Director of
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# Soviet Potential To Respond to US Strategic Force Improvements, and Foreign Reactions

Special National Intelligence Estimate

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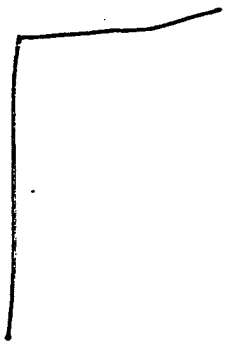

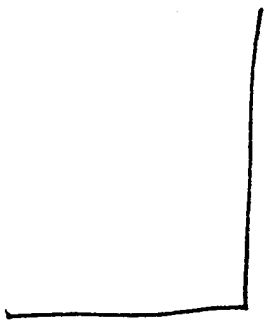

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THE NATIONAL FOREIGN INTELLIGENCE BOARD CONCURS, EXCEPT AS NOTED IN THE TEXT.

*The following intelligence organizations participated in the preparation of the Estimate:*

The Central Intelligence Agency, the Defense Intelligence Agency, the National Security Agency, and the intelligence organization of the Department of State.

*Also Participating:*

The Assistant Chief of Staff for Intelligence, Department of the Army

The Director of Naval Intelligence, Department of the Navy

The Assistant Chief of Staff, Intelligence, Department of the Air Force

The Director of Intelligence, Headquarters, Marine Corps

SNIE 11-4/2-81

# SOVIET POTENTIAL TO RESPOND TO US STRATEGIC FORCE IMPROVEMENTS, AND FOREIGN REACTIONS

Information available as of 1 October 1981 was used in the preparation of this Estimate.

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## SCOPE NOTE

This Estimate projects foreign reactions to modernization of US strategic nuclear offensive forces. We have also estimated possible programmatic, technical, and operational changes the Soviets might make in their forces and have analyzed how US strategic force improvements would affect their capabilities to perform some of the strategic missions called for by Soviet strategy.[1] The Estimate does not assess how the Soviets would perceive the effect of US strategic force improvements on US war-fighting capabilities—on military manpower, mobilization capability, and ability of the United States to fight a long war. Furthermore, it should be noted that this Estimate assumes the absence of arms control constraints on strategic force developments after mid-1982 or early 1983.

Our assumptions about US force improvements may not accord exactly with final US planning, but the force mix and system characteristics described below and the dates given for initial operational capability (IOC) are sufficiently representative of the US options under consideration to permit us to forecast the nature of foreign political and Soviet military responses:

| Systems | IOC |
|---|---|
| ICBMs—Deployment options: | |
| a. Retain Minuteman; 100 to 200 MXs in new, long-endurance aircraft | early 1990s |
| b. Retain Minuteman; 100 to 200 new ICBMs in superhard silos | |
| MX | mid-1980s |
| Common missile (assumed to be the D-5) | late 1980s |
| c. Retain Minuteman; | |
| 200 MXs in 4,600 shelters *or* | mid-1980s |
| 100 MXs in 1,000 shelters | mid-1980s |
| d. Upgrade Minuteman III; 100 common missiles (assumed to be D-5) in superhard silos | mid-1980s<br>late 1980s |

[1] *For an alternative view of the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of the military services regarding the inclusion of net assessment analyses in national intelligence estimates, see paragraph 14.*

| Systems | IOC |
|---|---|
| Antiballistic Missiles—Deploy ABMs to defend ICBMs in silos or shelters | late 1980s |
| SLBMs—Deploy D-5s on Trident submarines | late 1980s |
| Bombers—Deploy: | |
| 100 or more B-1 bombers | mid-1980s |
| Advanced strategic bombers | late 1980s/ early 1990s |
| Cruise Missiles—Deploy more long-range strategic cruise missiles than currently programed on: | |
| Aircraft | early 1980s |
| Submarines | before 1985 |
| Surface ships | before 1985 |
| Land-mobile launchers | mid-1980s |

# KEY JUDGMENTS

Recent trends in most of the measures of strategic nuclear power have favored the Soviets and have improved their capabilities to carry out the strategic missions envisioned by their strategy. A continuation of these trends would give the Soviets greater confidence in the war-fighting potential of their forces. Nevertheless, they would still be unable to prevent massive damage to the USSR from a large-scale US retaliatory nuclear attack. Modernization of US strategic forces will further increase the Soviets' uncertainties about their ability to carry out some of the missions of their strategic forces.

## Soviet Potential for Strategic Force Improvement

The Soviets have anticipated new US strategic systems for more than a decade, and have almost certainly considered them in their current programs for improving all elements of their strategic forces. Consequently, any reaction to US strategic force improvements that would affect Soviet forces during the 1980s probably would involve adjustments rather than major changes in existing programs. They have at least 70 strategic and space systems under development, and some 40 military design bureaus with the capacity to develop about 200 systems in a 10-year period.

The Soviets also have a growing number of military technologies to draw upon—in guidance and navigation, microelectronics, computers, signal processing, and space technologies. New weapons and command and control and surveillance systems that could be deployed in the late 1980s and 1990s would improve Soviet capabilities for attacking mobile land, sea, and airborne weapon carriers, and could overcome some weaknesses in Soviet low-altitude air defenses, ballistic missile defenses, and defenses against submarines.

## Implications for Soviet Capabilities

Primary Soviet concerns about any US strategic force improvements will be the extent to which they could impede or prevent the forces of the USSR from performing their missions during the intercontinental phase of a nuclear war.

*To Launch Counterforce Strikes:*

— Soviet forces would retain the potential, through technical improvements in their ICBMs, to destroy most US missiles in silos and shelters under any of the assumed US deployment options, although the Soviets would not be confident of achieving this result. The number of weapons they would require to attack US ICBMs would vary greatly depending on the US basing option assumed. By deployment of more MIRVs on their ICBMs the Soviets could keep pace with US construction of shelters for the MX.[2]

— ABM defenses of US ICBMs would increase Soviet uncertainties about the success of a counterforce attack, but could be overcome by Soviet deployment of more ICBM weapons or maneuvering reentry vehicles.

— Destroying ICBMs on long-endurance aircraft would present major difficulties for the Soviets, but appears technically feasible in the 1990s.

— Neutralizing ballistic missile submarines on patrol will remain beyond Soviet capabilities for the foreseeable future.

— The great difficulty of destroying new US bombers and cruise missiles in flight would give the Soviets more incentive to attack US strategic aircraft on the ground. However, they could not optimize a counterforce attack by SLBMs against US bomber bases and by ICBMs against US missile silos, because of the difference in flight times of Soviet ICBMs and SLBMs.

