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**Consequences of START
for the Nordic Region**

Summary

The START Treaty increases the role of the nordic area in the nuclear relationship between the US and the USSR. This is because the Treaty increases the relative importance of those strategic nuclear weapons which have nordic operational implications:

1. The relative number of warheads on the US heavy bombers will increase to the point where this leg of the triad has the largest number of warheads in the strategic arsenal. Since this weapons system also has a strong potential nordic operational profile this could in turn increase the strategic importance of the nordic airspace.
2. The Soviet SLBM force will be cut substantially, leaving only the most modern Delta IV and Typhoon SSBN classes and possibly a few Delta III. At present all Delta IV and Typhoon SSBN's operate from the Kola which is the only present basing area providing access to their Arctic patrol zones. The START cuts could thus leave virtually the full SSBN force based on the Kola, increasing the importance of the bases and the adjacent sea areas considerably.

As a result the strategic importance of the nordic area will increase marginally, with a particular focus on the nordic airspace, as a potential launch and transit route for US heavy bombers, and on the nordic Arctic coastline and sea areas, as the primary or only basing and patrol area for Soviet SSBN's.

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Contents

| | |
|--|----|
| Introduction | 1 |
| 1. Before START | 2 |
| 1.1. US Strategic Forces in the North before START..... | 2 |
| US SLBM forces | 3 |
| US LRB forces | 3 |
| US ICBM forces | 5 |
| 1.2. Soviet Strategic Forces in the North before START | 5 |
| Soviet SLBM forces | 5 |
| Soviet LRB forces | 6 |
| Soviet ICBM forces | 7 |
| 1.3. Conclusion | 7 |
| 2. After START | 9 |
| 2.1. US Strategic Forces in the North after START | 10 |
| US SLBM and ICBM forces | 10 |
| US LRB forces | 12 |
| 2.2. Soviet Strategic Forces in the North after START | 17 |
| Soviet ballistic forces | 17 |
| Soviet SLBM forces | 18 |
| Soviet LRB forces | 20 |
| 3. Conclusion | 22 |
| Appendices | 24 |

1970

1971

1972

1973

1974

1975

1976

1977

1978

Introduction

The START Agreement signed in Moscow on 31 July 1991 will have consequences for the nordic area. On the political level the Treaty is a significant reflection of the current spirit of cooperation between the Soviet and US leadership. Since the tone of this relationship also is a key factor determining the European security-political climate this is fundamentally positive. However it is important to recall that the political situation in the Soviet Union is volatile. The Soviet leadership can change abruptly and with it the foreign and security policy which we have enjoyed under Gorbachev. Thus the present positive political climate is also unstable, since it depends largely upon how long Gorbachev remains in power and/or is able to continue his present foreign policy. However as long as it lasts it has a positive effect on the overall nordic security-political climate.

On the military level the START Treaty will also have consequences for the nordic strategic environment. This is because part of the nuclear forces regulated by the Treaty have a partial nordic orientation. That is not to say that they are targeted against the nordic regions, but that their basing, transit or launch involves the use of areas close to or in the nordic area. This makes the affected regions of vital importance for US and Soviet national security, which in turn draws their political and military interest to these areas. Since the START Treaty alters the number and significance of these forces it will also affect their impact on the nordic region. This will not have immediate or direct consequences but will modify the Soviet and US strategic interests in the north, including the way in which they perceive the importance of the region and their nordic military posture. Hence the changes inaugurated by the START Treaty have long-term consequences for the regional security equation. These consequences are outlined below.

1. Before START

The US and Soviet strategic nuclear forces which are part of the START Agreement consist of a triad of Strategic Nuclear Delivery Vehicles (SNDV). They are:

Submarine Launched Ballistic Missiles (SLBM),
Heavy Bombers (LRB - Long Range Bombers),
Intercontinental Ballistic Missiles (ICBM).

These strategic nuclear forces are part of the central nuclear relationship between the US and the USSR and as such represent weapons of last resort. Their primary function hitherto has been nuclear deterrence, and they have thus made a direct confrontation between the two great powers unthinkable. These weapons are thus not directed against the nordic region specifically, but the operation of these US and Soviet forces has involved the use of the nordic area or its vicinity to varying degrees. This is outlined below, giving the situation in the late 1980's.

