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**The Flat Twin ABM Radar:
Not as Capable as
Previously Believed**

Summary

*Information available
as of 1 August 1991
was used in this report.*

New analysis of the Soviet Flat Twin ballistic missile defense radar shows that it is not as capable as previously believed.

Our analysis indicates severe constraints imposed on the Flat Twin by its antenna. This strengthens our belief that a widespread, fast-paced Soviet ABM deployment using the Flat Twin is unlikely because of the number of radars required, as well as the extreme difficulty of modifying the Flat Twin to make it perform effectively.

Our analysis of the Flat Twin's antenna indicates that the Flat Twin is much less capable in off-boresight scanning for track and search than we had previously estimated.

Our analysis indicates that the Flat Twin has a maximum scanning capability of about ± 15 degrees in azimuth and elevation for tracking. It also indicates that the Flat Twin can search less than ± 10 degrees. This reassessed search capability is considerably less than the earlier estimate of ± 45 degrees.

Because of the Flat Twin's scanning limitations, a widespread ABM system using the Flat Twin would require an overwhelming number of radars. A system deployed at Moscow and 40 of the most important areas in the Soviet Union would require about 500 to 570 Flat Twin radars. These numbers are about 30 percent higher than our previous assessment. Although the Soviets would require fewer Flat Twin radars to defend their 125 high-priority deployment sites under the START treaty, the number required is still considerable. Under the START treaty limit of about 4,900 US ballistic missile warheads—the level to be achieved by 1996—our modeling indicates that a Soviet defense would require about 510 to 600 Flat Twin radars. Under a potential future START treaty permitting about 2,450 US ballistic missile warheads, we calculate that the number of Flat Twin radars required for defense would be reduced to about 380 to 450.

Given the Flat Twin's limitations as a widespread ABM system, we believe that the Soviets would use a new type of ABM radar. We would expect a new radar to have a greatly improved scan angle, a better multiple-target-tracking capability, and greater detection range. Thus, a significant reduction in the number of radars required in a widespread ABM system would result.

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