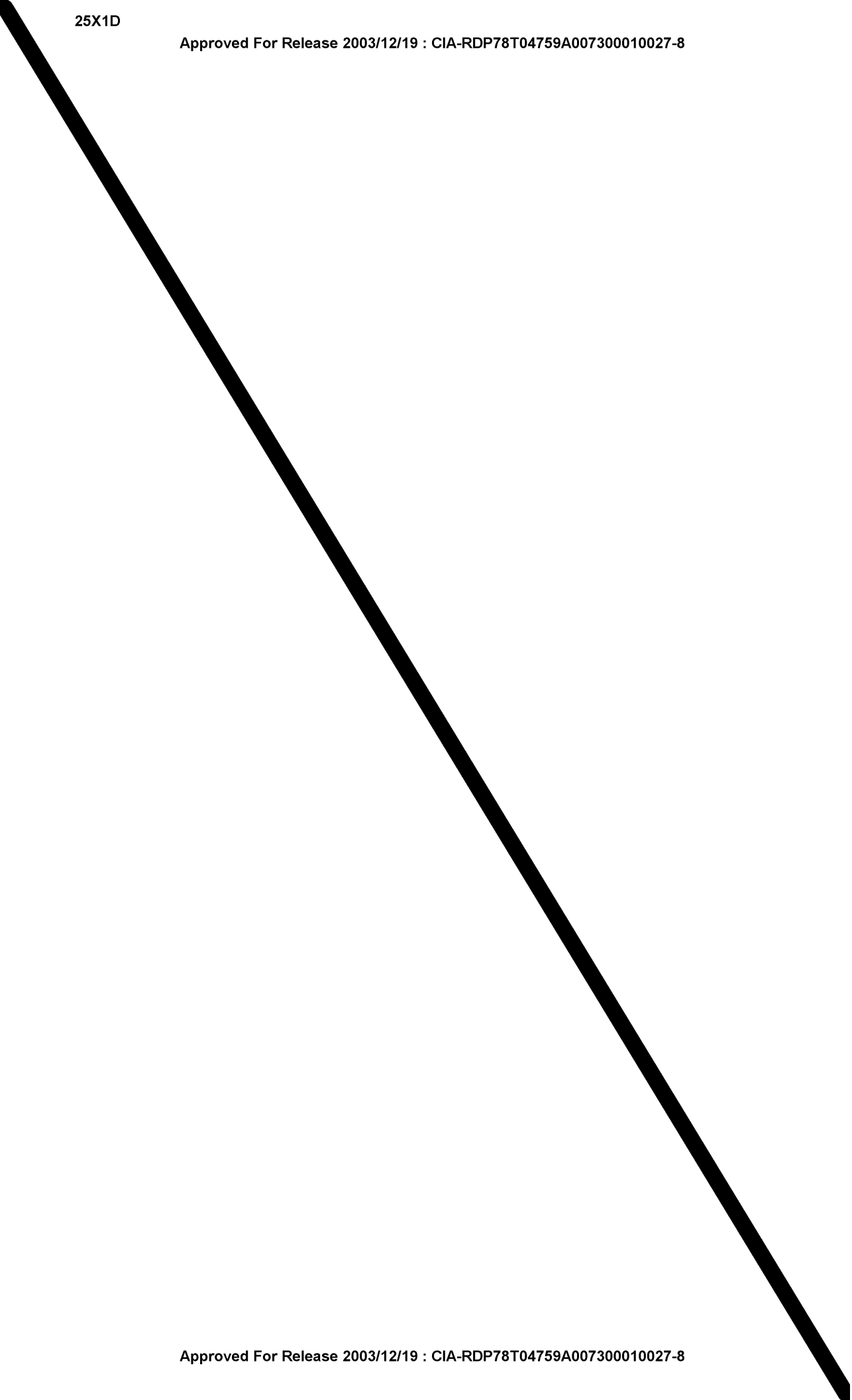

FIGURE 30. KOSTROMA PLRS LAUNCH COMPLEX. (Inset: air-warning radar facility 4.0 nm S).

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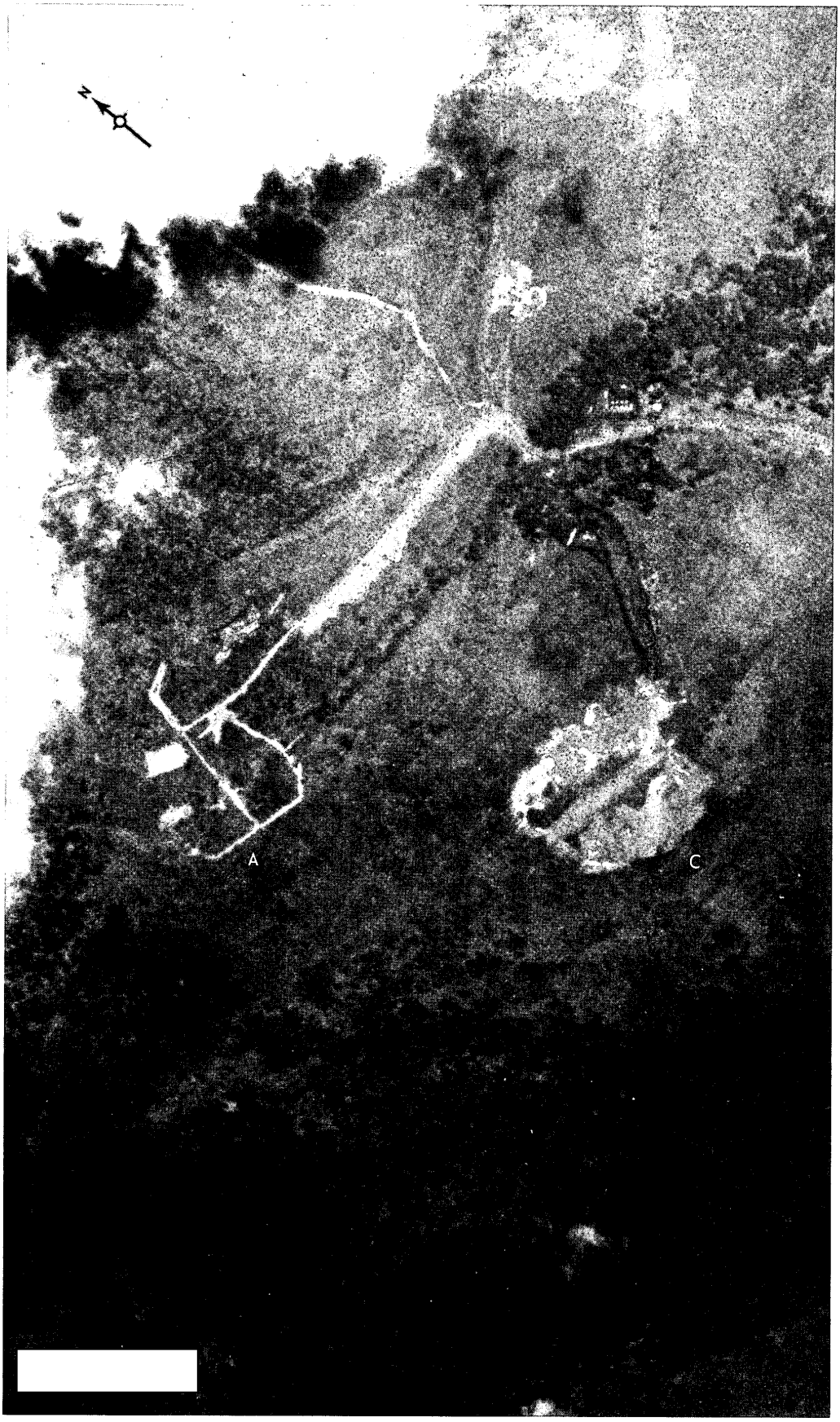