1.1. US Strategic Forces in the North Before START

The breakdown of the pre-START US strategic nuclear warhead arsenal¹ is provided in the table below and its nordic consequences analysed in the following subsections:

| System | Warheads | Percent |
|---------|----------|---------|
| SLBM | 5,376 | 40.1 % |
| LRB | 5,572 | 41.6 % |
| ICBM | 2,450 | 18.3 % |
| Totals: | 13,398 | 100.0 % |

Two of the three weapons systems in the triad have involved planned or actual operations in or near the nordic region. They are the SLBM forces, whose nordic orientation has been gradually declining during the 1980's,

¹ Unless otherwise specified all percentages are based on the number of warheads of the different weapons systems in the US and Soviet strategic nuclear arsenal in June 1990, using the START counting rules for the maximum permitted real warhead loadings. The source for the data is: The Military Balance 1990-1991. London, HISS, October 1990: pp. 212-213, 216-223.

and the LRB forces, whose nordic orientation has increased during the 1980's. US ICBM forces have no nordic operational profile whatsoever.

US SLBM forces

40% of the US arsenal of strategic nuclear warheads is deployed on submarine launched ballistic missiles (SLBM). 36% of these warheads consist of the Poseidon C-3 intermediate range SLBM. Its 4,600 km range means that it must be launched from patrol areas in the north Atlantic, Mediterranean or possibly northern Indian Ocean if it is to reach targets in the Soviet strategic heartland west of the Urals. Most of these SLBM are probably assigned patrol zones in the north Atlantic, which is where their main forward operating base lies (Holy Loch in Scotland) from which a reported ten SSBN operate.

On the other hand 64% of the US strategic submarine force is now equipped with the intercontinental range Trident C-4 and D-5 SLBM which is replacing the Poseidon. The 7,400 and 12,000 km range of these missiles permit them to reach strategic targets in the Soviet Union from most of the worlds oceans. Since the Soviet capability to track and attack US submarines increases the closer to the Soviet main naval bases one operates it is unlikely that the Trident submarines would approach the relatively dangerous waters around the nordic area. Thus the development of this SLBM system as of 1980 has actually reduced the strategic importance of the north since it is reducing the number and significance of those SLBM's deployed to the northern waters.

US LRB forces

42% of US strategic nuclear warheads are deployed aboard intercontinental range bombers (LRB). These bombers are all home-based in the United States and their shortest transit route to targets in the Soviet Union passes over the Arctic. For those bombers assigned targets in the Soviet heartland the shortest flight route passes over the 'European Arctic' - that is to say over Greenland, the northern part of the Norwegian Sea and then directly over Norway, Sweden and Finland. This makes this nordic airspace of vital importance for the US offensive nuclear forces and for the Soviet strategic air defence efforts.

How many US LRB actually would employ the shortest flight route to their targets is of course uncertain and would vary according to the scenario. These aircraft could approach their Soviet targets from a variety

of directions, using their aerial refuelling capability and/or operating via forward air facilities on Guam in the Pacific and Diego Garcia in the Indian Ocean. However most would probably use the direct Arctic flight routes. This is so for three reasons. In the first place it reduces the LRB dependence upon vulnerable support facilities. In the event of a nuclear war forward air bases would be destroyed in minutes and vulnerable airborne tanker operations could be interfered with or prevented. This makes the use of direct flight routes with a minimum of support dependence desirable or unavoidable. Secondly the desolation of the Arctic airspace means that there is less likelihood of the LRB's being detected or interfered with by third parties, as could be the case if for instance the People's Republic of China, India, the Middle East or central Europe were used as transit routes. Finally the Arctic, and particularly nordic Arctic, offers the greatest security for the LRB forces. This is the only part of the world where they can approach the immediate vicinity of the Soviet frontiers behind the shield of an allied state (Norway) and with immediately available forward based air support (in the UK and Iceland). It is also the point where the Soviet strategic air defences are the thinnest since the bordering states of Norway, Finland and Sweden make it difficult for them to extend outwards beyond the Soviet frontiers, and the Soviet heartland begins immediately inside the frontiers.