In sum, the deployment of ICBMs will complicate and make less likely a Soviet attempt to eliminate US strategic forces in a counterforce first strike. It is the combined effect of US deployment of ICBMs, SLBMs, bombers, and cruise missiles that makes Soviet prospects for a successful attack very unpromising.

*To Survive a Large-Scale Nuclear Attack:* Any of the assumed US ICBM deployment options will have improved capabilities against Soviet silo-based ICBMs. We believe that the Soviets have anticipated this threat and, to improve the survivability of their offensive forces, they have programs that would enable them to:

— Further harden their silo-based ICBM launchers. This is unlikely to be the sole measure they would take.

[2] *For an alternative view of the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of the military services regarding the inclusion of net assessment analyses in national intelligence estimates, see paragraph 14.*

— Deploy land-mobile ICBMs in the mid-to-late 1980s.

— Deploy new aerodynamic systems—strategic aircraft and cruise missiles.

— Increase deployment of SLBMs.

— Deploy ABMs for defense of their ICBM complexes by the late 1980s.

— Improve their capabilities to launch a substantial portion of their ICBM force on tactical warning.

*To Substantially Limit Damage to the USSR:* Soviet air defenses will face a qualitatively different threat, increasing in size and expanding in potential attack routes as US modernization proceeds with deployment of ALCMs, GLCMs, SLCMs, and the B-1 bomber.

— 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 10 years and possibly in the 1990s.

### Economic Implications

The Soviets already have under way costly research, development, and deployment programs for strategic systems. Even if the Soviets accelerated these programs during the 1980s, the impact on their overall military spending would probably be muted because the USSR's defense effort is so large. Operating and investment costs for strategic forces account for only about one-fifth of total Soviet military expenditures. Moreover, the short-term impact on the economy would probably not be significant, since resources for strategic programs are, for the most part, highly specialized and not readily transferable to areas of the USSR's most serious economic weaknesses.

### Arms Control Implications

Most US strategic force improvements were probably anticipated by the Soviets at the time the SALT II Treaty was signed. They may not have expected deployment of ICBMs in long-endurance aircraft or the

prospect of US programs requiring revision or abrogation of the ABM Treaty. The Soviets would regard the US strategic force improvements as requiring some adjustments in their forces but they would note that the US programs would not necessarily contravene the fundamental provisions of SALT II and the Interim Agreement. As we concluded in previous estimates, the Soviets will seek to slow or halt US and NATO force modernization through a combination of threats, inducements, and arms negotiations, while trying to maximize prospects for a continuation of strategic trends favorable to them. The new US strategic programs could give the Soviets more incentive to achieve an arms limitation agreement.

### Foreign Perceptions

US strategic programs to modernize bomber and missile forces along the lines we have assumed will:

- Enhance world perceptions of American power and determination to thwart aggressive Soviet ambitions, but produce concern about successive new rounds of weapons development by the USSR and the United States.
- Cause Soviet leaders to view the United States as a more determined adversary.
- Be welcomed by most West European leaders as indicating US resolve to meet the Soviet challenge. The Europeans will want assurances, however, of continued US commitment to European security and of US willingness to negotiate strategic arms limitation agreements. There is an alternative view that, while some segments of West European opinion may consider that US strategic force improvements should be accompanied by simultaneous strategic arms control efforts, most US Allies will welcome improvements in US land-based strategic forces as reinforcing the US nuclear guarantee to NATO Europe and as a US effort not to divorce nuclear force improvements in the United States from those in Europe. Additionally, the holders of this view note that most European leaders are primarily concerned with TNF and related negotiations, not SALT.[3]

These reactions are generally independent of the specific deployment options chosen by the United States. However, both the West Europeans and the Chinese would be sensitive to US policy changes that would undermine their strategic nuclear capabilities against the USSR, especially a revision or abrogation of the ABM Treaty.

[3] *The holders of this view are the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of the military services.*

# DISCUSSION

## I. SOVIET POTENTIAL TO RESPOND TO NEW US PROGRAMS

1. The Soviets evaluate US strategic force improvements as part of the larger question of how the overall US defense posture and force developments will affect the USSR's potential to carry out its global foreign policy objectives. In this context, modernization of US strategic forces will increase the Soviets' uncertainties about their ability to carry out some of the missions of strategic forces called for by their strategy. However, the US strategic force improvements will be subject to countermeasures and, for the most part, will not be surprising to the Soviets. Any reaction by the Soviets affecting their forces during the 1980s probably would involve adjustments rather than major changes in existing programs. For the longer term, we believe the Soviets have the technological potential to develop new systems that would give them greater confidence in carrying out the missions of their strategic forces.

2. Most of the US strategic force improvements were probably anticipated by the Soviets at the time the SALT II Treaty was signed. Potential US programs that may not have figured prominently in Soviet defense planning include ABM deployments requiring revision or abrogation of the ABM Treaty, deployment of additional silo launchers for ICBMs, and deployment of the MX ICBM in a long-endurance aircraft. Potential US programs which the Soviets should have anticipated include deployment of the MX ICBM and the D-5 SLBM, modernization of the US bomber force, and deployment of more long-range cruise missiles on fixed and mobile platforms.

### Objectives

3. Whatever the nature of US strategic force improvements, their primary concern will be the extent to which US force modernization could interfere with or prevent the USSR from carrying out strategic missions during the intercontinental phase of a nuclear war. We therefore conclude that, regardless of the changes in US programs, the Soviets will continue their efforts to acquire and maintain strategic forces that would have the capability to:

- Launch crippling counterforce strikes.
- Survive large-scale nuclear attack.
- Be employed flexibly against a wide range of targets.
- Substantially limit damage to the USSR.

4. The Soviets have made considerable progress toward achieving these capabilities, but recognize that the current US-Soviet strategic relationship remains one of mutual vulnerability. They would prefer a situation in which US nuclear potential could be neutralized by Soviet possession of capabilities to fight and "win" a nuclear war with the United States. At a minimum, they probably expect to maintain strategic nuclear capabilities that would permit them vigorously to pursue their foreign policy objectives by other means without risk of a US nuclear response.