FIGURE 33. VLADIVOSTOK PLRS LAUNCH COMPLEX.

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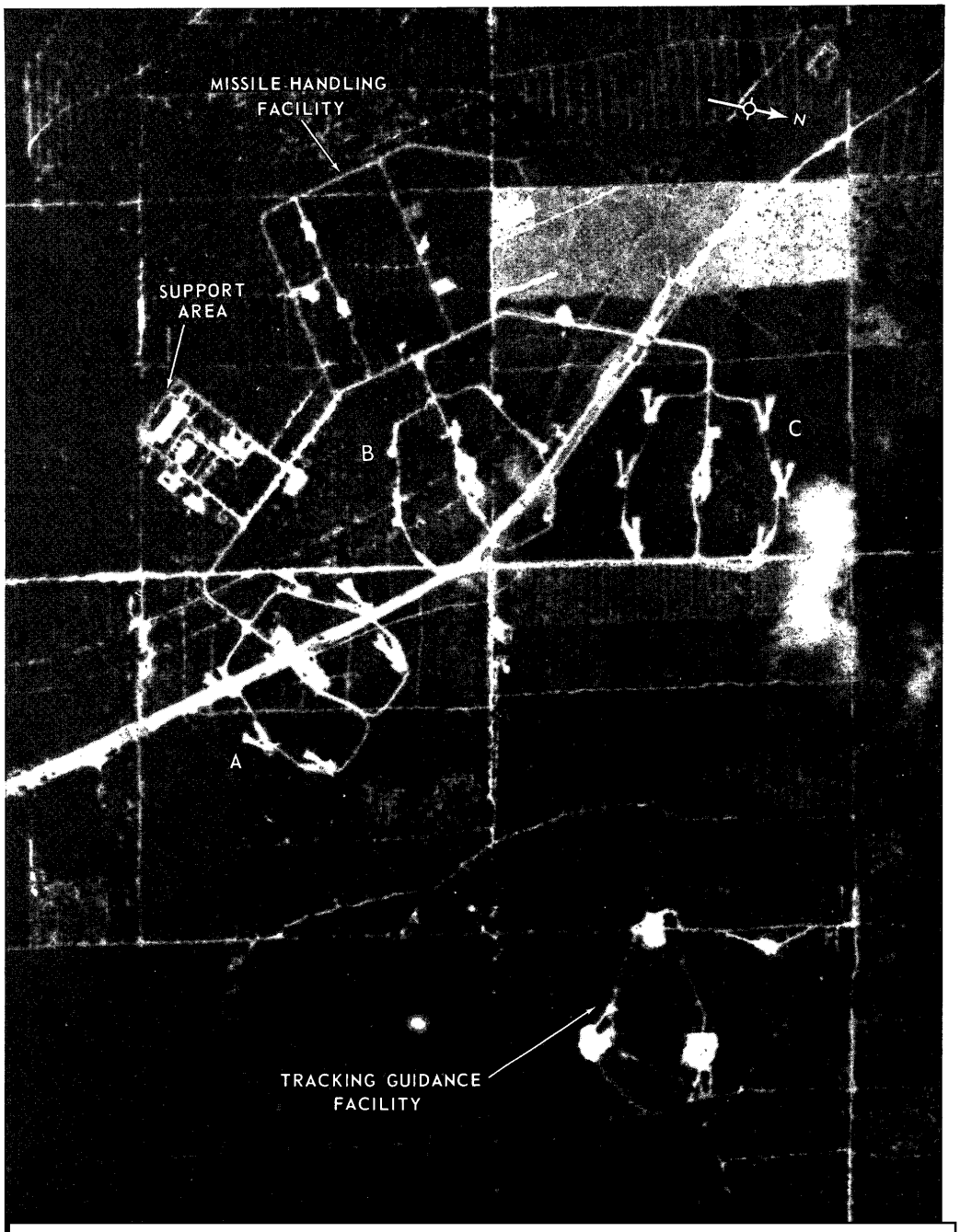

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FIGURE 34. KIYEV PLRS LAUNCH COMPLEX. (Inset: air-warning radar facility 2.5 nm ENE).

