

MARTIN MARIETTA

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**STRATEGIC
ARMS
LIMITATION
TALKS**

... a discussion

SALT II: A Brief Explanation of the Treaty

The Treaty's Origin

Formal strategic arms limitation talks—SALT—have been going on since 1969, although negotiations of nuclear arms control and testing began much earlier. The first SALT agreement was ratified in 1972. It essentially froze the installation of fixed land-based launchers—usually silos—at the existing levels. It also set some limits on sea-launched ballistic missiles carried in submarines. However, it did very little to address the expanding technological capabilities, such as improved missile accuracy and multiple, independently targetable missile warheads—called MIRVs.

SALT II negotiations began immediately after SALT I was signed. Although the basic framework was determined in 1974, it has taken the two countries 5 years to work out critical details of SALT II. These details include the first effort to limit use of the growing technology in strategic arms development. Technology can, and has, by-passed the effectiveness of simple numerical restraints. A case in point is the MIRVing of modern warheads, which has multiplied the effectiveness of single missiles.

SALT II is not the final work in arms control. It deals with only a portion of the nuclear and non-nuclear armaments the world is accumulating. It deals principally with only the two superpowers, although many other nations have nuclear weapons at their disposal. It is only one more step in efforts to control arms. But like the tightrope walker's, each step is very important and balance is the critical element.

The balance sought in the SALT agreement is often referred to as "essential equivalence" or "legislated equivalence" in the strategic forces of both sides. It is generally agreed that this cannot be a simple numerical, one-for-one balance because of the differences in weapons systems each side has developed.

The U.S. Department of State considers two conditions as necessary for essential equivalence: first, that overall, U.S. strategic forces are at least equal to those of the Soviet Union; and second, that any advantages enjoyed by the Soviet Union in particular areas are offset by U.S. advantages in other areas.

Accuracy, the number of warheads on any given type of missile, the size of those warheads, and the missile's survivability in attack, are among qualitative factors that are not covered by simply counting missile silos, aircraft, and submarines. Thus in SALT II, some qualitative limits combined with quantitative limits are found for the first time.

A great debate has begun on ratification of the new strategic arms limitation treaty—SALT II—between the United States and Soviet Union. Among its effects, the treaty debate will stimulate a long, hard look at our nation's military strength and defense policies. For this reason, we are all obligated to get a basic understanding of the treaty and its ramifications. What follows is an effort to set down in dispassionate, and objective language the basic background and current material needed to understand the issues.

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CURRENT STRATEGIC FORCE LEVELS (as of June 18, 1979)

	US	USSR
Fixed Launchers of ICBMs	1054	1398
Launchers of ICBMs with MIRVs	550	608
Submarine Ballistic Missile Launch Tubes	656	950
Submarine Launchers for Missiles with MIRVs	496	144
Heavy Bombers	573	156
Heavy Bombers Equipped for Cruise Missiles with a Range of More Than 600 km (373 mi)	3	0
Heavy Bombers Equipped for Air-to-Surface Ballistic Missiles	0	0
Air-to-Surface Ballistic Missiles	0	0

Ceilings Set on Weapons

The treaty focuses on launchers, which are silos for ICBMs; submarine launch tubes armed with missiles; and airplanes carrying either cruise missiles or bombs. Thus, launchers are more readily identified and counted than the weapons they contain.

The basic treaty, which would remain in effect through 1985, contains limits and sublimits that can be likened to a set of boxes within boxes. The size of the box has little to do with importance. The smallest box, for instance, is for the highly potent land-based ICBM armed with multiple, independently targetable warheads, or MIRVs.

Starting with the largest box, the treaty says that each side will limit itself to

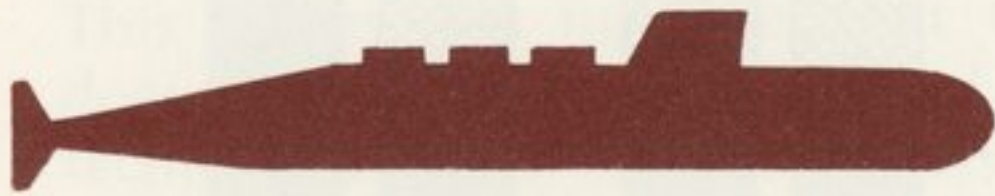
2,400 strategic launchers to be reduced to 2,250 by 1981. The reduction in this overall limit from 2,400 to 2,250 applies mainly to the Soviet Union, which will have to dismantle some 250 weapons systems. These systems are expected to be some of the older, liquid-fueled ICBMs. The U.S. will be able to buildup to the limit in some areas. (However, in the past, the U.S. has been below the SALT I limits and has chosen not to buildup to them.)