Thus an important part of the US LRB force would probably employ nordic airspace in the event of a war with the USSR. This possibility has increased since the deployment of the ALCM after 1982. This is a standoff weapon with a 2,400 km range, designed to be launched from relatively secure airspace beyond the reach of the Soviet air defences by the vulnerable B-52G/H bombers. One of the few areas in the world which both lies within 2,400 km range of the bulk of Soviet strategic targets and is relatively sheltered from the Soviet air defence system is the Norwegian Sea. Since the ALCM is also designed to be used en masse - overwhelming the air defences - and in concert with the penetrating bombers - blasting a path for them through the defences - the ALCM has boosted the strategic importance of the nordic airspace considerably.²

²

cf: RIES, Tomas: Strategic Implications of Unmanned Airborne Vehicles for the Nordic Region. Oslo, IFS, 1st. ed., April 1990: pp. 39-44.

US ICBM forces

18% of US strategic nuclear warheads are deployed aboard intercontinental ballistic missiles (ICBM's). This force has virtually no nordic impact at all. It is entirely based in the US and its extra-atmospheric ballistic trajectory to its targets in the USSR passes far above nordic airspace. It has had a marginal impact on the nordic area by leading to the deployment of Soviet early warning EW radars to her Arctic coastline (Pechora and the Kola) and to the Baltic area but the security political consequences of these facilities are marginal. Thus this force has helped reduce the strategic importance of the nordic area.

1.2. Soviet Strategic Forces in the North before START

The breakdown of the Soviet pre-START strategic nuclear warhead arsenal is provided in the table below and its nordic consequences analysed in the following subsections:

| System | Warheads | Percent |
|---------|----------|---------|
| SLBM | 3,636 | 31.2 % |
| LFB | 1,460 | 12.6 % |
| ICBM | 6,545 | 56.2 % |
| Totals: | 11,641 | 100.0 % |

Two of the three Soviet strategic nuclear weapons systems have also involved planned or actual operations in the nordic area. They are the SLBM force, of which two-thirds has traditionally been based on the Kola and whose nordic orientation has increased strongly during the 1980's. The second force with a partial nordic orientation are the Soviet strategic bombers, whose estimated wartime use of the nordic area for forward basing and transit has remained roughly stable. Finally Soviet ICBM forces have no nordic operational profile whatsoever.

Soviet SLBM forces

31% of Soviet strategic nuclear warheads are deployed on her SLBM's, which have a strong nordic orientation. In 1990 61% of all Soviet strategic submarines (38 SSBN) were based on the Kola and 39% on the Kamchatka Peninsula in the Far East (24 SSBN), which has also been the rough SSBN distribution for the last two decades. However since 1980 the importance of the Kola bases has increased. During the 1980's the Arctic sea areas north of the Kola - the Barents, Kara and Greenland Seas and

the Arctic Ocean - became the patrol and launch zones for the modern Soviet SSBN's. This has led to the deployment of all Soviet SSBN classes constructed since 1980 - the Typhoon and Delta IV types - to the Kola. They are armed with the advanced SS-N-20 and SS-N-23 SLBM with 10 and 4 warheads respectively. As a result 72% of the Soviet SLBM warheads are based on Kola and only 28% on Kamchatka:

| SSBN | Total | Northern Fleet | SLBM | SLBM/SSBN | Warheads | WARHEADS | |
|-----------|-------|----------------|---------|-----------|----------|-------------|-------------|
| | | | | | | NorFleet | PacFleet |
| DELTA IV | 6 | 6 (100 %) | SS-N-23 | 16 | 4 | 384 | - |
| TYPHOON | 6 | 6 (100 %) | SS-N-20 | 20 | 10 | 1,200 | - |
| DELTA III | 14 | 7 (50 %) | SS-N-18 | 16 | 7 | 784 | 784 |
| YANKEE II | 1 | 1 (100 %) | SS-N-17 | 12 | 1 | 12 | - |
| DELTA II | 4 | 4 (100 %) | SS-N-8 | 16 | 1 | 64 | - |
| DELTA I | 18 | 8 (44 %) | SS-N-8 | 12 | 1 | 96 | 120 |
| YANKEE I | 12 | 6 (50 %) | SS-N-6 | 16 | 1 | 96 | 96 |
| Totals: | 61 | 38 (62 %) | | | | 2,636 (72%) | 1,000 (28%) |