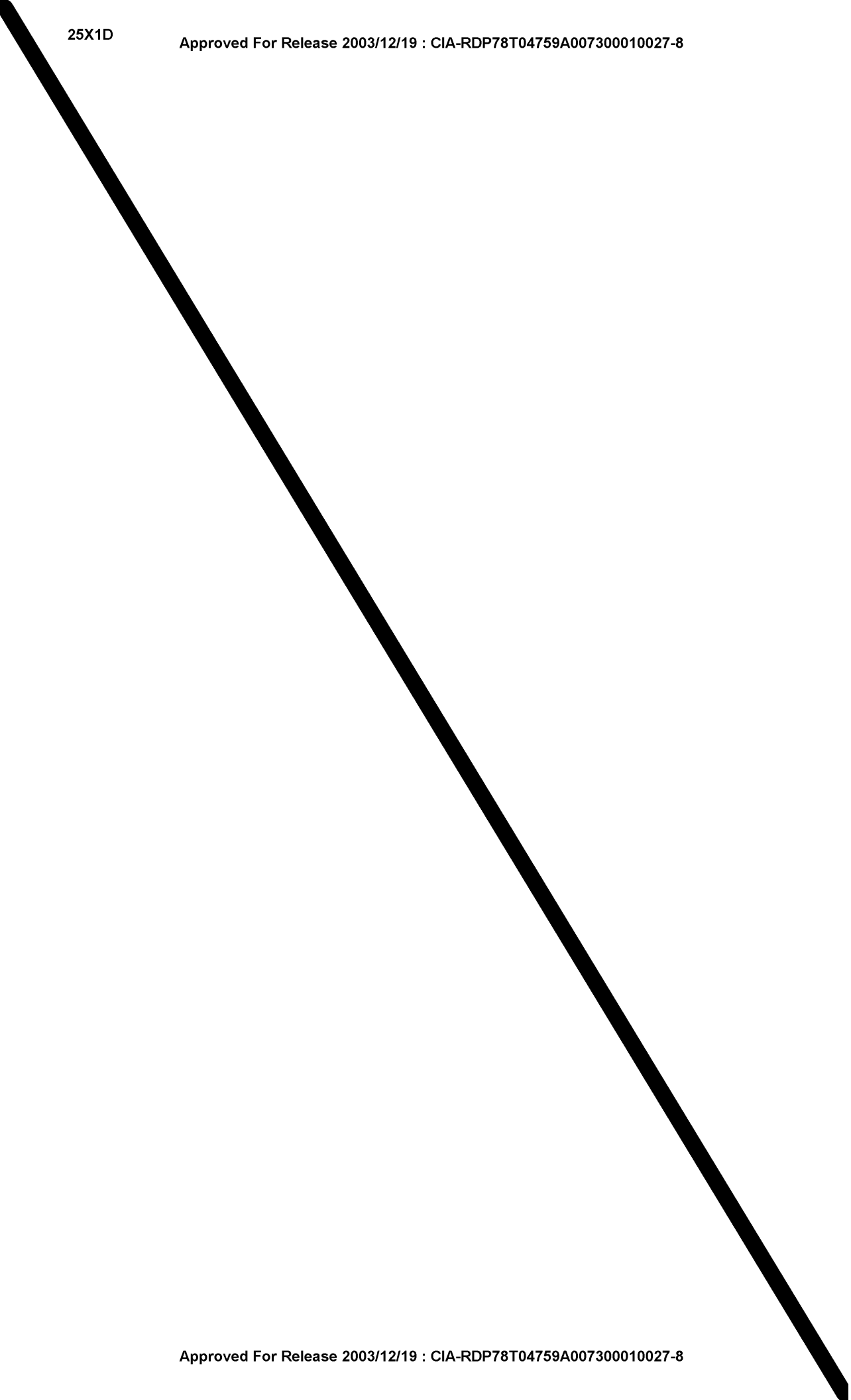

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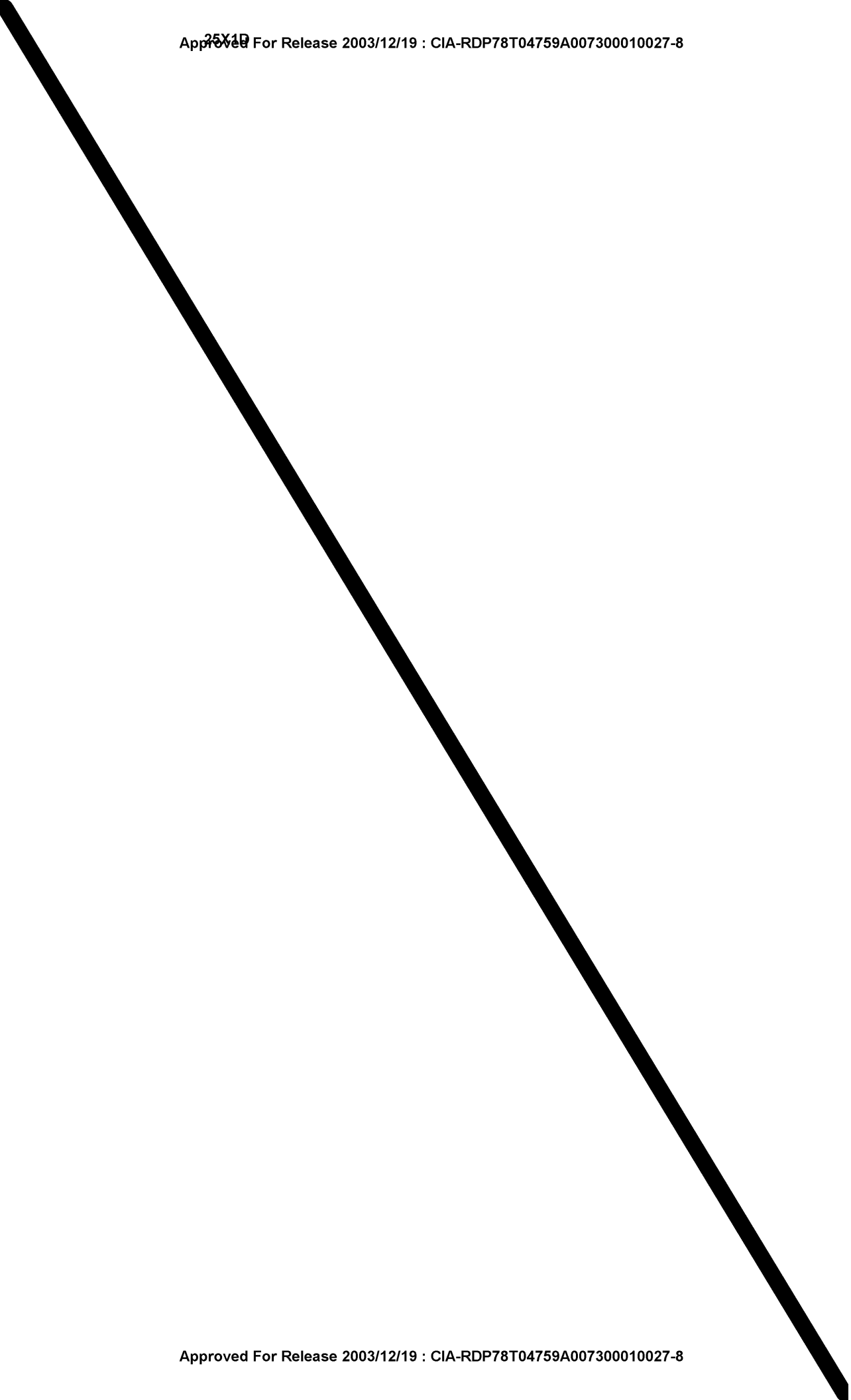
FIGURE 36. BEREZNIKI PLRS LAUNCH COMPLEX. (Inset: air-warning radar facility 3.5 nm SE).



