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OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

24 JAN 1969

[redacted]

SYSTEMS ANALYSIS
(Strategic Programs)

MEMORANDUM FOR DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
DIRECTOR, NATIONAL RECONNAISSANCE OFFICE
DIRECTOR, DEFENSE INTELLIGENCE AGENCY
VICE DIRECTOR, MANNED ORBITING LABORATORY PROGRAM OFFICE

SUBJECT: The Manned Orbiting Laboratory (MOL) Development Change Paper

The enclosed memorandum and supporting papers were reviewed with Mr Nitze, who discussed them with Mr. Packard. They asked that I work with your staff to prepare a memo summarizing the issues on MOL and the views of the interested parties on these issues.

My memorandum, enclosed, identifies and discusses what I believe are these issues--the value of very high resolution (VHR) imagery, the urgency with which we need it, and alternative ways of obtaining such imagery. I would like you to review my memorandum and its enclosures more thoroughly than you had an opportunity to do before, and provide me directly your comments on these by February 3, 1969. I will then prepare the memorandum requested by the Deputy Secretary of Defense. This memorandum will be made available to each of you for review and comment prior to its being sent forward.

Ivan Selin
Deputy Assistant Secretary

Enclosures

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ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

SYSTEMS ANALYSIS

P
S I

Have discussed this with Mr. Packard who would prefer to review it himself.
PHN

MEMORANDUM FOR DEPUTY SECRETARY OF DEFENSE

SUBJECT: Comments on the Manned Orbiting Laboratory (MOL) Development Paper (DCP) and the DDR&E Study of Very High Resolution (VHR) Imagery

The MOL DCP (Tab A) was transmitted to you on December 5, 1968, for signature. Supporting this DCP is an ODDR&E study entitled, "The Need for Very High Resolution Imagery and Its Contribution to DoD Operations and Decisions". At Tab B are our detailed comments on this study which I promised you in my letter of January 7, 1969.

The MOL DCP concludes that the need for VHR imagery is great enough and urgent enough to spend more than $1.5 billion on MOL in FY 69 through FY 71. I do not believe available evidence and analysis support this conclusion.

The Value of VHR Imagery

The MOL DCP and the ODDR&E study argue that VHR imagery will be valuable in two general ways. First, such imagery might improve our estimates of the capabilities of Soviet and Chinese forces, permitting us to plan less conservative, and therefore less expensive, forces. Second, VHR imagery might provide enough detail about the military characteristics of Soviet and Chinese weapons to permit better design of our weapons, either to reduce their vulnerabilities or to enhance other aspects of their effectiveness.

The most important example of the first argument is that if the Soviets were to deploy an extensive anti-ballistic missile system (ABM) which could be penetrated by means less costly than exhaustion of the ABM interceptors, VHR imagery might reveal these defects. We could then deploy a smaller offensive force than would otherwise be needed, saving the cost of weapons required to exhaust the ABM interceptors. This argument has several serious weaknesses.

First, if such forces were deployed by the two sides, the situation resulting would likely be unstable and possibly very dangerous. The Soviets might not recognize that their ABM is vulnerable. In other words they might not be deterred. This could lead to Soviet attempts to

exploit what they perceive to be some sort of superiority. Obviously such a course of events is highly undesirable. Alternatively, the Soviets might accept the fact that our penetration tactics will work and proceed to correct the vulnerabilities in their ABM. This eventuality could lead to larger U.S. forces to exhaust the improved ABM or to an interaction between the opposing forces involving cycles of improved U.S. penetration tactics and Soviet counteractions to these. Second, even if the difficulties just described did not exist, significant savings could be realized through smaller offensive deployments only if a number of conditions are met. First, a very large ABM deployment is necessary for the cost savings to be realized, since programmed U.S. offensive forces can tolerate much larger ABM forces than projected in NIPP-69. Second, the ABM must, in fact, be vulnerable to penetration tactics other than exhaustion. In short, the ABM system must be both extensive and defective. Third, we must discover the ABM vulnerabilities at least one lead time before additional offensive forces would otherwise be needed. Fourth, the ABM vulnerabilities must be such that the time between our discovery of a program to correct the vulnerabilities and their correction is longer than the time required for us to deploy enough additional payload to exhaust the ABM, or to develop new penetration tactics. Fifth, estimates of the ABM vulnerabilities and the time to correct such ABM defects must be made with very high confidence since a faulty estimate could lead to compromise or loss of our Assured Destruction capabilities. There is little reason to believe that any of these conditions are likely to be met. Certainly the DCP and the ODDR&E study do not make convincing arguments on these points.