This makes the nordic area important both for the basing and operation of some three quarters of the Soviet SLBM warhead arsenal, leaving it a key element in the US-Soviet strategic nuclear relationship. This SSBN deployment is *one* of the primary factors behind the buildup of the Soviet Northern Fleet general purpose forces over the last three decades, as well having helped draw considerable US (and British) naval interest to the northern waters.

Soviet LRB forces

13% of Soviet strategic nuclear warheads are deployed on her intercontinental bomber force. These aircraft have their main peacetime bases deep in the central USSR and are not home-based near the nordic area. However all of these bombers are strongly dependent upon using the shortest transit route from the Soviet Union to their targets in the US, since they do not dispose of secure forward basing areas outside the USSR, and their aerial refuelling capability is limited. This means that most if not all would transit the Arctic in the event of war. In this respect it is important to note that 71% of the Soviet LRB main bases (five out of seven) are located west of the Urals. From here the shortest flight path to the US passes directly over or to the immediate north of the nordic states. While the Soviet LRB forces would disperse in the event of war and would probably not operate en masse, a significant proportion would in all likelihood transit the airspace in the immediate vicinity of the nordic states. This is also borne out by the fact that 40% (five out of twelve) of their forward staging bases along the Soviet Arctic coastline are located near the nordic area on the Kola (2) on Novaja Zemlya (1) and on

Zemlya Frantsa Iosifa (2). Thus the airspace around the nordic region is probably of major importance as a forward staging and transit route for the Soviet strategic bomber force.

Soviet ICBM forces

56% of Soviet strategic nuclear warheads are deployed on her ICBM forces. For the same reasons as for the US ICBM's these have had very limited nordic implications. Since the mid-1960's they have all been based in the central USSR relatively far from the nordic area, and their extra-atmospheric ballistic trajectory places their transit route far above nordic airspace. Hence their deployment has reduced the strategic importance of the nordic area by diminishing the relative size and significance of those nuclear forces with a nordic orientation.

1.3. Conclusion

On the basis of the above it is possible to establish a rough picture of the role of the nordic area in the US and Soviet strategic nuclear relationship. The table below provides an overview of the pre-START proportion of US and Soviet strategic nuclear forces based in the nordic area and/or estimated as having it as a primary operational zone in wartime:³

| | | Warheads | Nordic | Nordic % of total |
|------|------|----------|--------|----------------------|
| US | SLBM | 40 % | 30 % | 12 % |
| | LRB | 42 % | 90 % | 38 % |
| | ICBM | 18 % | - | - |
| | Sum: | 100 % | | 50 % |
| USSR | SLBM | 31 % | 72 % | 22 % |
| | LRB | 13 % | 40 % | 5 % |
| | ICBM | 56 % | - | - |
| | Sum: | 100 % | | 27 % |

It is also possible to provide a slightly more precise picture of which parts of the nordic area are affected by the Soviet-US strategic nuclear

³ Obviously this only provides a rough estimate of the strategic role of the nordic area in the US - Soviet strategic nuclear relationship. It is impossible to determine exactly how many strategic bombers would operate in a given area since this will fluctuate depending upon the scenario. However on the basis of available information it is possible to make a rough estimate of the general proportion of bombers which would have the nordic and adjacent airspace as a major operational area, and this is what the table provides. The percentages for the Soviet and US SLBM forces on the other hand are fairly reliable since these are actually based in the area.

relationship and - very roughly - to what extent:

| | % of SNDV | Airspace | Sea | Land | % of Arsenal |
|------|-----------|----------------|--------|-------|--------------|
| US | 30 % SLBM | - | Patrol | - | 12 % |
| | 90 % LRB | Transit/launch | - | - | 38 % |
| | 0 % ICBM | - | - | - | - |
| USSR | 72 % SLBM | - | Patrol | Bases | 22 % |
| | 40 % LRB | Airspace | - | FOB | 5 % |
| | 0 % ICBM | - | - | - | - |