### Present Deployment and Development Programs

5. The Soviets have already achieved strategic nuclear capabilities that are widely perceived to be at least equal to those of the United States. Over the past 10 years the estimated cumulative dollar costs of Soviet forces for intercontinental attack (less research, development, test, and evaluation) exceeded comparable US outlays by 85 percent. Dollar costs of Soviet strategic defense over the same period were 10 times comparable US outlays.[4] They have deployment and research and development programs to improve all

[4] Soviet dollar costs represent what it would cost, using prevailing US prices and wages, to produce and operate Soviet strategic forces in the United States. All costs are measured in outlay terms and in constant 1980 dollars. Research, development, test, and evaluation costs are excluded. Dollar costs do not measure actual Soviet defense spending, the impact of defense on the economy, or the Soviet perception of defense activities. These issues are more appropriately analyzed with ruble expenditure estimates. Dollar costs are used to compare the magnitude of US and Soviet defense activities.

elements of their strategic forces. We estimate that the some 40 Soviet military design bureaus have the capacity to develop well over 200 new or modernized military and space systems during a 10-year period. Of about 150 development programs on which we have evidence, some 40 are space systems and about 30 are for strategic weapons and other supporting systems. Additionally, the Soviets have several laser development programs under way. Figure 1 depicts the development schedules for selected new or modernized systems, some of which are almost certainly applicable to possible US force improvements.

6. In addition to conveying the magnitude of Soviet research and development programs, figure 1 shows the long leadtimes between the design decision and deployment of weapon systems. However, most of the new systems under consideration by the United States would not begin to enter the operational force until the latter half of the 1980s, giving the Soviets some time to adjust before US systems could be fielded.

## Potential in Key Areas of Technology

7. The Soviets' research efforts have provided them with an increasing number of military technologies on which to draw for new strategic weapons and supporting systems based on innovative applications of current technology or on advanced technologies. The most important technological applications in new systems that could be deployed in the late 1980s or 1990s are in the following areas:

- *Guidance and Navigation:* For improved accuracy of ICBMs, SLBMs, and cruise missiles, evader MaRVs, and long-range antiaircraft homing missiles.
- *Microelectronics and Computers:* For advanced command, control, and communications (particularly for air defense) for ASW, and for computers for MaRVs and terminal homing systems.
- *Signal Processing:* For lookdown/shootdown-capable interceptors, airborne warning and control systems, airborne and spaceborne reconnaissance and attack warning and tracking systems, submarine detection systems, and data fusion systems for global surveillance.
- *Space Technologies:* For space-based weapons and military support systems.

8. Table 1 lists selected Soviet technologies applicable to future systems, the strategic missions to which such systems would contribute, and when the technology applicable to given systems could be available. In sum, the table indicates that there are few technological limitations on Soviet potential to develop systems that would improve the USSR's capability to carry out the missions of its strategic forces. New weapons and command and control and surveillance systems that could be deployed in the late 1980s and 1990s would improve Soviet capabilities for attacking mobile land, sea, and airborne weapon carriers, and could overcome some weaknesses in Soviet low-altitude air defenses, ballistic missile defenses, and defenses against submarines. The Soviets' ability to develop and produce operationally reliable systems based on advanced technologies is another matter. They will probably continue a conservative approach, making incremental improvements in most new or modified systems, avoiding high technological risks. However, if faced with a serious threat or the prospects of making a significant gain over the United States, the USSR would vigorously pursue developments that press the state of the art in advanced technologies.

## Economic Potential

9. Completion by the Soviets of the research, development, and deployment programs on which we have evidence will be costly. If the Soviets increased their efforts in the strategic area during the 1980s as implied by this Estimate, additional spending, if any, would occur mainly after the mid-1980s. Opportunities for near-term production increases could well be limited. By initiating expansion of production capacity at key facilities in the near term, they could begin producing during the late 1980s. The impact of added development and production for projected strategic systems on overall Soviet military spending would probably be muted because operating and investment spending for strategic forces accounts for only about one-fifth of total military expenditures. Moreover, the short-term impact on the economy would probably not be significant, particularly because resources for strategic programs are for the most part highly specialized and not readily transferable to areas of the USSR's most serious economic weaknesses.

## Figure 1
## Selected New and Modernized Soviet Strategic and Support Systems[a]

Projected Systems and Estimated Development Schedules
(Not all systems will necessarily reach deployment.)

1971 | 76 | 81 | 86 | 91

**ICBMs, MR/IRBMs**
- Small Solid ICBM
- New Medium-Size Solid ICBM
- Improved SS-18
- Improved SS-19
- [redacted]
- Experimental MaRV

**SLBMs**
- SS-NX-20
- Improved SS-N-8/18
- Improved SS-NX-20
- 2nd Improved SS-N-8/18

**Aerodynamic Systems**
- Long-Range Cruise Missile–SLCM
- Long-Range Cruise Missile–ALCM
- Long-Range Bomber and/or Wide-Body Cruise Missile Carrier

**Ballistic Missile Defense**
- New ABM System
- New Large Phased-Array Radar (Moscow)
- High-Energy Laser–Ground Based

**Air Defense**
- SA-10 SAM
- SA-X-11 SAM
- SA-X-12 SAM
- Anti-Tactical Ballistic Missile
- Sukhoy Interceptor
- Mikoyan Interceptor
- Modified MIG-25 Interceptor
- Airborne Warning and Control Aircraft
- Aircraft With Laser Weapon[c]
- Short-Range Laser–Ground Based

**Space Systems**
- Improved ICBM Launch Detection
- Improved Photoreconnaissance
- New ELINT Systems–High Altitude
- [redacted]Communications Networks
- ASAT–Improved Orbital Interceptor
- Experimental Satellite Armed With Short-Range Missiles
- Experimental High-Energy Laser–Space Based

[redacted]



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Table 1

Selected Soviet Technologies Applicable to *Future* Strategic Missions

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Table 1

Selected Soviet Technologies Applicable to *Future* Strategic Missions (Continued)

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Table 1

Selected Soviet Technologies Applicable to *Future* Strategic Missions (Continued)

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Table 1

Selected Soviet Technologies Applicable to *Future* Strategic Missions (Continued)

14. There is an alternative view that the display of US forces, the computer simulation of Soviet attacks to destroy US strategic nuclear forces, and the calculation of US capabilities to destroy Soviet strategic nuclear forces comprise a net assessment and should not appear in a national intelligence estimate. Assessment of the effectiveness of planned US developments in the face of potential Soviet force improvements is a function intelligence should not undertake in isolation. The holders of this view believe that such net assessments of forces should be produced as a collaborative effort of the Intelligence Community and the Department of Defense (OSD/JCS), and should be published under the auspices of the Secretary of Defense and the Director of Central Intelligence, with very limited distribution. Such net assessments should include an accounting of substantially more operational factors and uncertainties such as the effect of defensive weapons, connectivity of communications, attack assumptions, force status assumptions, and operational objectives and tactics.[6]

15. Table 2 lists improvements the Soviets could make in their present forces and supporting systems, many of which we have already projected as likely, to counter new US strategic programs.