This does not necessarily mean the Soviets are ahead in weapons because they are over the limit and the U.S. is under. The Soviets have more and larger delivery vehicles, but the U.S. has more warheads (although they are smaller). This fact gives an idea of why essential equivalence is not a one-for-one proposition.

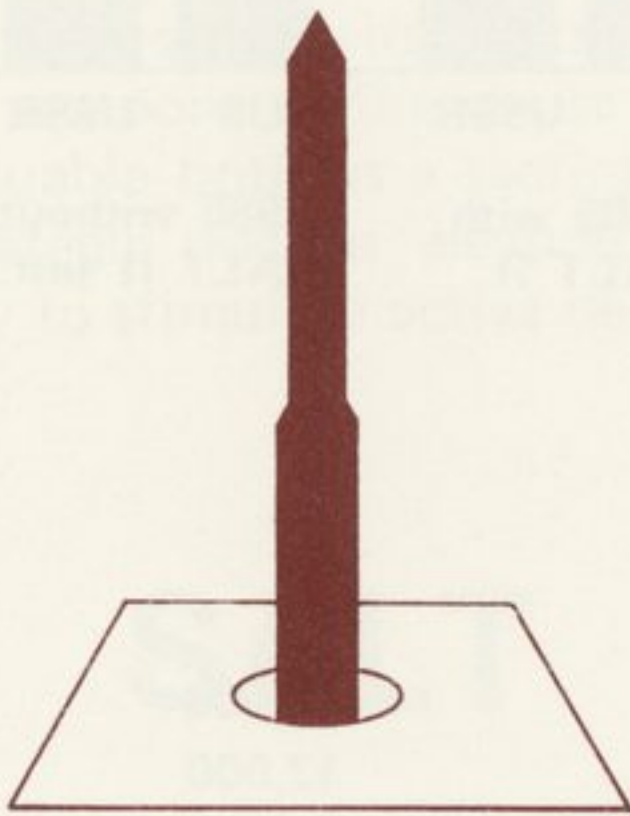
LAUNCHERS



BOMBERS (SHOWN WITH CRUISE MISSILE)



SUBMARINE LAUNCH TUBES



ICBM SILOS

If the biggest box deals with all strategic delivery systems, the next one deals with only those weapons that are MIRVed. These weapons are multiple warhead missiles and airplanes that carry cruise missiles. Bomb-carrying aircraft and single-warhead missiles like the Titan are excluded. The treaty sets a ceiling of 1,320 weapons, which can have the multiple independently targetable warheads.

Within this limit is another sublimit. It says that of all MIRVed weapons, no more than 1,200 of them can be land-based ICBMs or submarine-based ballistic missiles. That is, if a country chose to build all 1,320 MIRVed launchers, only 120 of them could be aircraft with cruise missiles.

The final box is for the ICBM alone. Neither side is to have more than 820 ICBMs with multiple warheads.

Although not contained in the treaty, the following breakdown provides a hypothetical illustration of the treaty's limits in each category:

- 820 MIRVed ICBMs
- 380 SLBMs with multiple warheads
- 120 aircraft with MIRVed cruise missiles and 830 other systems: single-warhead ICBMs, ballistic missile submarines, or cruise carrying aircraft and bomb carrying aircraft.

One more box could be placed inside this last one. It would contain a specific type of MIRVed ICBM called the "heavy." This is a very large missile containing a quantity of large warheads. The Soviet Union is allowed 308 of the SS-18 missiles, each armed with 10 warheads and the capability of having many more. The U.S. has no heavy ICBM and would not have one in the future because SALT II freezes both sides at their current levels. This element of the treaty has drawn heavy criticism by some treaty opponents; they feel that essential equivalence would require at least a reduction in the Soviet force of heavy missiles.

Multiple Warheads Limited

Proponents of the treaty focus on the multiple warheads of the Soviet heavy ICBM and another different aspect of the treaty: A limit on the number of multiple warheads that missiles can contain.