It is interesting to note that roughly half of the US strategic forces have a potential nordic operational profile. This is largely due to the important role played by the US strategic bombers, which carry the largest number of warheads in the US strategic nuclear arsenal and which have a strong nordic orientation. On the other hand the Soviet strategic nuclear forces have a relatively lower nordic profile, with one quarter likely to involve the nordic area in their operations. This is primarily due to the predominant role played by their ICBM force, which has no nordic orientation at all.

2. After START

The exact consequences of the START Treaty for the composition of the US and Soviet strategic nuclear arsenal are not possible to foresee since the Treaty leaves considerable latitude for each side to decide how it will make the cuts within the overall limits. However it is possible to draw some general conclusions and estimate the broad range of alternatives open to both sides.

On this basis it appears likely that the proportion of US and Soviet strategic nuclear forces with a potential nordic orientation is likely to increase after START. This is so for three reasons:

Firstly because the START reductions impose the strongest cuts on those forces with a non-nordic profile, that is to say US and Soviet ICBM forces. This means that the relative importance of the remaining forces increases.

Secondly because the cuts imposed on the Soviet SLBM force will in all likelihood eliminate all Soviet strategic submarines based in the Far East, leaving all or almost all remaining SSBN's based on the Kola.

Thirdly because the START counting rules (and US strategy) strongly favour the strengthening of the heavy bomber forces, which will increase the importance of nordic airspace further.

One should note that the START Treaty imposes strong cuts on the US and Soviet ballistic warheads (ICBM and SLBM). The Treaty leaves no latitude in this area, obliging the US to cut ballistic warheads by a minimum of 38% and the USSR to cut them by at least 45%. This will reduce the ballistic warheads, but will also make the remaining ballistic warheads more important, since there are less reserves and the smaller forces will be more vulnerable. This increases the importance of whatever forces are left or moved up to the nordic area. This point is particularly important where the Soviet SSBN force is concerned.

Finally one should also note that the above warhead cuts (38% and 45%) only apply to both sides ballistic warheads, and that the counting rules for the bombers are far more flexible. This is dealt with below.

2.1. US Strategic Forces in the North after START

Tables 1. and 2. outline the present number of warheads in the US strategic arsenal included in the START Treaty, the warhead limits under the Treaty and the resulting cuts which the US must make if it is to comply with the Treaty. On the basis of the data presented in the table the US must - technically - cut her overall number of warheads by 38% and her Strategic Nuclear Delivery Vehicles (SNDV) by 17% if she is to meet the Treaty limits:

| | Warheads | SNDV |
|-------------|--------------|-----------|
| US total | 9,724* | 1,930 |
| START limit | - 6,000 | - 1,600 |
| | 3,724 (38 %) | 330 (17%) |

* Using START counting rules.

The SNDV limits are precise and cannot be circumvented, but the warhead limits are extremely flexible and strongly favour the heavy bomber. In practice - as we shall see - the actual US warhead arsenal can be more than doubled by exploiting the special counting rules governing heavy bomber warheads. Secondly the Treaty permits considerable latitude as to the way in which the different SNDV types are reduced to meet the overall counting limits. The most likely options open to the US are examined below.

US SLBM and ICBM forces

One of the few certain predictions which can be made on the basis of the START regulations is that the US will have to cut her ballistic missile warheads (ICBM and SLBM) by at least 37%:

| | |
|-------------|-------------|
| US total | 7,826 |
| START limit | - 4,900 |
| | 2,926 (37%) |

This is one of the few areas where the START Treaty leaves very little room for manoeuvre, as the limits and the counting rules are clear. However from here on the going gets less clear. Within the above overall ceiling governing the ballistic warheads the US is free to choose how the

ballistic cuts are to be made and hence what share of ICBM and SLBM will be eliminated. The size and composition of the remaining ICBM and SLBM force is therefore difficult to foresee. However one should note that the SLBM remains the only secure second strike system in the US nuclear arsenal, and as such it occupies a position of special importance. Thus it is likely that a significant number of warheads will remain deployed on the SLBM's.