## Neutralization of US Nuclear Delivery Means

### US ICBMs in Silos and Shelters

16. The Soviets already have weapon programs and deployment options that could make prospective land-based US ICBM forces highly vulnerable if they are to ride out an attack. Our calculations indicate that Soviet forces will retain the potential to destroy most of the land-based US ICBM force under all assumed US deployment options, although the option selected will affect substantially the number of Soviet weapons required for the attack. We do not believe that a Soviet planner would have high confidence in the outcome of such an attack, however, because of operational uncertainties and the prospect that the United States would launch under attack.

17. Our estimates of the Soviets' capability to destroy ICBMs prior to launch are derived from computer simulations of an attack by the most capable Soviet ICBMs against US missiles in silos and shelters. In making our estimates we use:

- Draft baseline force projections—10,000 ICBM RVs in 1991—prepared for NIE 11-3/8-81 (not yet coordinated within the Intelligence Community).[7]
- Best single-value estimates of the characteristics and performance of Soviet ICBMs. Our calculations also account for the uncertainty in our estimates of ICBM accuracy, reliability, and warhead yield.
- Estimates of the weapon effects—overpressure level and duration—required to inflict severe damage on a Minuteman silo.

18. In calculating Soviet capabilities to destroy US ICBMs in silos and shelters we make a number of simplifying assumptions, common to analyses of Soviet counterforce potential. For example, we assume that: (a) Soviet forces are on full alert, (b) they receive the launch order and attack all US ICBMs in a single wave, (c) Soviet weapons detonate at optimum height of burst to maximize target damage, and (d) US ICBMs ride out the Soviet attack. There are also nonquantifiable uncertainties associated with any analysis of Soviet counterforce capabilities. Among them are whether Soviet weapon deployments will proceed as we have projected, and how the Soviets would actually employ their forces under circumstances extant at the time of an attack. Alternative assumptions and attack scenarios would, of course, yield different results.

19. The analyses below are not, therefore, forecasts of how the Soviets would actually employ their forces.

[6] *The holders of this view are the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of the military services.*

[7] Alternative Soviet force projections for this year's NIE and the projections in NIE 11-3/8-80 contain different numbers of hard-target-capable ICBM RVs in 1990, ranging from 5,900 under SALT II limits to some 14,000 in the No-SALT force in last year's NIE. The alternative projections would not alter significantly the trends depicted in this estimate of Soviet capabilities to destroy US ICBMs in silos and shelters. However, the 5,900 RVs projected in the Soviet SALT II-limited force in NIE 11-3/8-80 would be insufficient to attack the 1,000 Minuteman silos and 4,600 shelters assumed in this estimate. Also, depending on the projections, there would be varying numbers of Soviet RVs remaining for other targeting requirements.

They depict only expected values of surviving ICBMs under a set of reasonable assumptions, using a 90-percent confidence interval for weapon system parameters with quantifiable uncertainties. The results are indicators of trends and of relative potential implied by alternative force postures; they do not provide accurate predictions of the absolute number of ICBMs that would survive counterforce attacks.

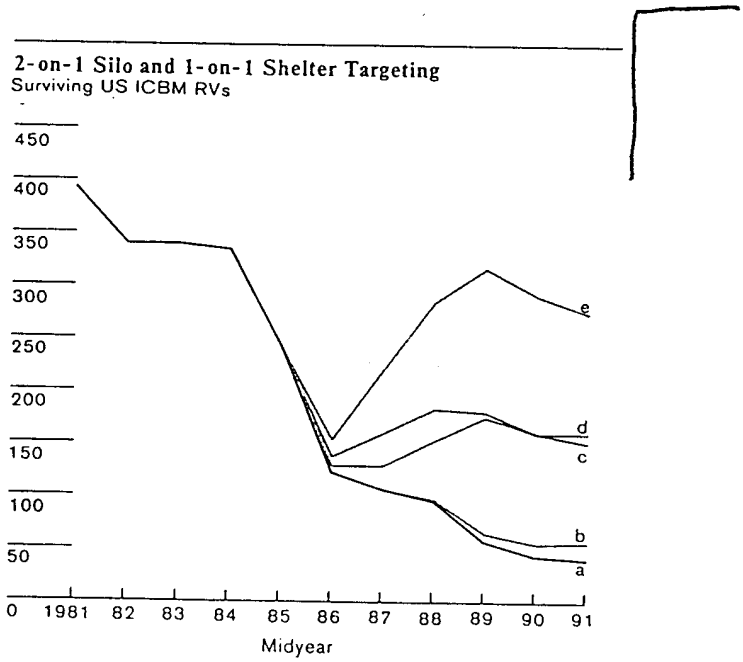
20. We estimate that today, using two weapons per silo to compound the probability of damage, the current Soviet ICBM force has the potential to destroy all but approximately 200 Minuteman silos in a well-executed first-strike attack. Taking the above uncertainties into account, we estimate that [ ] Minuteman silos could survive—that is, escape severe damage. If the Soviets used one weapon per silo, our best estimate is that some 400 Minuteman silos could survive, with a range of uncertainty of [ ] surviving silos.

21. We have also assessed Soviet potential to destroy alternative US ICBM deployments, assuming two-on-one silo and one-on-one shelter targeting (see figure 3). The results for 1991 are summarized in table 3.

— The new missiles would still be as vulnerable as Minuteman ICBMs [ ] because of the high accuracies that we believe Soviet ICBMs will achieve by the late 1980s.

— Although our analysis shows that a few more RVs would survive if deployed in shelters rather than in silos, the uncertainties attendant with these

Figure 3
Estimated Soviet Capability To Attack US ICBM Forces, 1981–91




*Note: For an alternative view of the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of the military services regarding the inclusion of net assessment analyses in national intelligence estimates, see paragraph 14.*

[a] 1,000 Minuteman ICBMs
[b] 1,000 MM + 100 Common ICBMs in Silos
[c] 1,000 MM + 100 MX ICBMs in 1,000 Shelters
[d] 1,000 MM + 200 MX in Silos
[e] 1,000 MM + 200 MX in 4,600 Shelters