SALT II requires that a missile may not have more warheads than the number previously deployed or tested on it. Thus the Soviet SS-18 heavy is limited to 10 warheads and the U.S. Minuteman III is limited to three. The treaty's supporters note that without SALT II the Soviets

would be able to divide their heavy missile's payload into as many as 30 warheads per missile.

In addition, submarine-launched missiles, either Russian or American, are allowed up to 14 warheads each.

The significance of MIRVed missiles is important. This technological advance allows a single missile to deliver bombs on several different targets. Missiles of earlier design can deliver only one bomb, or a buckshot distribution of several bombs, on a single target.

The comparatively smaller bombs of a modern MIRVed missile are more accurate than their predecessors. This gives each side the capability of targeting the protective silos of ICBMs.

The Soviets are deploying new guidance systems that are making their ICBMs as accurate as those of the U.S. This is enabling them to replace large single warheads with several smaller ones.

As more and more of these guidance systems are deployed, targeted on U.S. Minuteman and Titan silos, the deterrent force becomes increasingly vulnerable to a Soviet first strike. This vulnerability upsets the balance of strategic equivalence.

MIRVING* OF A MISSILE

* MULTIPLE INDEPENDENTLY TARGETABLE REENTRY VEHICLES



SINGLE WARHEAD

3 MIRVs

10 MIRVs

TREATY LIMITS ON WEAPONS

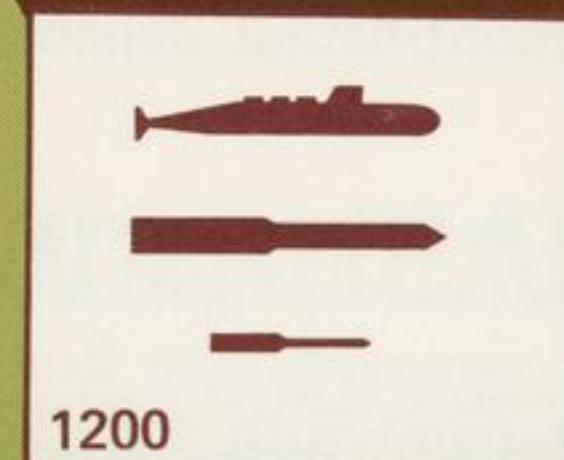
**All Nuclear Armed Aircraft,
Submarines, ICBM's**



**All Cruise Missile Aircraft,
Submarines,
ICBM's with Nuclear MIRVs**



**All Submarines and
ICBM's with Nuclear MIRVs**



All ICBM's with Nuclear MIRVs



The eventuality of this situation has been recognized from the time the Minuteman was built. No weapon is the last word in armaments. For some time, the U.S. has been investigating new systems. As a result of these investigations, the administration has announced its intention of developing the mobile Missile-X system. This system is intended to have a high degree of survivability under attack, by moving each missile among several protective shelters. Under the SALT II limits, it would augment and partially replace the Minutemen as a deterrent force.

Single New ICBM Allowed

The SALT II treaty allows each side to develop one new ICBM system with a maximum of 10 warheads on each missile—MX is the new U.S. system. It is believed the Soviets plan to build one new missile to replace one or more of their older missiles.

There are many other constraints on ballistic missiles. Neither side can circumvent the "one new system" limit by elaborate changes to existing missiles. Under the treaty's terms, any change of a missile's size, payload capacity, and other factors exceeding five percent would make that a new missile.

Aircraft carrying cruise missiles are constrained under a limit that defines one airplane with 28 missiles as one launcher, one airplane with 56 missiles as two launchers, and so forth.

No new construction of additional fixed launchers or silos, and no relocation of existing ones is to be allowed. There is a limit on the construction of testing and training launchers. As long as the ICBM and MIRVed missile limits were met, the U.S. would be able to proceed with development of the mobile launchers of the Missile-X system.

Another important detail is a ban on the development, testing or deployment of rapid reloading launchers. Neither side can devise silos that can have more than one missile fired from them in quick succession or stockpile several ICBMs near the silo.

How SALT is Verified

One of the hotly argued issues in the gathering debate involves how each side verifies that the other is abiding by the treaty—in short, how and when weapons are counted.