The second way VHR imagery might be valuable is exemplified by arguments on air defenses and armored vehicles.

Air Defense

The ODDR&E study argues, for example, that VHR imagery would have allowed earlier improved estimates of FOXBAT characteristics such as maximum speed and range. The difficulty here is that our penetration capabilities are not very sensitive to such characteristics over rather wide ranges. On the other hand, our penetration probabilities are strongly influenced by Soviet air defense capabilities at low altitude. These are, in turn, determined mainly by internal electronic characteristics of Soviet airborne radars. Overhead VHR imagery will have little or no capability against such radars.

Armored Vehicles

The ODDR&E study argues essentially that our armored vehicle design is sensitive, for example, to the largest gun on Soviet tanks. VHR imagery would permit a better estimate of the caliber of these guns.

This is no doubt true; however, our armored vehicles are vulnerable to many other weapons such as rocket launchers and recoilless rifles, many of which are very unlikely to be photographed by overhead VHR. Further, Soviet general purpose weapons are not threats to us until they are deployed in large numbers, an inherently very slow process (for instance, they replace less than 10% of their tank inventory per year). This gives us time to gather needed information from direct observation, COMINT and other sources for any response that might be required. In short, VHR imagery in this case would give us only fragmentary information earlier than it is really needed for an effective U.S. response.

The Urgency of VHR Imagery

VHR imagery is not required to determine such things of immediate importance as numbers of Soviet strategic offensive and defensive weapons and numbers of Soviet, Bloc, and Chinese general purpose forces units, where these are deployed, and the equipment they possess. Rather, VHR imagery can contribute to more refined estimates of some of the performance parameters of weapons, both before and after their deployment. The resulting estimates even with VHR imagery will be of modest confidence because of a large number of factors. We have not found examples of such estimates to which VHR can contribute, which have a strong influence on major resource allocation decisions.

We have some relatively urgent intelligence needs for general purpose forces, for example, intelligence on Soviet and Bloc force dispositions in real time during crises, but VHR imagery will not contribute much to these. In short, a case has not been made that the need for VHR imagery is urgent. On the contrary, there are good reasons to believe that it is not.

On balance, I believe that VHR imagery may provide some useful information we cannot now obtain and that it will be a worthwhile if marginal addition to our collection program. However, I do not believe large savings will result from VHR imagery, nor do I believe such imagery will make major changes in the confidence with which we estimate Soviet and Chinese threats. I do not believe that our need for VHR imagery is great enough or urgent enough to warrant the high costs of MOL.

Alternatives to MOL

ODDR&E has indicated that they have not found alternative ways to obtain VHR imagery that are cheaper than MOL (about $1.8 billion dollars still to be spent) even if more time were used for development of such alternatives. ODDR&E is still studying such alternatives, however. If unmanned cheaper alternatives are not available, I believe serious consideration should be given to terminating the MOL program and substituting for it a program which would:

1. Exploit an existing system such as GAMBIT-3 or HEXAGON to obtain photography of resolution between that of GAMBIT-3 and MOL.

2. Do advanced development of the optical and other systems for an unmanned VHR satellite to be operational at some time in the future when technology might permit a substantially less costly system than MOL.