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## Table 2
## Improvements to *Present* Soviet Strategic Forces and Subsystems Applicable to US Force Initiatives

| US Initiatives | Soviet Improvements | | |
|---|---|---|---|
| | Programmatic | Technological | Operational |
| MX ICBMs (irrespective of deployment mode) | —Silo hardening<br>—Mobile ICBMs<br>—More SSBNs<br>—ABM defense | —Improved accuracy for SLBMs and mobile ICBMs<br>—Hard-point ABM | —Improvement in launch-on-tactical-warning<br>—Perfection of sanctuary deployment of SSBNs |
| MX in multiple protective shelters | —More hard-target-capable weapons | —Increased ICBM fractionation | —Perfection of employment tactics |
| MX in Minuteman silos | —Little or no change | —Improved accuracy and yield | —Perfection of 2-on-1 attack |
| ABMs protecting MX in silos | —More hard-target-capable weapons | —Further development of penetration aids and MaRVs<br>—Increased ICBM fractionation<br>—Hard-target capability for SLBMs | —Development of tactics for use of penetration aids<br>—Development of tactics for ABM saturation |
| Trident submarines (with D-5 SLBMs) | —More SSNs<br>—More ASW aircraft and surface platforms with improved sensors | —Submarine quieting<br>—Development of more sensitive acoustic and nonacoustic detection sensors<br>—Improved signal processing | —Perfection of overt trail tactics<br>—Increase attack submarine deployment |
| MX in long-endurance aircraft | —SLBM and SLCM to strike at bases | —Development of depressed-trajectory SLBM<br>—Development of low-radar-cross-section and "smart" SLCMs<br>—Submarine quieting<br>—Surveillance satellites to locate long-endurance aircraft in flight | —SSBN patrols closer to US<br>—Procedures to destroy aircraft after launch<br>—Development procedures to track MX-carrying aircraft |
| B-1 bombers with SRAMs; cruise missile carriers | —Little or no change beyond those already projected<br>—Systems for forward defense | —ECCM responsive to B-1 ECM suite<br>—"Smart" long-range air-to-air missiles<br>—Surveillance satellite (against cruise missile carriers)<br>—Directed-energy weapons | —Improvement of forward defense operations and planning to destroy alert force at bases or after launch |
| Long-range cruise missiles | —More SAMs for terminal defense<br>—Systems for forward defense such as long-range interceptor | —Automation of command, control, and communication intercept control<br>—Data systems for remote vectoring<br>—Fusing options for SAMs (bombers or cruise missiles)<br>—Improved signal processing<br>—Long-range air-to-air missiles | —Perfection of forward defense operations<br>—Dense terminal ground defense<br>—Perfection of remote vectoring of interceptors<br>—AWACS intercept control<br>—Integration of tactical and strategic air defenses |
| Submarines carrying SLCMs | —More ASW platforms and sensors | —Submarine quieting<br>—Development of more sensitive acoustic and nonacoustic detection sensors<br>—Improvement of signal processing | —Concentration of naval deployments in likely launch areas<br>—Perfection of overt trail tactics |
| Surface ships carrying SLCMs | —More naval patrol and attack aircraft<br>—More maritime reconnaissance and intelligence assets | —Improved antiship ASMs<br>—Long-range fighters for carriers<br>—Improved RORSAT | —Perfection of reconnaissance-strike procedures |
| Mobile launchers for GLCMs | —Strike and reconnaissance tactical systems | —Near-real-time surveillance systems<br>—"Smart" weapons for conventional strike | —Increased surveillance of deployment areas<br>—Agent targeting<br>—Perfection of commando and tactical system strikes |



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Table 3

Estimated Soviet Potential in 1991
To Destroy Alternative US ICBM Deployments [a]

| Assumed US Force | Approximate Number of Surviving US ICBM RVs (Assuming 2-on-1 Silo and 1-on-1 Shelter Targeting) Best Estimate |
|---|---|
| Minuteman alone | 40 |
| Minuteman plus | |
| 100 common missiles in [redacted] silos | 60 |
| 200 MX in [redacted] silos | 150 |
| Minuteman plus | |
| 100 MX in 1,000 shelters | 150 |
| 200 MX in 4,600 shelters | 275 |

[a] *For an alternative view of the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of the military services regarding the inclusion of net assessment analyses in national intelligence estimates, see paragraph 14.*

calculations suggest that Soviet potential against the MX would be about the same for either basing mode.

These figures characterize only the consequences of a simulated attack by Soviet ICBM forces on US ICBM forces and, therefore, do not represent potential counterforce capabilities that would reside in the SLBMs, bombers, or cruise missiles of either side.

22. The US basing options would affect substantially the number of remaining Soviet ICBM weapons following an attack on US missile silos and shelters. Out of the approximately 10,000 Soviet ICBM RVs in the force projection used in the estimate for 1991, some 7,600 RVs would remain after an attack against the Minuteman and 200 new silos, as opposed to some 3,400 remaining after an attack against the Minuteman force plus 4,600 shelters. In either case, we believe the Soviets would have sufficient offensive nuclear forces remaining after an attack against US ICBMs to undertake other missions against US targets, even if the Soviets did not deploy more weapons—as we believe they would—to counter a large US shelter system. We estimate that a comprehensive attack against other US military targets, as well as government and military-economic targets, would require about 2,000 additional ICBM warheads.

23. *ABM Defenses of US ICBMs.* We are unable to quantify the potential of Soviet forces deployed against an ABM defense of US ICBMs. We believe the Soviets have the resources and technical capability to overcome an ABM defense by some combination of saturation of the defense with ICBM RVs; use of penetration aids, chaff, and decoys; or employment of maneuvering RVs to evade ABM interceptors. However, deployment of missile defenses would compound the Soviets' difficulties in planning a counterforce attack and would increase their uncertainties about whether it could be carried out successfully. On the other hand, the net effect of an ABM defense of US ICBMs would have to take into account the additional US weapons required to overcome any ballistic missile defenses the Soviets might deploy.

24. *US Launch-Under-Attack.* The Soviets have credited the United States with the capability to launch ICBMs before the arrival of Soviet weapons. Furthermore, they probably do not have high confidence in their present capabilities to destroy the entire US warning apparatus, to prevent communication of the launch order, or to employ SLBMs or other means to "pin down" US ICBMs until Soviet ICBMs arrived. Future Soviet forces would have better capabilities to employ some of these tactics, but Soviet defense planners will continue to confront numerous technical uncertainties associated with launch-under-attack. Moreover, they would probably also be uncertain about whether the United States would initiate a nuclear attack in reaction to Soviet interference with its warning or launch execution facilities.

### Long-Endurance MX-Carrying Aircraft

25. We conclude that it would be difficult for the Soviets to develop the means and operational techniques to be confident that they could detect, target, and destroy MX-carrying aircraft (MXCA) on airborne alert. Countering these aircraft in the 1990s appears technically feasible, however, and we believe the Soviets would make substantial efforts to do so. To counter an MX force launched from long-endurance aircraft, the Soviets would have to perform a sequence of tasks similar in kind, but not in difficulty, to those associated with antisubmarine warfare: detection, localization, and targeting of the MXCA, and delivery of a weapon or weapons against it.