The treaty often refers to launchers when it talks about limits on weapons. Neither side has expressed a willingness to let the other poke around its manufacturing facilities and military installations to count missiles and look inside them to count warheads. Instead, each side is to rely on what are called "national technical means." For example, photographic reconnaissance is a way to count submarines, silos, aircraft and other highly visible structures that are the launchers.

The problem becomes more complex with the qualitative characteristics of missiles: for instance, the number of warheads they contain, or payload weight and missile size with reference to the constraint on modifying existing weapons. This is done by using additional national technical means, such as monitoring the radio signals sent out by missiles as they are test launched.

Critics have argued that the treaty is inherently unverifiable, especially since the U.S. is without a replacement of its monitoring station in Iran. There are also questions about the ability to reliably detect any cheating on the number of warheads contained in delivery vehicles.

In a Congressional study of the treaty, critics raised deep concern over the possibility that the Soviets may already have silos capable of being reloaded within a matter of hours, and cast doubts on U.S. ability to verify further development of this capability by the Soviets.

Interference Prohibited

The treaty includes a section prohibiting either side from interfering with any of the techniques used to count launchers or determine missile characteristics. For example, the Soviets were recently accused of encrypting their test missiles' telemetry, which rendered the missiles' radio transmissions into a garble decipherable only by Soviet computers. The new treaty prohibits this encryption, but only when it is a deliberate denial of telemetry related to treaty verification. In other words, the Soviets determine what telemetry is essential to treaty verification. The U.S. is to assume that any encrypted radio telemetry they pick up has

nothing to do with verification of treaty limits. This provision also has drawn heavy criticism from treaty opponents.

The treaty also requires functional alterations in the appearance of aircraft carrying cruise missiles when the same kind of aircraft are used for other functions such as bombs, cargo, or airborne fueling.

In SALT II, both sides also agree that they won't circumvent treaty limits by giving restricted weapons or the technology to build those weapons to other nations.

This means, for instance, that the U.S. does not give certain kinds of nuclear technology to NATO countries and the Soviets do not give strategic technology to their European satellites or Cuba. The vagueness of this noncircumvention clause has caused some concern over U.S. ability to supply its European allies with such weapons as the cruise missile, which is valuable both as a tactical weapon and a strategic nuclear weapon. This issue is likely to stimulate active debate.

SALT II

1. TREATY

Effective through 1985

2. PROTOCOL

Effective through 1981

3. PRINCIPLES

SALT III Negotiations to start immediately

Protocol Sets Short-Term Limits

The entire SALT agreement has three sections to it. What has been discussed so far is the basic treaty, which is effective through 1985. Another section, called the Protocol contains several short-term agreements effective through the end of 1981.

The Protocol bans the deployment or flight testing of mobile ICBM launchers, such as the MX system, but allows their development. There is also a restriction on cruise missiles, which stipulates that those missiles with ranges of over 370 miles may be carried only on heavy bombers. The intent of this passage is to prevent the deployment of cruise missiles, in Europe or at sea, that can reach deep into Russian territory.

The U.S. does not expect to have the MX ready for flight testing until 1983 so the Protocol really does not affect mobile ICBM development. However, it is possible that these terms might be extended beyond 1983 in subsequent negotiations.

SALT III Planned

A third part of the agreement is a statement of principles. In this part, some of the areas that SALT III negotiations should deal with are outlined. These areas include further reductions of overall numbers, more qualitative limitations, and gray area systems like the Russian Backfire bomber and intermediate-range missiles deployed in allied countries.

The Soviet Backfire bomber is a supersonic airplane capable of carrying nuclear weapons. The Backfire is not included in the SALT II accord because the Soviets claim that its range does not allow it to reach targets in the United States and, therefore, it is not a strategic delivery vehicle. The Soviets also promised not to develop intercontinental capabilities for the bomber.

However, the Backfire can reach into the U.S. if it refuels in midflight. And, until it was recently removed, the bomber had been photographed with a midair refueling nozzle on its nose. This caused concern in the U.S. which has not entirely been allayed by a written Soviet promise to limit the plane's capabilities and production rate.

Because of the proximity of western European allies to the Soviet Union and its Warsaw Pact allies, geography makes the gray areas of negotiation important in the search for world stability. Within this European theater, both sides have intermediate range weapons capable of reaching the other. Further, the U.S. is committed to the defense of its European allies. The intermediate range missiles, aircraft, and other weapons are not dealt with in SALT II, but are intended to be a subject of SALT III negotiations, which, evidently, will become even more complex and difficult.