Recommendations

I would like you to:

1. Withdraw your endorsement of the MOL DCP.

2. Direct the preparation of a revised MOL DCP which would present the MOL option and either (a) unmanned alternatives to MOL; or (b) a program to exploit existing systems coupled with advanced development of the critical components of a VHR satellite. This revision should be completed in time to support FY 70 apportionment.

3. Direct the Air Force to limit commitments on MOL to the minimum required to maintain the current program pending completion of the revised MOL DCP.

At Tab C are letters to the Director, Defense Research and Engineering, and to the Secretary of the Air Force to effect these recommendations.

Melvin Laird

Enclosures

COMMENTS ON THE STUDY
"THE NEED FOR VERY HIGH RESOLUTION (VHR) IMAGERY
AND ITS CONTRIBUTION TO DOD OPERATIONS AND DECISIONS"
AND THE
MANNED ORBITING LABORATORY (MOL) DEVELOPMENT CONCEPT PAPER (DCP)

VHR imagery, if provided by DORIAN, is very expensive: DORIAN start-up costs are estimated to be about $3.0 billion, of which about $1.2 billion is already spent. Additional launches will cost more than $100 million each. Because of these high costs, we need to be convinced that VHR imagery will be of a high value, that the need is urgent, and that DORIAN is the best way to obtain such imagery.

Conclusions

The VHR imagery study argues that photography of about [redacted] resolution will reveal many things that photography of about [redacted] resolution will not. The study is persuasive on this point; however, it does not make a convincing argument that these things will result in significant savings or effectiveness gains in our strategic and general purpose forces.

The analysis of strategic forces is inadequate and is not consistent with the way these forces are designed. The analysis of tactical forces does not show that VHR photography would change the way we design these forces, nor does it show that such imagery would have in the past contributed to avoiding situations that were either very costly to us or that materially reduced the capabilities of our forces.

Serious consideration should be given to an option which develops the VHR optical and image motion compensation systems on a schedule designed to achieve a high degree of economy in their development. This development is not urgent enough to justify the present levels of expenditures on DORIAN.

Value of VHR Imagery in Strategic Force Decisions and Operations

Our strategic forces are sized to meet Assured Destruction (AD) criteria. These criteria require that under very pessimistic assumptions (or estimates) about Soviet forces and tactics we can with high confidence kill 20% to 25% of the Soviet population after a surprise first strike on our strategic offensive forces by the Soviets. The Soviet forces which influence these calculations are ballistic missiles (sea-based and land-based), ASW, air defenses, and anti-ballistic missile defenses (ABM).

VHR Imagery and Assured Destruction

Soviet Anti-Ballistic Missile Defenses. The analysis of VHR photography in support of strategic force decisions is one of the weakest parts of the VHR study and is also the most crucial argument in support of rapid development of VHR capability. This study says on pp 44-45, Volume I, and pp 86-109, Volume II, that the U.S. might deploy strategic offenses for AD which would be substantially inadequate to exhaust Soviet ABMs with warheads only. In making this point, the study fails to account for likely consequences of such a strategic balance. Also, the study does not make clear all the conditions that would have to be met to make this a permissible course of action, even if the consequences were otherwise acceptable.

Deterrence and Strategic Deployments

Our deterrent forces are designed primarily to convince the Soviets that we have the capability to destroy their society after a surprise first strike on U.S. forces. Our forces must be unmistakably capable of so destroying the USSR. For the Soviets to be so convinced about a U.S. offensive force, substantially incapable of exhausting a large Soviet ABM, they must accept an estimate that their ABM will not serve its intended purpose (or alternatively, that our penetration tactics will work). This would entail the exposure of our penetration tactics and consequently the vulnerability of the Soviet ABM. Such a balance between U.S. and Soviet forces would seem to be highly unstable. There are only about three ways such a situation could proceed:

1. The Soviets might believe their ABM works. This could lead to Soviet attempts to exploit their perceived strategic advantage. Such actions could lead to very dangerous crises.

2. The Soviets could accept the faults of their ABM, but set about fixing them; in this event, we would have to respond by deploying more payload or developing other penetration tactics.