26. ***Detection and Localization.*** As few as 10 specially designed space-based radars might be able to discriminate the MXCA from other aircraft and provide near-real-time position information for targeting purposes. The Soviets should have the technology to enable them to deploy these types of radars by the mid-1990s. The Soviets could obtain some useful data for detection and localization by means other than a space-based radar, such as over-the-horizon radars, long-endurance surveillance aircraft, forward-based AWACS aircraft, intelligence collection ships, surface combatants, and auxiliary ships.

27. ***Targeting and Destruction.*** Weapons delivery would be complicated by keeping a large portion of this force on airborne alert.

- Our analysis shows that if the Soviets attacked the airborne force using ICBMs—more than 20 minutes' flight time from their targets—a simple barrage attack could require an enormous number of warheads, depending on the time between last detection of the target and weapon delivery. The Soviets could pursue options other than a "barrage" to neutralize the MXCA, such as deployment of maneuvering SLBMs with shorter flight times than ICBMs, or terminally guided long-range cruise missiles.
- In any case, the Soviets would need to provide more timely target position data in order to achieve a favorable ratio between the number of Soviet weapons used and the number of US weapons destroyed.

Thus, there is potentially a large payoff for the United States to deny the Soviets the requisite localization information, both before the attack and during the final engagement. The United States could attempt a variety of countermeasures for this purpose, but we are unable to project how successful these might be.

### US Strategic Aircraft (Prior to or Immediately After Launch)

28. In view of the great difficulty and uncertainties in defending against bombers and cruise missiles in flight, the Soviets almost certainly will have greater incentive to maximize their capabilities to destroy a force of B-1s, cruise missile and MX carriers, and tankers—as well as command and control aircraft—on the ground or immediately after takeoff.

- Of the weapons in the Soviet inventory, SLBMs on routine patrol near the United States—with flight times of eight or nine minutes to coastal bases—are the most serious threat to the prelaunch survivability of US strategic aircraft on alert. The Soviets would probably conclude that the United States would detect movement of Soviet missile-carrying submarines closer to US coasts, reducing the chance of tactical surprise.
- If the Soviets were to target SLBMs to destroy aircraft on escape routes, the critical factors—as in the case of long-endurance aircraft carrying MX—would be the size of the airspace to be targeted and the lethal weapon effects. We believe that the number of SLBMs required for the task would be so large as to make it impractical.

29. Moreover, Soviet planners could not rely on optimizing a counterforce attack against US bomber bases, and against US ICBMs as well, because of the differences in flight times of Soviet ICBMs and SLBMs. On one hand, in the event of simultaneous launch of Soviet ICBMs and SLBMs, nuclear detonation on bomber bases would provide unequivocal evidence of a Soviet attack some 20 minutes before US ICBMs were struck. On the other hand, an attack intended to achieve simultaneous impact of Soviet RVs on both US ICBM silos and bomber bases would give US bombers some 30 minutes to launch before being struck.

30. The Soviets could significantly improve the technical characteristics of their SLBMs and develop cruise missiles specially designed for use against US strategic aircraft. We have no evidence, as yet, of work on such systems, but we believe the Soviets will have the technology in the 1990s to develop them.

### The Trident Submarine Carrying the D-5 SLBM

31. The Soviets currently have little capability to detect US SSBNs in the open ocean, and the expanded operating area of Trident submarines will result in a manifold increase in the Soviets' ASW problem. We expect Soviet ASW capabilities to improve over the next 15 years as sensors and data reduction systems are improved, and as cumulative experience begins to pay some dividends. The United States, however, has instituted new submarine-quieting techniques and continues to work on improving ASW systems which will further compound the Soviets' problems. We do not think Soviet progress in ASW—barring some new and totally unexpected breakthrough—will threaten US SSBNs for the foreseeable future.

### US GLCMs and SLCMs

32. *US GLCMs on Mobile Launchers.* The targeting problems posed by GLCMs would be very similar to those posed for many years by such US systems as the Pershing Ia and Lance short-range ballistic missiles. To counter the GLCM, therefore, the Soviets probably would adapt many of the same methods they have developed to locate and attack these older US systems. These methods involve the use of all available tactical reconnaissance systems—including human agents—to locate and trail the US systems, and a combination of nuclear and conventional weapons, sabotage, and attacks by specially trained commando units to destroy them.

33. Whether the Soviets could successfully maintain knowledge of the location of GLCMs and target and destroy them during conventional or nuclear war would depend heavily on the conflict circumstances, such as the length of the conventional phase and how the tactical nuclear phase eventuated.

34. *SLCM Carriers—Surface Ship and Submarine.* The Soviets' inability to detect US submarines in the open ocean stems from a significant inferiority in their quieting techniques, the poor sensitivity and range of their detection sensors, and their poor signal-processing capability. At present, and throughout the 1980s during periods of no particular tension, we believe US submarines could get into position to launch long-range cruise missiles against targets in the USSR.

35. US surface ships carrying cruise missiles targeted against the USSR would be at much greater risk than submarines. Soviet reactions would depend heavily on whether the SLCMs were deployed on only a few special-purpose ships or were part of the normal weapons suite of most US capital ships. The Soviets' reactions to deployment of SLCMs on a few ships might be similar to their reactions to US carriers. Soviet naval aviation and submarines would be the primary weapons employed. In this case, Soviet reactions might be primarily operational, without planning for any major increases in naval forces. Faced with what they would regard as strategic weapons on many ships, the Soviets would probably see a need to increase their naval forces to counter them.

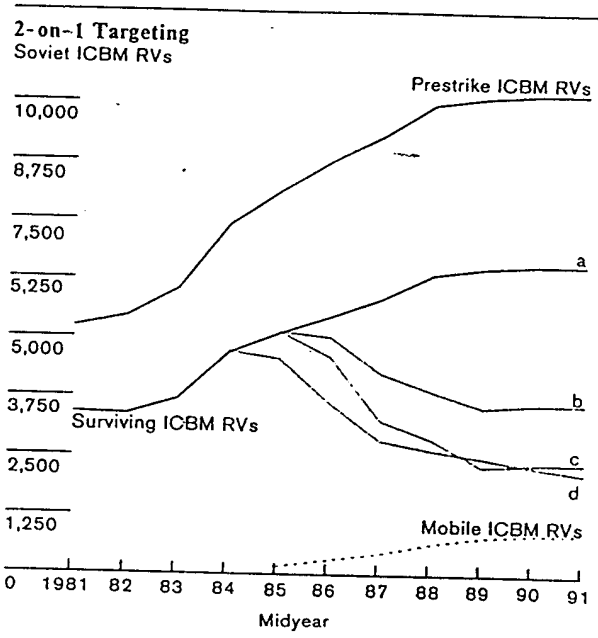
## Maintaining Survivability of the Soviet Strategic Nuclear Arsenal

36. Soviet silo-based ICBMs will become increasingly vulnerable to first-strike attack by the alternative future US land-based ballistic missile deployments assumed in this Estimate (see figure 4). (We did not consider use of D-5s on Trident submarines because we lacked information on their eventual deployment and operational availability. The use of D-5s would further reduce the estimated numbers of Soviet surviving ICBM RVs.) For our assessments we use US data on the accuracy, reliability, and warhead yields of the Minuteman, the MX, and the common missile (assumed to be the D-5 with MX accuracy), and have taken into account our uncertainties about Soviet silo hardness. The results of our analysis of Soviet ICBM vulnerability in 1991 are summarized in table 4.