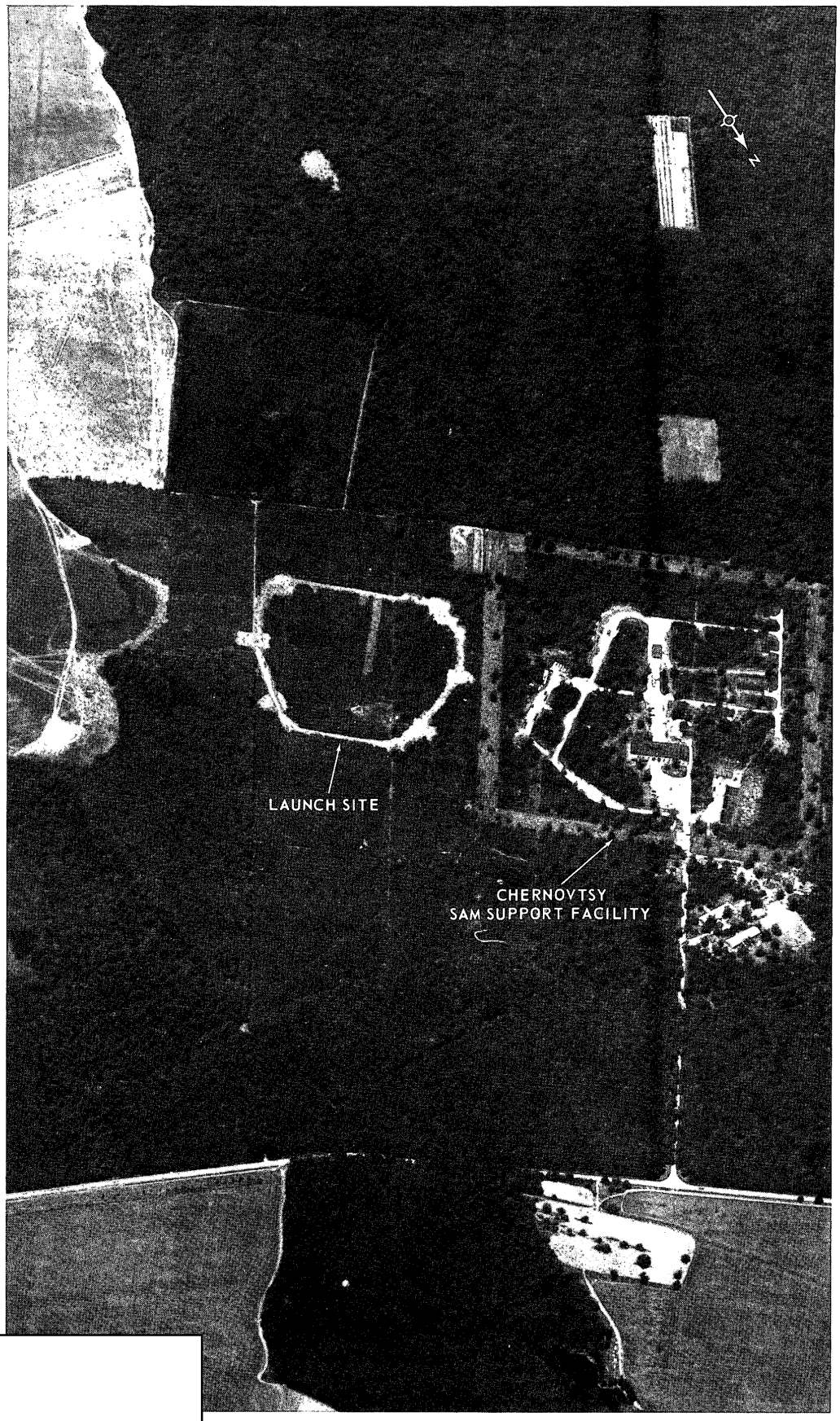


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FIGURE 38. BORSHCHEV PLRS LAUNCH COMPLEX.