3. The Soviets could accept the faults of their ABM and do nothing or phase out the ABM. This appears to be the assumption of the VHR study.

Even if the U.S. could discount the foregoing argument, all of the following conditions must be satisfied for us to realize real savings as suggested in the VHR study.

1. Very large Soviet ABM deployments must be projected in our intelligence estimates. We are already committed to deploying POSEIDON and MINUTEMAN III. These, with other programmed missiles and bomber forces provide the capabilities shown in Table I.

Table I
Capabilities of U.S. Programmed Forces for Penetration of High NIPP-69 Soviet ABM Defenses[a/]

	FY72	FY73	FY74	FY75	FY76	FY77
Missile Warheads						
Reliable, Surviving, Penetrating Area Defenses	1904	2668	2752	2729	2608	2596
Reliable, Surviving, Penetrating Terminal Defenses	1876	2641	2723	2686	2570	2533
Area Aim Points						
Reliable, Surviving, Penetrating Area Defenses	2631	2681	6524	6226	5834	5748
Terminal Aim Points						
Reliable, Surviving, Penetrating Terminal Defenses	2020	2771	2828	3030	3169	3289
U.S. Assured Destruction Capabilities						
Percent Soviet Fatalities						
Without Penetration Aids	45	45	44	43	42	40
With Penetration Aids	45	45	45	44	44	43
Reliable Effective Soviet ABMs (NIPP-69)						
Area Interceptors	0	100	280	550	820	950
Terminal Interceptors	64	64	64	124	184	364

a/ Strategic Force and Effectiveness Tables, January 1969.

This table shows that very large increases can be tolerated in projected Soviet forces, especially their ABMs, before major new outlays on U.S. strategic offensive forces would be required. Further, the most recent changes in projections of Soviet ABMs have been downward by about one-half.

2. The Soviet ABM must, in fact, have defects which will permit it to be penetrated using tactics other than exhaustion (direct penetration). Even if VHR imagery would permit a high-confidence analysis of Soviet ABM, the ABM must have features which will permit high confidence penetration using direct penetration tactics. There clearly is some probability that this will not be so. In this case, VHR imagery would not permit lesser U.S. offensive forces.

3. The high confidence estimate of Soviet ABM characteristics must be obtained at least one U.S. strategic force deployment lead time before such U.S. forces would be required; otherwise the information will be too late to avoid many of the costs of such U.S. offensive forces. The lead time to make significant changes in our strategic offensive force posture

is at least three years, and probably closer to five. It could even be longer if an entire new system must be developed. For example, MINUTEMAN development began in earnest about July, 1958. Three hundred MINUTEMAN missiles were not deployed until about the Fall of 1963, five years later; hence, we must be able to predict three to five years in the future that a Soviet ABM will be such that we can penetrate it without interceptor exhaustion. Otherwise we cannot avoid committing to larger offensive forces.

4. The time between U.S. discovery of a program to correct the Soviet ABM defects which permit direct U.S. penetration and their correction must be longer than the lead time for the U.S. to deploy enough payload to exhaust the ABM. Consider the situation in which the Soviets deploy a very large ABM--say 6,000 interceptors. If the defect in the ABM is in the radars, say, the Soviets might be able to correct the defect quickly, creating an ABM that must be exhausted. If we have failed to deploy enough payload to exhaust the Soviet ABM, our Assured Destruction (AD) capabilities could be compromised for an extended period.

5. Finally, our confidence in our estimate that a Soviet ABM is vulnerable to direct penetration must be very, very high. At present our most important national defense objective is to deter nuclear war. We believe that to do this we must maintain an Assured Destruction capability--the capability under extremely pessimistic estimates of Soviet forces and tactics to kill 20% to 25% of the Soviet people after a surprise Soviet first strike. Though no one has assigned an acceptable probability to the event "we lose our AD capabilities", there is general agreement that this probability must be kept vanishingly low. This probability can be thought of as our lack of confidence that we have been sufficiently pessimistic about the many uncertainties that enter the AD calculations. Our estimate of Soviet ABM performance is only one of these; hence, our confidence in this estimate must be even higher than our confidence that we will not lose our AD capability.