Senate Concerns Over Ratification

The treaty requires a two thirds vote by the Senate to become effective. The Senate has three options: to accept the treaty as written, to reject the treaty, or to accept a marked-up version. The Soviets have insisted that they will not accept any substantially altered form of the treaty.

Senate discussion of the treaty will look at both the contents of the agreement and factors not covered by the treaty. One Congressional study of the negotiations concluded last December that the

treaty, "cannot be considered in isolation." The report said that evaluation must be made in the context of overall trends in the military forces of the two countries and U.S. defense policies.

While the U.S. in the past has maintained a strategic superiority to the U.S.S.R., national leaders have become concerned about the rate of Soviet development of its military capabilities—both nuclear and conventional. They are worried about how far this buildup will go and its purpose in a time of supposed détente. Growing instances of Soviet and Soviet/Cuban involvement in conflicts throughout the world have helped fuel their concerns. The question many ask is whether SALT II will, in fact, put a lid on this military buildup.

Supporters of the treaty argue that it does put a ceiling on the rapid growth of Soviet military capabilities . . . that without SALT II, the U.S. would be looking at a greater Soviet strategic weapons superiority in a few years and a highly accelerated arms race.

The treaty also affects Missile-X, even though development of the mobile ICBM is considered necessary with or without a new SALT agreement. The deployment of MX would provide about 4,600 shelters, concealing 200 missiles. Without a SALT limitation on warheads, improving Soviet accuracy could cancel the effective deterrence of the MX system as planned and the U.S. would have to deploy more MXs.

If the treaty is enacted and its limits are obeyed, MX will compensate for the impending vulnerability of Minuteman and Titan weapons. Since it is mobile, among multiple protective shelters, Soviet strategists would know that a first strike against U.S. land-based missiles would be a very questionable strategy to consider.

Stability Key to Peace

The idea behind the arguments over stabilization is: The world is stabilized by each side's perception that a surprise attack would not be very successful. It is destabilizing when one side can perceive, even if it is an illusion, a distinct advantage to be gained from a first strike.

The threat of actual Soviet attack is not the only concern. The reality is that the Soviets might use proven superiority combined with universal dread of nuclear war to achieve political ends without a shot being fired, or with a strike at only the fixed missile silos—if those are all the U.S. has. The remaining Soviet ICBM force, so this line of reasoning goes, would be sufficient to intimidate the U.S. into making massive concessions.

One possibility is that American knowledge and fear of this situation alone

might encourage Soviet leadership to undertake activities that push the world closer to war in the belief that the U.S. would backdown or concede the issues at hand. This is the instability that SALT II seeks to avoid, and that its opponents insist that it does not avoid.

If Soviet strategists, on the other hand, had to figure that it would take most of the Soviet land-based missiles to eliminate most of the U.S. deterrent force, there is no apparent advantage in a first strike with strategic air and sea forces that are essentially balanced. This is the purpose of the "triad" in U.S. strategic defense—land, sea, and air.

Issues Make Negotiations Complex

The issues that are involved in SALT negotiations are sufficiently complex by themselves. The ideological differences between the United States and Soviet Union compound negotiation difficulties.

Both sides are presumed to share a common interest in efforts to feel secure within their own territorial boundaries and in security from the devastation of nuclear war, as well as from attack. The SALT negotiations are an attempt to exploit this common interest and to maintain a stable strategic relationship despite serious differences between the two nations on other matters.

It is the nature of the negotiation process that in limiting defense capabilities each side has had to give up some things to gain others. Therefore, if one side then changes parts of the agreement in some way, it is logical to expect that the other side will feel justified in making changes. For this reason, alterations to the treaty being considered by the U.S. Senate will require great care and consideration of what the Soviets might insist upon in return.