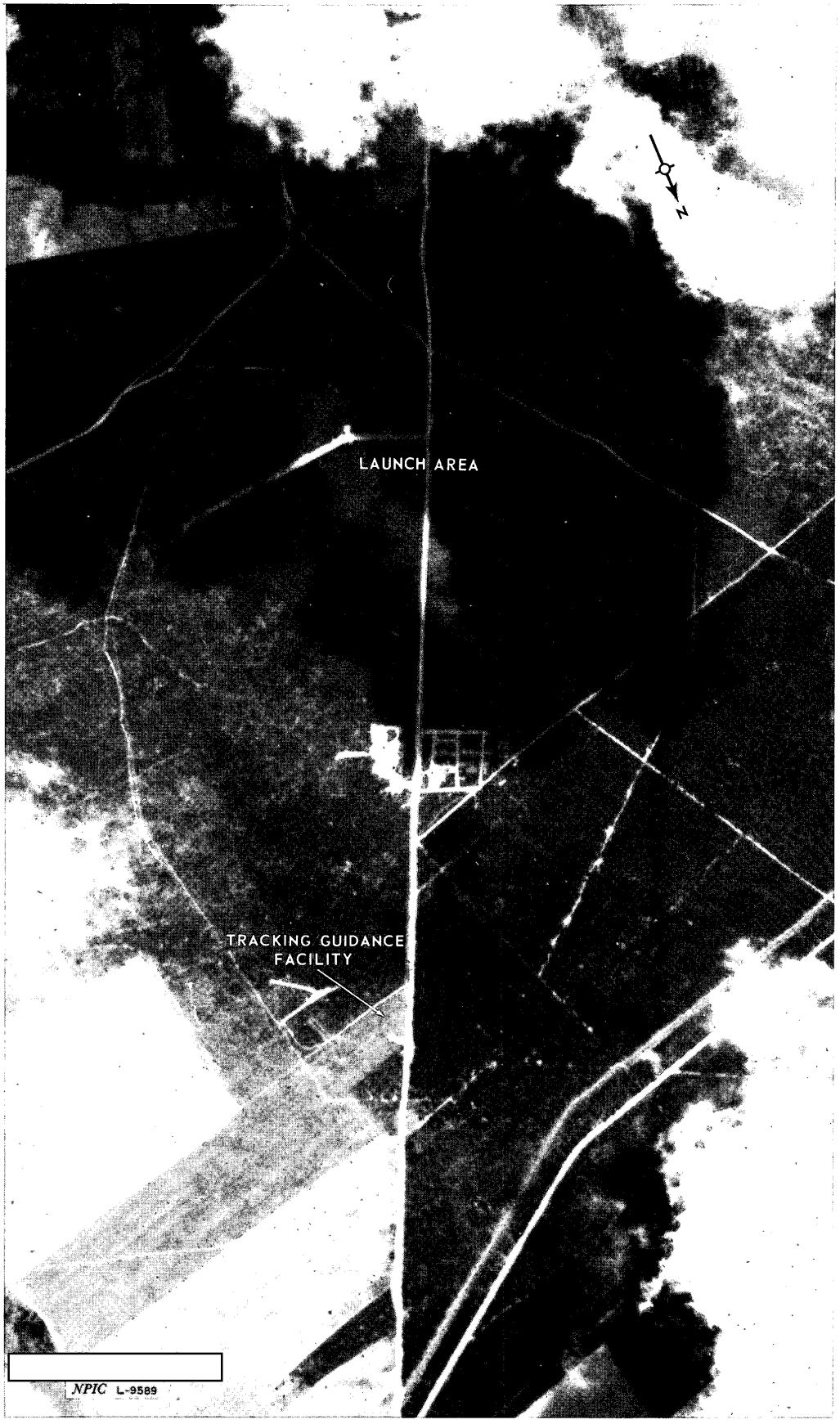

FIGURE 39. MINSK PLRS LAUNCH COMPLEX.

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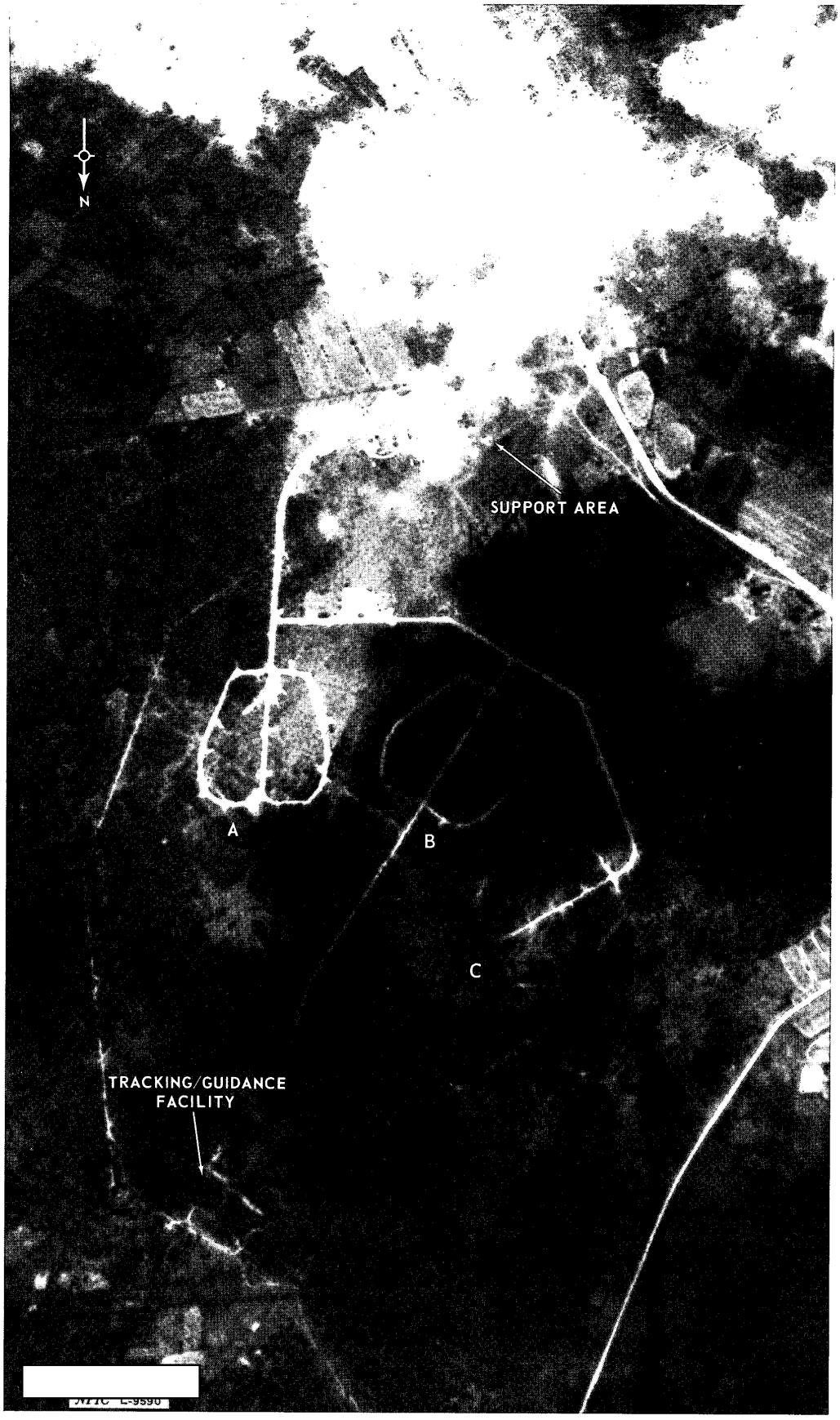

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FIGURE 40. VENTSPILS PLRS LAUNCH COMPLEX.

FIGURE 41. KALININGRAD PLRS LAUNCH COMPLEX.