The VHR study fails to make convincing arguments that any of these conditions will be met.

At present there is little evidence that the Soviets are now or will in the next few years embark upon a major ABM deployment. The Moscow system deployment has been cut back substantially; there is as yet no evidence of a terminal defense system development; there are some indications of the initiation of a new test program for a modified Moscow ABM. This new program is consistent with NIPP-69 which has reduced estimates of Soviet ABM deployments as noted earlier.

Not much can be said about the probability a Soviet ABM will have serious defects. If NIKE-X were to be deployed, it is unlikely that it could be penetrated without exhaustion. Soviet ABM technology appears to

be behind ours and they appear to have been sensitive to shortcomings in their ABMs in the past. Such sensitivity might explain the sporadic nature of Soviet ABM deployments since the early 1960s. One can only speculate, but reasonable estimates would seem to be: (1) that Soviet technology will permit a NIKE-X like system in the 1970-1980 period, and (2) because of the great expense of a large ABM deployment and apparent past Soviet sensitivity to their ABM technical shortcomings, it is not likely that a large Soviet ABM would contain serious flaws.

The question of timing raised in paragraphs 3 and 4, above, are not discussed beyond estimates of the increase in lead time VHR would give. Cases are not made that either of these two conditions will be satisfied.

Finally, the issue of confidence in the estimates of ABM performance is raised in the study; however, the confidences used in the study are vague in their meaning, they have been determined subjectively, i.e., someone has guessed them and they are rather low in an AD context, e.g., 50% to 90% on individual ABM performance parameters (several of which might be needed to estimate that an ABM is vulnerable to direct penetration). In short, the study fails to make a case that any combination of intelligence systems will provide estimates of high enough confidence to permit founding our AD capabilities on direct penetration.

In sum, the arguments made in the VHR study that large savings might result from VHR imagery are highly speculative, would require, literally, a change in national policy, and at best are based on situations which have a very low probability of occurrence.

Soviet Ballistic Missiles. We need to know the number of independent ballistic missile reentry vehicles that can be delivered, their reliability, delivery accuracy, and yield. Of these, by far the most important are numbers and accuracy. Since Sentinel presents a negligible defense to the Soviets, if the Soviets take even simple steps to exhaust it, Soviet penetration capabilities beyond use of chaff are now of little importance. Soviet silo hardness does not even enter our estimates of our AD capabilities. We cannot, therefore, agree with the statement on Page 48 of Volume I of the report that states that accuracy, penetration capability, and silo hardness are the most important features of Soviet missiles which influence U.S. (strategic) programs and that numbers, reliability, and payload are of secondary importance.

VHR imagery can be expected to make little or no additional contribution to determining either numbers or accuracy of Soviet ballistic missiles. It is conceiveable that such imagery could help determine the payload (through better measurements) and hence the yield of a missile such as the SS-13; but because our ICBM vulnerability is not very sensitive to yield, the value of every refined yield information is low.

Soviet Area Air Defenses. The effectiveness of Soviet air defenses, given known Soviet aircraft, are almost completely determined by the capabilities of Soviet airborne warning and control (AWACs) aircraft, interceptors, and air-to-air missiles to find and shoot at low altitude targets. Because these capabilities depend almost entirely on Soviet airborne radar design features aimed at dealing with ground clutter, especially in the radar signals and in the radar receivers, it is very unlikely that photography of any resolution can contribute much to reducing the uncertainties about these capabilities.

Soviet terminal air defense capabilities are determined by surface-to-air missile (SAM) system low altitude capabilities, basically an electronic capability, SAM fire power and SAM reaction time, both electronic and data handling capabilities. None of these are very susceptible to analysis by VHR imagery.