37. We believe the Soviets have anticipated an increased US threat to their silo-based ICBMs in the 1980s and have a number of programs that would enable them to reduce the vulnerability of their offensive forces:

— The Soviets are conducting tests that could lead to further hardening of their silo-based ICBM

Figure 4
Estimated Vulnerability of Soviet ICBMs to a US ICBM Attack




*Note: For an alternative view of the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of the military services regarding the inclusion of net assessment analyses in national intelligence estimates, see paragraph 14.*

[a] Attack by Minuteman ICBMs Alone
[b] Attack by 1,000 MM + 100 MX
[c] Attack by 1,000 MM + 200 MX
[d] Attack by 450 MM-II + 550 Upgraded MM-III + 100 Common ICBMs

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Table 4
Estimated Soviet ICBM Vulnerability in 1991 to a US ICBM Attack [a]

| Assumed US Force | Approximate Number of Surviving Soviet ICBM RVs (of 10,000 RVs including some 840 RVs on mobile launchers) |
|---|---|
| | Best Estimate |
| Minuteman alone | 6,500 |
| Minuteman plus | |
| 100 MX | 3,600 |
| 200 MX | 2,300 |
| Upgraded Minuteman [b] plus | |
| 100 common missiles | 2,100 |

[a] *For an alternative view of the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of the military services regarding the inclusion of net assessment analyses in national intelligence estimates, see paragraph 14.*

[b] The vulnerability of Soviet ICBMs to an attack by this force is sensitive to the accuracy and warhead yield that could be achieved for an upgraded Minuteman. For this analysis we have assumed an upgraded Minuteman with three RVs having accuracies and warhead yields comparable to those of the MX.

launchers. We do not believe, however, that they would rely on hardening alone to assure the survivability of their land-based missile force.

— They are about to test a new ballistic missile that could be deployed as a small off-road mobile ICBM in the mid-1980s. While such a system will enhance ICBM survivability, it will not increase Soviet counterforce capabilities significantly because its relatively small throw weight would limit payload fractionation. There is also a view in the Intelligence Community that the Soviets are examining an option for deployment later in the 1980s of a rail-mobile, medium-size ICBM that would have better hard-target potential than the off-road system.

— The Soviets are deploying long-range MIRVed SLBMs capable of striking targets in the United States from the USSR's home waters, providing greater protection for its SSBNs from Western ASW forces. There is evidence of continuing deployments in the 1980s, along with improvements in SLBM capabilities.

— They are developing a new strategic bomber or cruise-missile-carrying aircraft, or both, as well as new cruise missiles.

— The USSR is developing new ABM components, which could provide for at least a limited defense of its ICBM complexes by the late 1980s.

— Finally, the Soviets are improving their capabilities to launch a substantial portion of their ICBM force on tactical warning, prior to impact of enemy warheads.

## Limiting Damage to the USSR

38. The analysis in this section is limited to assessment of the capabilities of Soviet strategic air defense to limit damage to the USSR. US deployment in the 1980s of the B-1 bomber and larger numbers of long-range cruise missiles would probably result in some adjustments in Soviet low-altitude air defenses. However, we doubt that the Soviets would make any major changes in their air defense development and deployment programs, beyond those depicted in previous estimates. During the 1970s, Soviet air defense planning almost certainly was in expectation of cruise missiles and a new strategic bomber to replace the B-52.

39. A combined attack by cruise missiles and penetrating bombers armed with SRAMs would put far greater stress on Soviet air defenses than an attack by one force alone.

— When new low-altitude-capable air defense systems are deployed in sizable numbers in the mid-1980s, penetration of Soviet air defenses by conventional bombers will be more difficult. The capabilities of the individual Soviet low-altitude air defense systems that we have projected over the next 10 years are relatively insensitive to the differences in radar cross section and subsonic speed of conventional bombers. However, differences in bomber characteristics that we have not assessed, such as avionics, ECM suite, and self-defense systems, may give the B-1 (with its higher low-altitude speed) a greater probability of penetration of Soviet air defenses. Air Force studies show that the planned characteristics of the B-1 would undoubtedly give it a greater probability of penetrating Soviet air defenses than currently operational bombers.

— Current and future Soviet air defense systems on which we have evidence would have only limited capabilities against the US cruise missile, and probably could not be deployed in sufficient numbers in the 1980s to defend all the areas the Soviets probably would want to protect. Our judgment is that against a combined attack of penetrating bombers and cruise missiles the effectiveness of Soviet air defenses during the next 10 years will remain limited. Furthermore, we doubt that the Soviets will succeed even in the 1990s in solving all the air defense problems created by the very small radar cross sections of future aerodynamic vehicles. We have no basis, however, for estimating Soviet capabilities against US aircraft incorporating "stealth" technology.

40. Faced with the prospect of a B-1 with operational capabilities much improved over those of the B-52 and thousands of cruise missiles—ALCMs, SLCMs, and GLCMs—and the difficulty of defending

against them in flight, the Soviets undoubtedly will undertake further improvements in their deployments and tactics. They almost certainly will deploy a forward defense—composed of AWACS aircraft and interceptors—capable of operating several hundred kilometers from Soviet borders. They might deploy more short-range tactical systems and improve their tactics for air defense operations.

## III. FOREIGN PERCEPTIONS OF US STRATEGIC FORCE IMPROVEMENTS

### Soviet Perceptions[8]

41. The Soviets believe that trends in the world "correlation of forces" have been moving in their favor, in large part because of gains in their military power, especially strategic nuclear power. They see the United States as unwilling to concede to the USSR the recognition and political benefits to which they believe their power position entitles them. They believe that US defense plans, including programs for modernizing strategic forces, are intended to regain the military advantages and international influence the United States enjoyed earlier in the post–World War II period.