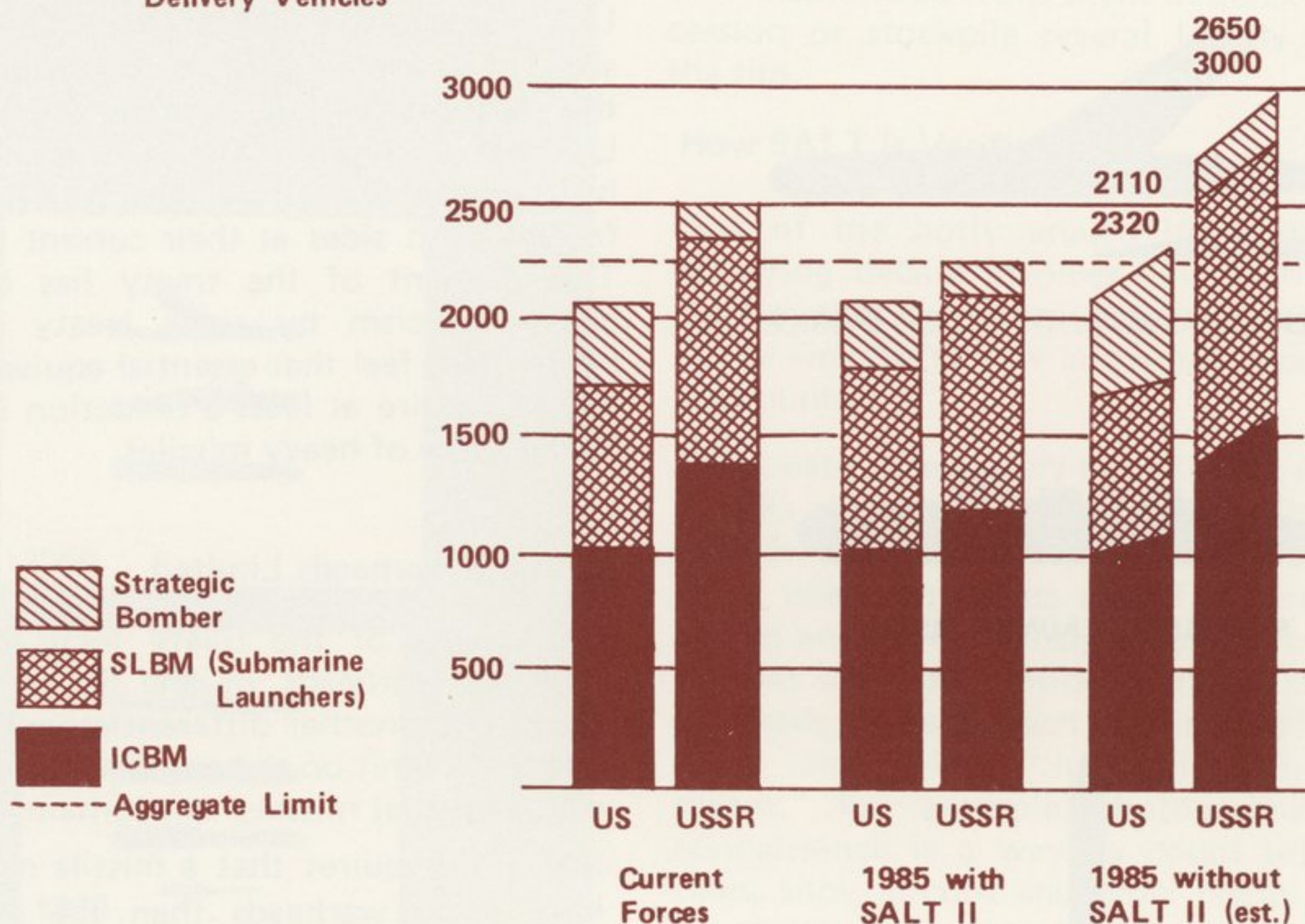
The Senate will not be debating the treaty in a vacuum. The attitudes of everyone in the United States will have an effect on the deliberations. In this sense, every American has an opportunity to play a role in setting the course of a new trend in political and military relations affecting the world's future.

These are the issues and policies, doubts and uncertainties that make SALT negotiations so complicated and important. It is worth noting that no one—neither supporters or opponents of the SALT II treaty—is speaking against the basic idea of arms control. Their dispute is whether SALT II is the best and safest path to a more stable world.

The tightrope walk is just as delicate to peaceful co-existence as it is to hostility. Each step must be considered with equal care.