With the recent decision to include subsonic cruise armed decoys (SCADs) in our bomber forces, our sensitivity will be low even to very good Soviet area defenses, e.g., several hundred FOXBATs with shoot-down missiles and AWACs.

Soviet Anti-Submarine Warfare (ASW). The problems the Soviet have with ASW against our SSBNs are exceedingly difficult. Our SSBNs are unlikely to be seriously threatened by any foreseeable Soviet ASW options. The kinds of things we might see with VHR imagery such as deck mounted ASW weapons, sonar domes, and antennas are not the critical elements in a system with capabilities against our SSBNs. The fundamental problems of detecting and tracking these submarines are not likely to be solved with equipment subject to VHR imagery. The VHR study does not identify the critical problems the Soviets must solve to have effective ASW against our SSBNs. It does not make a case that VHR can contribute much in this area.

In summary, the analysis of the VHR imagery contribution to U.S. strategic offensive force structure decisions is naive and misleading. There is very little likelihood that any intelligence collector like DORIAN, or any realistic combination of collectors, will ever be good enough to give us the confidence required to base our AD capability on an offensive force substantially inadequate to exhaust a Soviet ABM. Further, the report has identified the wrong features of Soviet systems as the important ones. It has also ignored the substantial hedges already built into U.S. forces against greater-than-expected Soviet ABM. For example, we could add 4 MK 3 RVs to each of the 496 programmed POSEIDON and about 300 MK 12s to the MINUTEMAN force for little more than just the cost of the warheads. These would yield between about 1,000 and 1,500 more surviving reliable RVs, depending on MINUTEMAN survivability. About another 1,000 reliable MK 12s could be added to the MINUTEMAN force by converting all to MINUTEMAN IIIs. If MINUTEMAN III survivability were only .5, these steps would add 1,800 surviving reliable RVs. These steps would cost nowhere near the $5.0 million per warhead suggested in the VHR study.

VHR Imagery and Damage Limiting

We do not buy substantial increments to our strategic forces for Damage Limiting (DL); however, because we expect to over-design our forces using the AD criteria, we spend modest sums to enhance the DL capabilities of our forces so that those excess to our AD needs can be used to limit damage if deterrence fails.

The primary DL contributions suggested by the report for DORIAN are improving our estimates of Soviet ICBM silo hardness and determining more about Soviet capabilities to penetrate our anti-Soviet ABM (which we have not yet decided to buy).

It is undoubtedly true that VHR imagery could improve our estimates of ICBM silo lid thickness. Unfortunately, the lid is unlikely to determine silo hardness. As is pointed out in the study, and as our experience with MINUTEMAN indicates, other factors dominate. Even with complete drawings, exhaustive soil tests, and, finally, full scale high explosive tests, we were and are unsure of the true hardness, especially the upper limit, of the MINUTEMAN facilities. In any case, this part of the report is somewhat irrelevant because even at the lower hardness level (200 psi), and at projected U.S. CEPs of about 1,500 feet, we are very, very unlikely to buy the 2,000 or so 1 megaton weapons, with their delivery systems, required to get a .9 damage expectancy on Soviet silos. If we were to find out their silos are 1,000 psi, we certainly would not buy the 5,000 or so required for a .9 damage expectancy. If we were to discover the silos to be essentially soft (100 psi or less), we probably will find enough payload already deployed in our programmed forces to achieve a reasonable damage expectancy. In short, we do not now size our forces to achieve given damage levels on Soviet counterforce targets. We are unlikely to do so in the future. Soviet silo hardness is of interest, but does not drive either our force requirements or the way we might use these forces.

The study also argued that DORIAN might get VHR pictures of Soviet reentry systems. This seems highly unlikely. Advanced re-entry systems of the type we are developing and testing just aren't exposed to overhead photography; MIRVs, decoys, chaff, etc., are nearly always, as a minimum, under wind shields when the boosters are on the test pads. Even if such photographs were obtained, they would tell us very little about penetration capabilities. If we were to deploy a heavy ABM against the Soviets, we would still need collectors like Sentinel Foam to acquire necessary reentry data. DORIAN would add very little to our knowledge in this case.

