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THE KRASNOYARSK RADAR: CLOSING THE FINAL GAP IN COVERAGE FOR BALLISTIC MISSILE EARLY WARNING

Summary

The large phased-array-radar (LPR) located near Krasnoyarsk, USSR has been an ABM Treaty issue since it was first detected in July 1983 because of its inland, rather than peripheral, siting. Responding to US demands about its inconsistency with the ABM Treaty, the Soviets have repeatedly argued that the radar is for satellite detection and tracking.

Our analyses indicate, and [] that the primary mission of this radar is ballistic missile detection and tracking. Further, we believe the Krasnoyarsk LPAR closes the final gap in the Soviet ballistic missile early warning (BMEW) and tracking network that includes LPARs and the older Hen House type radars.

We believe the siting of an LPAR near Krasnoyarsk was motivated primarily by the requirement to close this BMEW gap and at the same time achieve more favorable RV-impact prediction accuracy at the expense of warning-time. Although the Soviets lose some tracking time because of the inland location, track times are comparable to those of the rest of their BMEW system. We believe the

This unclassified memorandum was prepared by _____ and _____ of the Office of Scientific and Weapons Research. OSWR, contributed to this report. Questions and comments are welcome, and may be directed to the Chief, OSWR on _____

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specific location of the radar was determined on the basis of logistical requirements for construction and maintenance, and construction and operations costs.

Introduction

In previous studies, we analyzed the role of a large-phased array radar (LPA) located in the east central USSR near Krasnoyarsk.* These studies concluded that the radar's primary mission is ballistic missile early warning and not space-tracking as the Soviets have claimed. Newly acquired information reaffirms this view. [

The capability of the Krasnoyarsk radar to fill an existing BMEW gap is a function of its angular coverage and the coverage provided by "adjacent" LPAs and Hen House radars. The azimuth and elevation scan limits of these two types of Soviet BMEW radars [] are as shown in the table.

TABLE

Estimated Scan Limits of Soviet BMEW Radars

	<u>LPA</u>	<u>Hen House</u>
Azimuth (deg)	+/- 55	+/- 32
Elevation (deg)	1 to 60	8 to 32

* See FTB [

Moscow Coverage

Our analysis indicates that Moscow could be attacked by future Trident D-5 SLBMs [without LPAR detection, if the Krasnoyarsk radar did not exist. It appears that a small, but possibly in Soviet eyes, strategically significant SLBM launch area is not covered because of azimuthal scan limitations of the LPARs based at Pechora and Mischelevka [.] The LPAR at Krasnoyarsk provides the required coverage to fill this gap.

The northern edge of the Moscow coverage gap is defined by the Pechora LPAR's azimuth limitations. The southern edge is a result of the azimuth and elevation scan limitations of the Mischelevka Hen House. [

] A second, larger, gap in Pechora-type radar coverage for SLBM attacks on Moscow, (that is, one that is independent of Hen House radar coverage) is closed by the Krasnoyarsk radar [.] The northern edge of the LPAR-only gap is defined by the Pechora LPAR. The southern edge is primarily limited by the azimuthal-scan limit of the Mischelevka LPAR. [

[

Soviet ICBM Field Coverage

It appears that a significant portion of the Soviet's ICBM force could be attacked without warning by future Trident D-5 missiles if the Krasnoyarsk LPAR was not present. Potential SLBM launch areas in the North Pacific could strike ICBM complexes west of Krasnoyarsk by avoiding the Pechora and Mischelevka LPAR coverages. Figure 3 is representative of such attack; this attack region could be moved somewhat north or south by moving the launch area south or north, respectively.

[

Location

We believe the siting of an LPAR at Krasnoyarsk closes the last gap in ballistic missile early-warning coverage. Of course, this is not the only location that could provide this coverage. For example, an LPAR deployment along the eastern coast of the USSR would work, but such alternative locations while increasing warning-time would result in significantly degraded tracking accuracies [