On the other hand it seems likely that the remaining SLBM force will only include the most modern Trident SLBM's and will lose its last intermediate range Poseidon forces. These ageing SLBM's (first deployed in 1971) have already been phasing out gradually in favour of the new Trident C-4 and D-5 systems and today only 12 Poseidon SSBN remain in operation. Their retirement is likely to be accelerated by the START Treaty partly because the total SLBM force must now be cut, and partly since each Poseidon SLBM is counted as carrying 10 warheads and hence substantial warhead savings (1,920) can be made by removing this SLBM type. This would cover 66% of the US ballistic missile warhead reductions:

| | |
|------------------------|---------------|
| Minimum ballistic cut: | 2,926 |
| Poseidon warheads: | - 1,920 (66%) |
| | 1,006 |

Such a cut in the Poseidon force is important for the nordic region since it removes the last US SSBN type which had a clear north Atlantic orientation and of which part or all of the force could have involved the nordic waters. Their removal will help reduce the strategic significance of these waters, and in this respect reduce the nordic involvement in the US-Soviet nuclear relationship.

The reductions imposed on the remaining US ICBM and SLBM forces are difficult to predict. On the other hand the exact composition of the remaining ballistic missile force does not matter very much as far as the nordic area is concerned. Neither of these systems involves the nordic area in their operation. The ICBM force has no nordic orientation, while the Trident SLBM force is extremely likely to involve nordic waters. Thus what really matters is not their future mix but their relative importance in the overall US strategic nuclear arsenal. The greater this is the less important will be those systems which do have a nordic orientation, and hence the less involved will the nordic region be in the great power nuclear relationship.

In this respect it is important to note that the relative importance of the

US ICBM and SLBM force will decline after START, as the proportion of warheads deployed aboard the ballistic systems will fall markedly. At a minimum level - assuming the full 4,900 ballistic missile force is retained - the drop will be from the present 58% of the total force down to 45%. As we shall see below it could be even greater, as there are reasons why the US ICBM/SLBM force may drop even lower than the 4,900 warhead limit.

Thus START is in fact imposing cuts on the two nuclear systems which have detracted from the strategic importance of the nordic area. This will make the remaining US SNDV system - the heavy bombers - relatively more important in the overall US nuclear arsenal. Since this system also has a marked nordic orientation this could also increase the strategic importance of the nordic area.

US LRB forces

On the surface the START Treaty indicates that the US will have to make significant cuts in her heavy bomber forces. Assuming that the US desires to retain her full complement of 4,900 ICBM and SLBM warheads then the heavy bomber warheads will have to be cut by 42%, since there are today 1,764 bomber warheads and the limit is 1,100. This will *in theory* reduce the US bomber force, but in practice the effect can be the opposite. The reasons for this are twofold: firstly because of the general drift of US national security strategy and specifically nuclear strategy, and secondly because of the special counting rules which apply to heavy bombers under START, and which strongly favour these systems.

The evolving US National Security Strategy and nuclear strategy are presented elsewhere and will not be dealt with here,⁴ other than to note that it strongly favours the development of the heavy bomber forces over and above ballistic missile systems and that the essence of the US START strategy was based on favouring the bombers. Thus there is a strong trend supporting the strengthening of the US heavy bomber force, and particularly of the penetrating bombers.

4

See for instance (and particularly TRITTEN):

1991 Joint Military Net Assessment. Joint Chiefs of Staff, Washington, D.C., DOD, March 1991: pp. 12-7.

RIES, Tomas: 'US National Security Strategy in the 1990's.' in: Strategic Implications of Unmanned Airborne Vehicles for the Nordic Region. Oslo, IFS, 1st. ed., April 1990: pp. 30-35.

SNIDER, Don M.: Evolution of a New U.S. Military Strategy. Washington, D.C., CSIS, 1st. ed., September 1990: pp. 45.