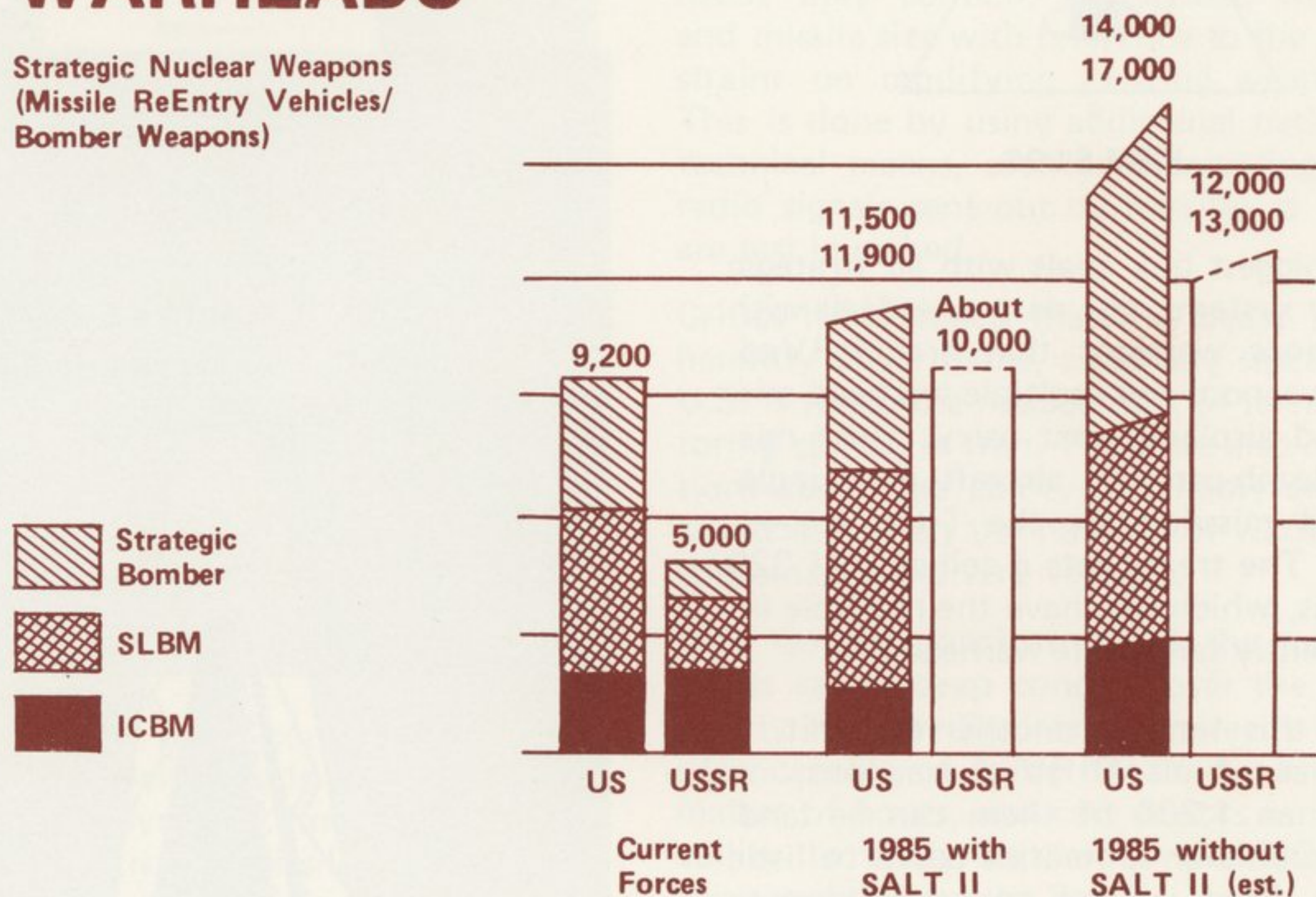
LAUNCHERS

SNDV: Strategic Nuclear Delivery Vehicles



WARHEADS

Strategic Nuclear Weapons (Missile ReEntry Vehicles/Bomber Weapons)



Source: U. S. Department of Defense

MARTIN MARIETTA AEROSPACE INTEREST

The Denver Division of Martin Marietta has been selected by the U.S. Air Force as the assembly, test and systems support contractor for the mobile Missile-X. As such, the company will help the Air Force develop specifications for the missile, plan and conduct flight tests, design and construct the missile's ground transport, and for evaluation of the system.

Under separate contracts, the company has also been responsible for building and testing key components of a proposed basing system.