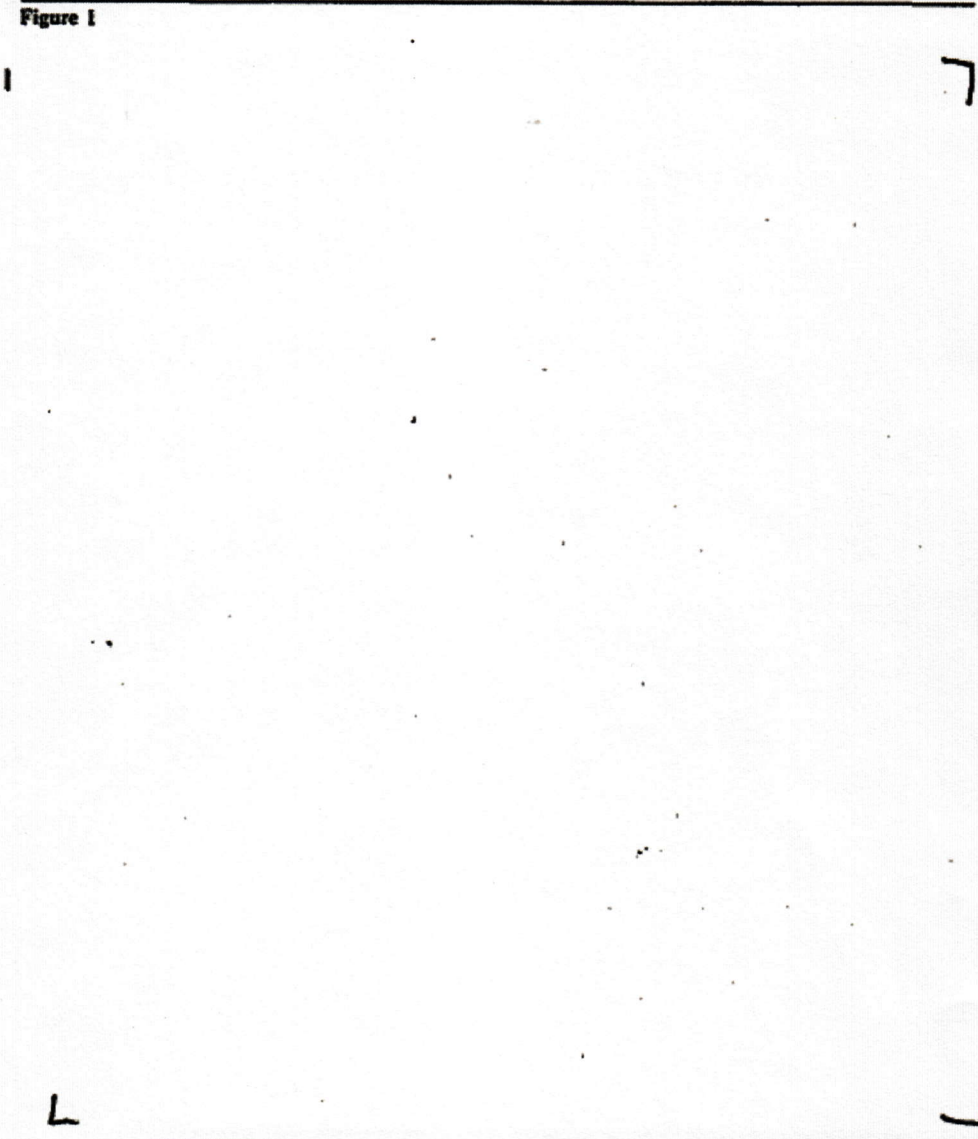
[Interesting to note that the warning-time for Moscow afforded by the Krasnoyarsk location still is compatible with that for other LPARs,]

[The Soviets may also have been motivated by deployment and support cost in locating an LPAR at Krasnoyarsk. LPAR's consistently have been deployed south of the permafrost (figure 5). Deployments north of the permafrost, although technically possible, add significant building and maintenance costs. Additionally, the Krasnoyarsk site is near a rail line; many of the other potential sites north of the permafrost are not serviced by rail.]

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Figure 1



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Figure 2

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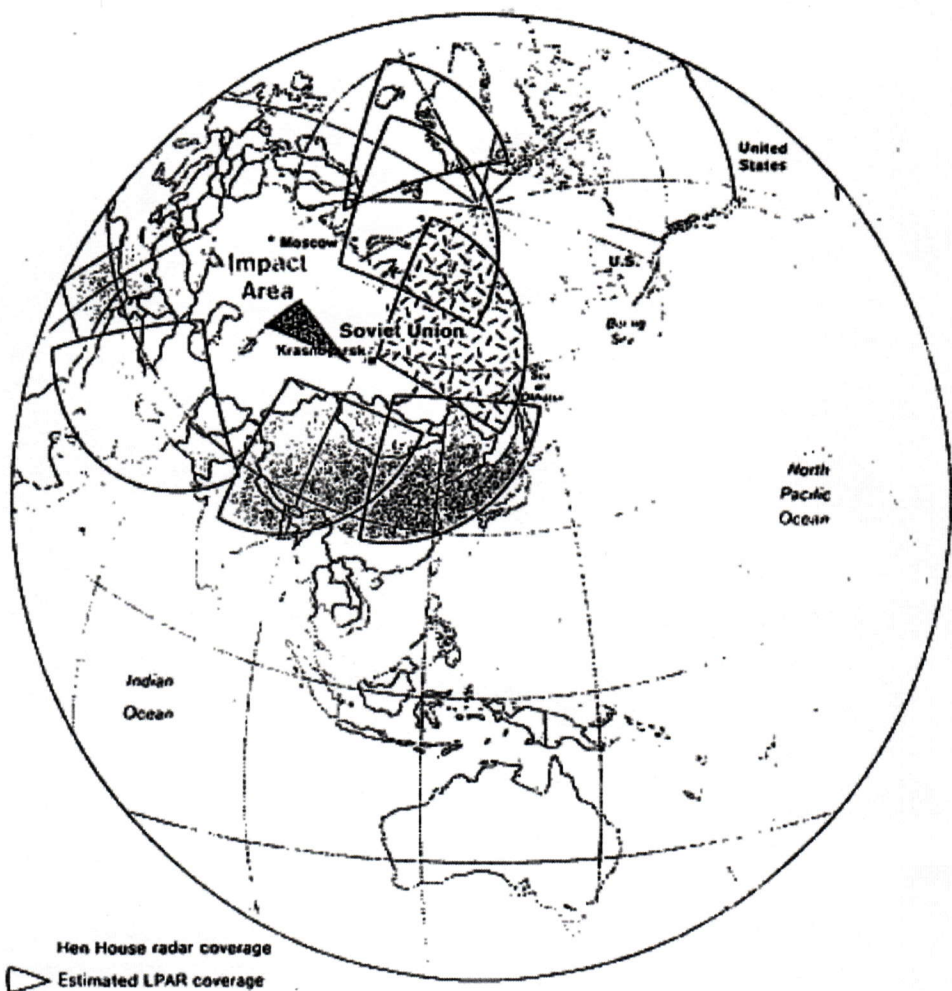
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Figure 3
BMEW Coverage Gap for Representative SLBM Attack
on Soviet ICBM Forces Without Krasnoyarsk LPAR



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Figure 5
Soviet BMEW Radar Sites Relative to Limit of Permafrost

The United States Government has not recognized the sovereignty of Cuba, Laos, and Vietnam in all territories indicated.



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