42. Soviet leaders have already concluded that the attitude of the present US administration toward the USSR is hostile and that its policies are threatening. They believe the current US attitude represents a fundamental change from the early 1970s, when the United States believed that an easing of bilateral tensions through arms control, trade, and other agreements could provide direct economic and security benefits and could serve indirectly to moderate the East-West competition. Decisions on modernization of US strategic forces, coming on the heels of a reordering of domestic priorities to increase the defense budget and the decision to produce neutron weapons, will make Soviet leaders view the administration as more determined. They may not yet be convinced, however, that the increased spending implied by US defense programs, including modernization of strategic forces, can be sustained.

43. Any of the US programs for land-based ICBM deployment would result in a situation in the late 1980s in which both sides' ICBMs deployed at fixed sites would be perceived as vulnerable. Moscow almost certainly regards the potential of Soviet ICBMs to destroy US land-based missiles as contributing to the image of Soviet strategic power and as limiting US options in a crisis, although the Soviets appreciate the uncertainties that would attend a counterforce attack. MX deployment in multiple protective shelters has been characterized by the Soviets as unverifiable and as a deployment mode having more political and psychological effect than military utility. However, their real concerns about MX and other new ballistic missile options probably center on their first-strike potential.

44. Aspects of the new US programs have implications for Soviet perceptions of the prospects for arms control:

- The Soviets would regard a US program for ballistic missile defense that required revision or abrogation of the ABM Treaty as the most significant change in US planning. The Soviets clearly want to preserve the Treaty without amendments. They would distinguish, however, between revision and abrogation, and their willingness to accept a revision to the Treaty would depend on their evaluation of its effect on the capability of Soviet forces to perform the missions required by their strategy.
- As we concluded in previous Estimates, the Soviets will seek to slow or halt US and NATO force improvements through a combination of threats, inducements, and arms control negotiations, while trying to maximize prospects for a continuation of trends favorable to them. US offensive force improvement programs do not necessarily call for activities in contravention of the fundamental provisions of the SALT II Treaty, but would entail testing and deployments later in the decade of systems limited by the SALT II Protocol. The Soviets almost certainly had hopes that the Treaty would be ratified and that the provisions of the Protocol would remain

[8] Our assessments of Soviet perceptions of the United States and the implications of US strategic force improvements are derived from Soviet statements and attitudes, especially those noted in clandestine reporting, diplomatic channels, and the press, and from our analysis of Soviet policies and programs drawn from a variety of intelligence and open sources.

in force. The Soviets appear likely to continue to constrain their strategic modernization programs within the limits of the unratified SALT II Treaty while assessing US intentions with regard to strategic arms limitations. The new US programs could give the Soviets more incentive to achieve an arms limitation agreement.

— Soviet arms control policy in the post-Brezhnev political succession in the USSR is less certain. During a leadership succession period the Soviet stand on arms control policy may harden, because no power contender would want to appear less defense-minded than another.

## West European Perceptions

45. West European leaders—in and outside of government—generally have welcomed the harder line the United States has taken toward the USSR, including proposed improvements in intercontinental strategic nuclear forces. Their reactions reflect an appreciation of the gravity of the Soviet threat to West European security. Some West European leaders may be concerned that the shift in the strategic balance against the United States has eroded the credibility of the extended nuclear guarantee of US intercontinental forces. However, the majority of West European governments and leaders have taken the position that the US-Soviet strategic nuclear balance is one of rough equivalence and mutual deterrence.

46. Despite their generally favorable reactions to US strategic force improvements, West Europeans hope the Soviet threat can be abated through mutual force reductions, avoiding the successive rounds of new weapon deployments toward which they fear both superpowers may be headed. Few among West European leaders and their publics share the sense of urgency that they perceive is driving a US military planning. The Soviet buildup has proceeded over the past decade without much public fanfare, permitting the Soviets to present Western governments with a fait accompli unencumbered by European public protest. By contrast, US defense decisions, like the decision on neutron weapons, have been highly and critically publicized in Western Europe, reflecting Europeans' fears that the United States may be moving toward a renewed Cold War posture. Allied governments also would react unfavorably to US decisions that appeared to abandon basing of strategic missiles in the United States at the same time they are being asked to accept Pershing II missiles and GLCMs in their countries.

47. Allied leaders are likely to oppose improvements in US strategic nuclear forces, unless at the same time the United States is willing to pursue seriously arms control negotiations with the USSR.

— They almost certainly would seek assurances that the United States was willing to negotiate reductions in planned new weapons deployments or even to forgo deployment of new systems if arms control talks with Moscow proved satisfactory.

— The Allied governments will continue to regard the effect of US strategic program initiatives on the prospects for SALT as directly related to their security interests, contending that limitations on LRTNF deployments are illogical without a SALT agreement. They will also continue to seek linkage between SALT and LRTNF limitations in order to prevent another US-Soviet agreement on central systems that ignores the theater nuclear balance.

— In view of the relationship they make between SALT and West European security, the Allies' concerns about the prospects for arms control would be deepened if the new US programs called for deployments in excess of SALT II limits or for abrogation or revision of the ABM Treaty. In contrast to objections by West European leaders to possible revision or abrogation of the ABM Treaty, stepped-up ABM development to hedge against more threatening Soviet programs would probably receive grudging understanding.

There is an alternative view that, while some segments of West European opinion may consider that US strategic force improvements should be accompanied by simultaneous strategic arms control efforts, most US Allies will welcome improvements in US land-based strategic forces as reinforcing the US nuclear guarantee to NATO Europe and as a US effort not to divorce nuclear force improvements in the United States from those in Europe. The holders of this view believe that Allied leaders are primarily concerned with TNF and

related negotiations, not SALT, and are likely to support improvements in US strategic nuclear forces as long as TNF negotiations take place. They would also view US-Soviet negotiations on strategic forces favorably.[9]

48. Allied governments will be concerned that the US strategic force improvements portend changes in US commitments to European defense. They will look for the United States to demonstrate that it is not removing itself from European conventional defense to help pay for expansion of its strategic arsenal. They would reject any suggestions that they bear more of the cost for conventional forces primarily because economic and social programs receive higher priority than defense.

[9] *The holders of this view are the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of the military services.*

## Perceptions of Other Nations

49. The Chinese would regard steps to improve the US strategic posture as evidence of renewed US determination. We believe, however, that they would be very concerned if US plans necessitated a change to the ABM Treaty that permitted the USSR to deploy a nationwide ballistic missile defense, given the potential impact of such a move on China's nuclear retaliatory capability.

50. Non-NATO states shape their foreign policies, including their attitudes toward Washington and Moscow, largely in response to regional and domestic issues. Hence, a key determinant in the reactions of other nations will be the extent to which they believe that the US strategic programs are necessary for supporting US commitments abroad and for reducing the likelihood of regional conflicts.

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