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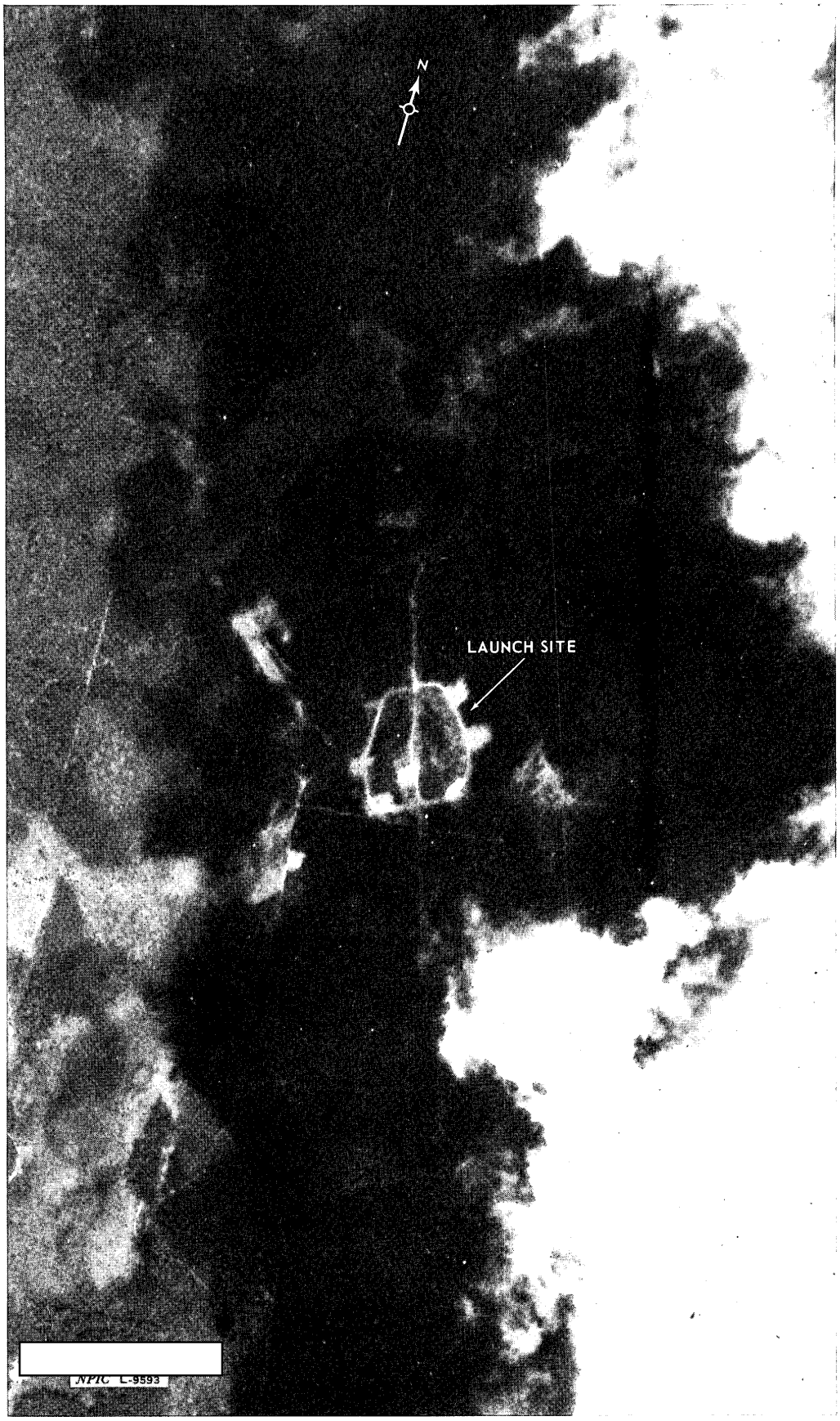

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FIGURE 43. TIKHVIN PLRS LAUNCH COMPLEX.

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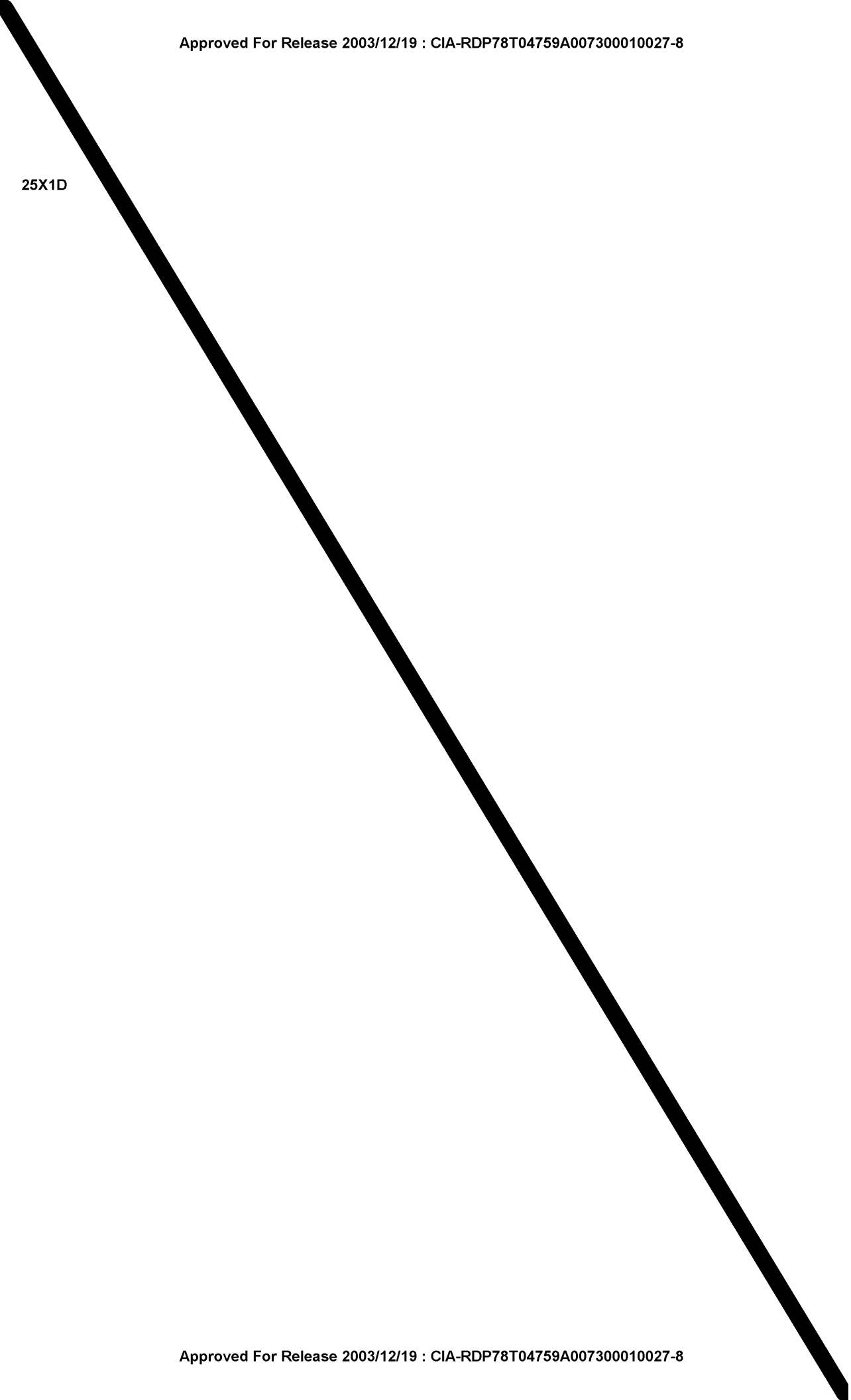

