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THE DIRECTOR OF CENTRAL INTELLIGENCE

WASHINGTON, D.C. 20505

National Intelligence Council

SP - 225/81
30 October 1981
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MEMORANDUM FOR: Director of Central Intelligence
Deputy Director of Central Intelligence

THROUGH: Chairman, National Intelligence Council *AK*

FROM: National Intelligence Officer for Strategic Programs

SUBJECT: Assessments of Soviet Strategic Air Defenses

1. Summary

--Capabilities of Soviet strategic air defenses will be a key theme of critics of the Administration's modernization program.

--To date, assessment of these capabilities has not been a particularly contentious issue within the intelligence community. Nobody dissented on the air defense discussion in the recent SNIE on Soviet responses.

---Improvements in Soviet low-altitude air defenses will make low-altitude penetration of the USSR by today's bombers more difficult by the mid-1980s.

---The overall capabilities of Soviet low-altitude defenses against a combined attack by cruise missiles and penetrating bombers armed with short-range attack missiles will remain limited during the next ten years and possibly into the 1990s.

--Assessments of the effectiveness of Soviet air defenses can be quite difficult to perform.

---Up to now, assessments have been made easier by Soviet lack of technical capabilities and other factors.

---Increasing sophistication of Soviet systems will make future analyses more difficult.

--Our assessments are not based on computer simulations; based on analyses of Soviet capabilities to perform essential air defense functions.

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---Air Force does the only full simulation of this problem, which forms the basis for DoD assessments, but model not fully satisfactory.

---Air Force analyses attempt to account for the many significant operational factors that we cannot deal with.

--Our judgments on Soviet air defense capabilities tend to be ambiguously stated; my goal is to achieve more precise and explicit assessments, including those on how the Soviets view their air defense systems.

--Particular areas of weaknesses:

---Do the Soviets emphasize protection of certain targets?

---What are their capabilities with an air defense system degraded by precursor ballistic missile attacks? How well can they reconstitute their air defense forces?

--Proposed measures to improve our understanding:

---Examination of basis for current assessments.

---Air defense workshop, 5 November.

---Number of initiatives for specific analyses.

---Support computer simulations by NFAC/SOVA.

---Use SecDef/DCI net assessment arrangement.

--Ultimately, I am personally concerned that we may be understating the future effectiveness of Soviet air defenses.

2. The recent flurry of excitement over the effectiveness of future Soviet air defenses against the B-1 is not likely to abate. This issue, plus the capability of Soviet ICBMs to destroy MX missiles in hardened silos, are going to be focused on heavily by the critics of the Administration's strategic modernization program. To date, assessment of Soviet strategic air defense capabilities--particularly against targets penetrating at low altitude--has not been a particularly contentious issue within the intelligence community. Further, various testimony and studies by the community over the past year have been consistent in their characterization of the main aspects of the Soviet air defense problem (excerpts are attached).

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Current Intelligence Estimates of Soviet Air Defenses

3. The key judgments about Soviet air defense capabilities that we have been making are:

--Soviet air defense forces today could perform well against aircraft at medium and high altitudes.

--They would have little aggregate capability today against targets at low altitudes.

--By the mid-1980s, improvements in Soviet low-altitude air defenses will make low-altitude penetration of the USSR by today's bombers more difficult.

--Capabilities of individual Soviet low-altitude air defense systems that we have projected over the next ten years (beginning their deployment now, or within the next several years) are relatively insensitive to differences in radar cross-sections and subsonic speeds of "conventional" bombers (stealth excepted.) However, differences in bomber characteristics we have not assessed--avionics, self-defense systems, etc.--may give the B-1 a greater probability of penetration of Soviet air defenses. (Analysis by US Air Force planners and the recent DoD Bomber Study reportedly show that the planned characteristics of the B-1 will undoubtedly give it a greater probability of penetration.)

--Current and future Soviet air defense systems on which we have evidence would have only limited capabilities against the US cruise missile, and virtually none against the Short Range Attack Missile (SRAM).

--Thus, primarily because of current and anticipated numerical deficiencies, the effectiveness of Soviet air defense systems against a combined attack of penetrating bombers and cruise missiles will remain limited during the next ten years.

--Further, we doubt that the Soviets will succeed, even in the 1990s, in solving all of the air defense problems created by the very small radar cross sections of prospective future aerodynamic vehicles. We have no basis, however, for estimating Soviet capabilities against US aircraft incorporating "stealth" technology.

View of Current Analytic Basis for Judgments

4. Assessments of the effectiveness of Soviet air defense can be quite difficult to perform. In estimating the effectiveness of current air defense systems our assessments are made much easier by the fact that the Soviet systems simply lack the technical characteristics needed to perform against low altitude bombers, and they rarely practice low altitude

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air defense operations. In addition we have noted that they do not operate their system as effectively as they could because they have command and control deficiencies and their air defense troops are not among the best and often perform poorly in training exercises. These latter problems have led to a widely held feeling that the Soviets are really quite inept in this area, and this feeling carries over as a contributing factor in judging how well the Soviet air defenses would do in the future.