In sum, VHR photography is unlikely to make a major additional contribution to U.S. DL capabilities. Even if it could provide these data, DORIAN should not be bought for DL purposes unless the U.S. decides to invest heavily in DL forces.

VHR Imagery and War Planning

As is pointed out, the VHR study, Volume I, page 45, knowledge of our ability to penetrate directly a Soviet ABM might be used in our war plans to limit damage to our cities in the event of war. Attached to these comments is a paper prepared for another purpose which bears on the value of knowledge about the performance of Soviet ABM in war planning. This paper suggests that at reasonable levels of Soviet ABM deployment and for reasonable upper uncertainty limits on the performance of Soviet ABM, relatively few lives can be saved by modifying our war plan if it is discovered that a Soviet ABM is in fact totally ineffective.

The paper also emphasizes that war plans are unlikely to be based on estimates of inferior Soviet ABM performance unless they are very high confidence estimates. This results from the fact that if a target is attacked assuming poor ABM performance, and this assumption is wrong, defended Soviet cities are likely to escape damage completely. If the ABM performance is over-estimated, some weapons are spent inefficiently, but the target will be destroyed. With this payoff structure, only high confidence estimates are likely to be used. The VHR study suggests that even with resolution of [redacted] our confidence in estimates of ABM parameters will not exceed a subjective estimate of about 90%. This suggests that we will never be sure enough that the ABM can be penetrated by other than exhaustion tactics to change our war plans (just as we will never intentionally fail to deploy enough payload to exhaust an ABM). The report fails to consider both the low payoffs of such a change and the low probability that we will ever have enough confidence to make the change in any case. The foregoing arguments are further bolstered by the observation that the most likely Soviet ABM deployment over the next several years will be even less than the smaller of those used in the attached study. In this event, the value of VHR imagery in war planning would surely be negligible.

Value of VHR Photography to Tactical Forces Decisions

The thrust of the study's arguments on tactical forces seems to be that the design of our general purpose forces weapon systems are very threat-sensitive and that early acquisition of very specific information on the strengths and vulnerabilities of Soviet and Chinese weapons would be a distinct advantage. We do not agree.

First, our tanks and personnel carriers, etc., are being designed for relatively long lives. MBT-70, for example, is meant to be an effective first line tank for at least 5 to 10 years. The threat we are designing this tank for must be a conservative postulation of things the Soviets' technology will likely permit over the 1970-1980 period in all relevant fields, e.g., anti-tank weapons as well as tanks. If VHR imagery were to reveal lesser threats, we would not reduce the design requirements on the

MBT-70. On the other hand, it is very unlikely that we would see advances exceeding our conservative postulation since: (1) many of the weapons simply would not be available to overhead photography of any resolution, and (3) because our postulations are very conservative, it is, by definition, unlikely that we would discover more serious threats.

Second, the capabilities of Soviet general purpose forces change slowly because it simply takes a long time to modernize these forces, since such modernization may require literally thousands of new weapons. A large change in the balance of our general purpose forces and the Soviets' is very unlikely to come about because of Soviet technical innovations. We will gain much information on such changes from COMINT, direct observation, and other sources in time to respond if a response is needed. What is far more likely is a sudden relocation of major forces to achieve local superiority or a crash program to produce a very large number of proven weapons. Neither of these is uniquely vulnerable to detection and analysis by VHR photography.

In short, the study does not show that VHR photography is likely to make significant difference in either the technical characteristics of our general purpose forces or in the sizes of these forces. It does not evaluate alternative ways of dealing with the things VHR might detect. It also does not follow the arguments through that high priority efforts to get high resolution photography should result in similar efforts to respond to such photography--possibly because we have not in the recent past engaged in any major high priority programs to change the general purpose force weapons in response to surprises discovered by means other than VHR imagery.