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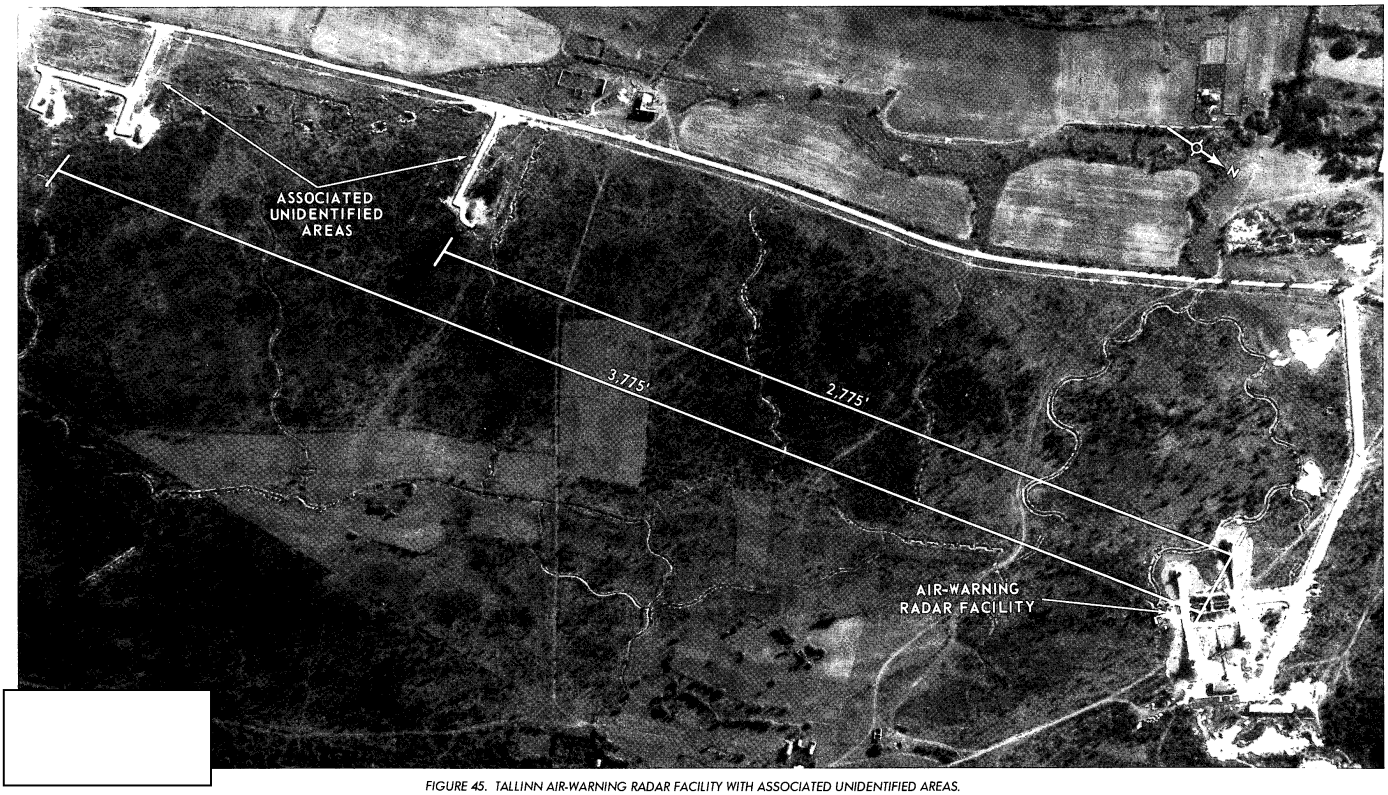

FIGURE 45. TALLINN AIR-WARNING RADAR FACILITY WITH ASSOCIATED UNIDENTIFIED AREAS.