5. In the future, for the first time, they will actually have systems deployed in increasing numbers that will have the technical capability to detect and track low altitude bomber targets well enough to pose a threat. The assessments of future effectiveness are therefore more difficult to make, and need to be done more carefully. The technical analyses must account for the many steps in the sequence from early warning of bomber approach to final intercept by a launched air defense weapon.

6. pointed out in his Senate testimony of 28 October, and as we have noted in our past estimates, our conclusions about the overall effectiveness of Soviet air defenses are not based on the results of computer simulations to calculate attrition the Soviets could inflict on an attacking force. Rather, they are based on our assessments of Soviet capabilities to perform in sequence each of the essential air defense functions: early warning, detection and tracking, control of intercepts, and target destruction. In fact, the only full simulation being done in detail is that performed by the Air Force, with a very large and slow model (Advanced Penetration Model) that they have used for many years. The results from this model have for a long time formed the analytic basis, which, together with considerations of a variety of qualitative factors, leads to Department of Defense judgments on the capabilities of bombers and cruise missiles to penetrate Soviet air defenses. These results typically have shown a continuous but gradual decline in B-52 penetration capability (although not an abrupt failure in the mid-to-late 1980s, as has somehow been implied), and somewhat better penetration probability for newer bombers such as the B-1 and for cruise missiles, although also declining over time unless infused with modifications. These analyses take into consideration in a quantitative fashion many operational factors that we are unable to account for:

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- bomber penetration tactics such as defense avoidance, selection of routes and penetration corridors.
- bomber system avionics and electronic countermeasures.
- the suppression of air defenses by direct attack from the bombers and from prior ballistic missile attacks.
- the cooperative effects of bombers and cruise missiles.

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These analyses appear very impressive, although it is my judgment, based on my conversations with many analysts while I worked in the Pentagon, that DoD should not have great confidence in judgments of absolute penetration capability based on this model. Rather, it is more credible in illustrating trends, and in making some comparisons between bombers. It is difficult to discover which factors dominate in the effectiveness calculations, and the Air Force analysts often cannot tell why the results come out as they do. (I have heard of cases when bad assumptions, buried in the model, have completely negated the potential effectiveness of the new highly capable Soviet interceptors--a fact discovered, not by the Air Force analysts, but by others who have attempted to understand these results.)

Plans for Future Analyses of Soviet Air Defenses

7. In part because of the nature of the analysis that is done on Soviet air defenses, and the prominent role played by the Department of Defense in assessing the interaction with US bomber forces, we tend to make somewhat ambiguous statements about overall Soviet capabilities (e.g., "... will be limited"). I am personally troubled by such phraseology, and would like to be more helpful to the community in laying out the basis, or lack of basis, for judgments.

8. I would like to focus more on how the Soviets view their air defense system. For example:

--It is part of an overall concept of strategic defense, and, as such, partial effectiveness may be acceptable to the Soviets.

--Despite the fact that the Soviets cannot provide low altitude air defense coverage of the entire country, they may be able to take advantage of their analyses of US bomber force operations and the early warning they would obtain of bomber approaches and penetration routes, to provide more substantial coverage in key areas and thus improve their capabilities. They also would preferentially protect certain areas in any event.

--The Soviets see their air defense system as having to deal with bomber attacks over a much longer period of time than US planners have typically envisioned.

9. Some areas in our understanding that are particularly weak:

-In analogy to civil defense, where the Soviets concentrate most effort on the protection of key leadership and essential wartime personnel, the Soviets could be emphasizing the protection of key leadership and military facilities in their air defenses. I plan to get some work done on this question.

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-Although we have some understanding of how the Soviet air defense system operates in peacetime, we know much less about its wartime operations and how it would perform after it has been degraded by a ballistic missile attack on parts of the system (I do not believe that US targeting plans include a concerted attack against air defense command and control). In particular we have a poor understanding of how well they could reconstitute the system in preparation for bomber attacks. In effect our judgments on Soviet air defense effectiveness do not account for air defense reconstitution.

10. I am planning to do several things to improve our understanding of Soviet air defense capabilities.

--For the near term I will ask all those in the intelligence community responsible for air defense assessments to lay out the basis for their assessments and the relative contributions of evidence, analysis, opinion, and bias. It is my guess that the apparent unanimity in judgments, as appears in recent estimates, is the result of different sets of assumptions and beliefs, some of which may be quite contradictory. I would prefer to have a clear picture of the basis for individual judgments in order to inform my own judgment and, ultimately, what we put forth in our estimates.

--I am having an air defense workshop on 5 November, with various analysts in the air defense community participating, in order to begin this process and get an early understanding for both the NIE 11-3/8 estimate and for future Congressional testimony that we may have to give.

--I plan to encourage a number of efforts, within the intelligence community as well as by DoD and civilian contractors, for specific analyses.

--I would enthusiastically support the development within the Strategic Forces Division of SOVA of a computer simulation model for the air defense-bomber interaction, on a much more modest scale than that used by the Air Force, that would support our national intelligence needs.

--I believe we should use the joint net assessment arrangement between DCI and the Secretary of Defense to provide a better exchange of information on Soviet air defenses and US force operations and characteristics, as well as to highlight the critical areas in which the intelligence community could provide better analysis.

Attachments



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