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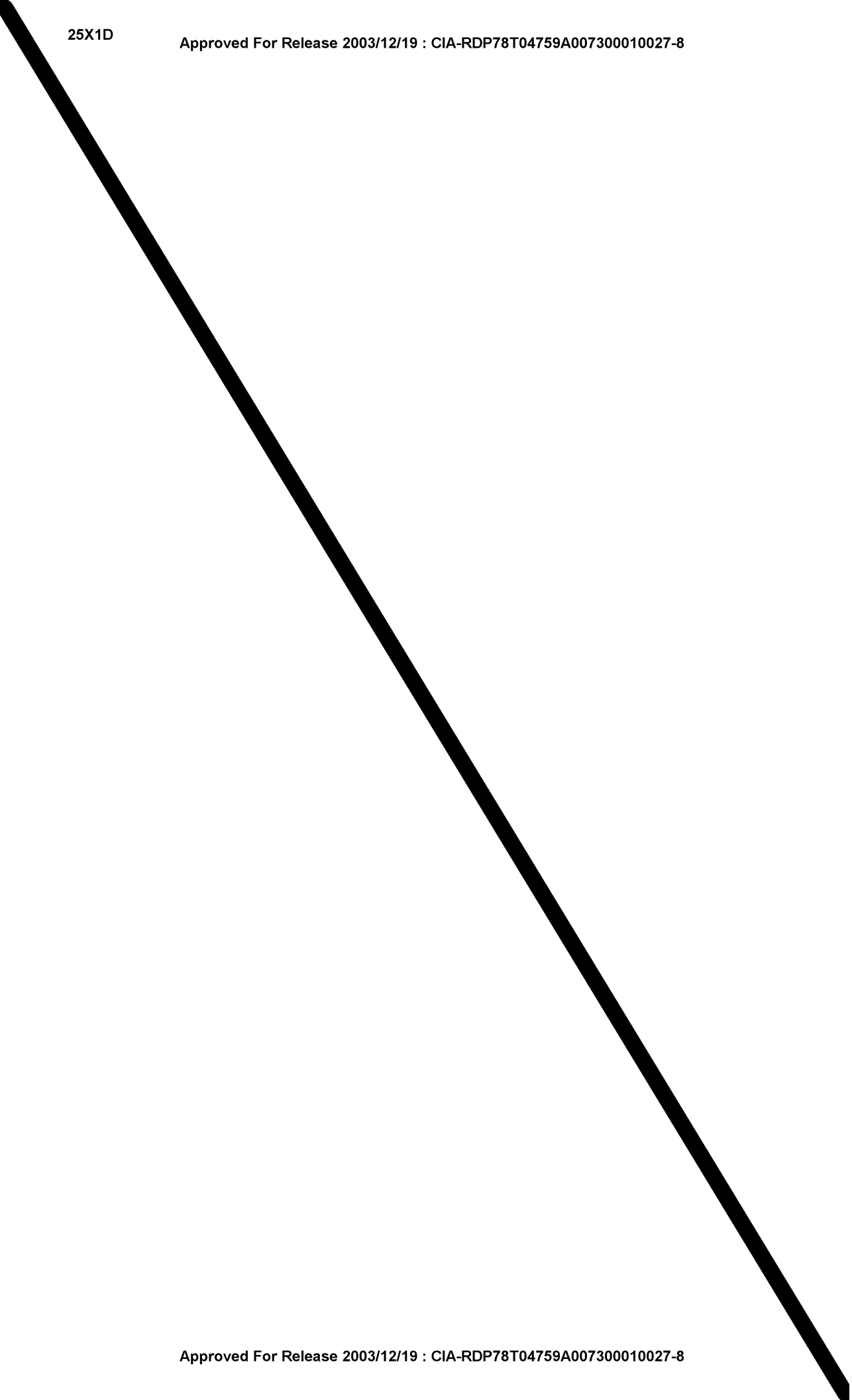

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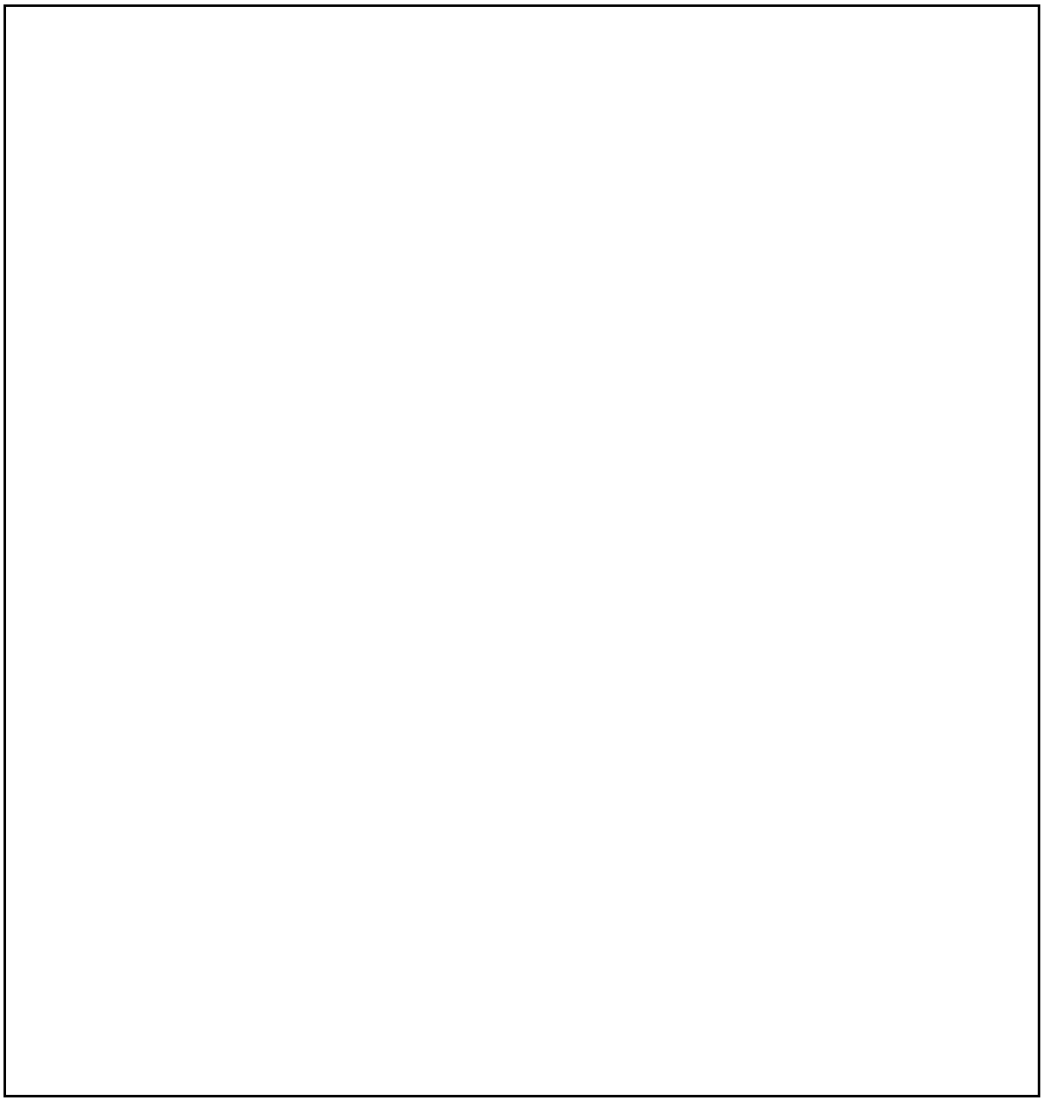

DOCUMENT

1. NPIC. [redacted] *Summary of Probable Long Range SAM Launch Complexes, USSR,* Jun 67 (TOP SECRET [redacted]

REQUIREMENT

CIA. C-DI7-84,255

NPIC PROJECT

11248/67 (partial answer)