TRITTEN, James J.: America Promises to Come Back: A New National Security Strategy. (NPS-NS-91003A), Monterey, Ca., Naval Postgraduate School, 1st. ed., May 1991: pp. 153.

This is evident if we look closer at the START counting rules which in fact permit both sides to increase the actual number of warheads dramatically over the 6,000 limit, if the warheads are placed on heavy bombers, and particularly if they are placed on non-ALCM heavy bombers. Thus having more bombers permits the US to have more warheads. This is so for two reasons:

1. ALCM heavy bomber counting rules.

The START Treaty distinguishes between ALCM bombers (which can carry ALCM) and non-ALCM bombers (which can carry bombs and SRAM). The US is permitted to have up to 150 ALCM heavy bombers which are counted as carrying 10 ALCM each though they actually are permitted to carry 20 ALCM:

| | | |
|--------------|------------|---------|
| Actual ALCM: | 150 x 20 = | 3,000 |
| START count: | 150 x 10 = | 1,500 |
| Net gain: | | + 1,500 |

Thus by deploying the full 150 ALCM bomber force the US can increase its authorised nuclear warhead arsenal from 6,000 to 7,500, which is a strong incentive to retain the full 150 ALCM bomber force. The US can also deploy more ALCM bombers, but in this case all those exceeding the 150 level are counted for the actual number of ALCM which they carry.

The US presently exceeds the number of limited-count ALCM bombers by 22 aircraft:

| | |
|---------|-----|
| B-52G: | 77 |
| B-52H: | 95 |
| | 172 |
| START: | 150 |
| Excess: | 22 |

Thus we can expect the US to reduce the present B-52G force to 55 aircraft, which reduces the ALCM bomber force by 13%. From this perspective the size of this nordic-oriented weapons system will probably be cut marginally. One should also note that the 77 B-52G are only able to carry 12 ALCM. Thus if the ALCM bomber force is trimmed to fit the START ALCM counting limit and optimised for maximum ALCM loads (-22 B-52G) then it would only carry 2,560 ALCM:

| | | |
|-------|-----------|-------|
| B-52G | 55 x 12 = | 660 |
| B-52H | 95 x 20 = | 1,900 |
| | | 2,560 |

Thus using the present B-52G/H ALCM carriers the US will only gain 1,060 warheads over the START limit of 6,000. (2,560 - 1,500 = 1,060.) However this can be increased to 1,500 when the B-52G are replaced with another ALCM bomber (eg the B-1B) in the years to come. This role conversion is already foreseen for the B-1B for when it is no longer perceived as capable of penetrating Soviet strategic air defences. USAF analysts estimate that this will be the case in the latter half of the 1990's.

2. Non-ALCM heavy bomber counting rules.

However the real warhead boost will probably come through the deployment of non-ALCM heavy bombers. Here the START Treaty permits truly remarkable warhead gains. All non-ALCM heavy bombers are counted as carrying only 1 warhead under the START rules, though they in fact are allowed to carry their full weapons load. The US B-52G version which is not fitted for carrying the ALCM can carry up to 12 bombs/SRAM and the B-1B can carry up to 24 bombs/SRAM. Thus the present US non-ALCM heavy bomber force is already permitted to carry 2,614 warheads over the 6,000 warhead START limit:

| Bomber Number Warheads | | | | |
|------------------------|-----|---|----|---------|
| B-52G | 39 | x | 12 | = 468 |
| B-1B | 95 | x | 24 | = 2,280 |
| Sum: | 134 | | | 2,748 |

By subtracting the START warhead count for these bombers from the real maximum load which they can carry we get the number of warheads over the START limit which these bombers provide the US:

| | |
|------------------|-------|
| Actual warheads: | 2,748 |
| START count: | 134 |
| Difference: | 2,614 |

If we add up the existing extra ALCM and non-ALCM heavy bomber warheads which are permitted but not counted under START we thus get the actual authorised US warhead level:

| | |
|--------------------------|-------|
| Extra ALCM warheads: | 1,060 |
| Extra non-ALCM warheads: | 2,614 |
| Sum extra warheads: | 3,674 |

Thus with the present heavy bomber ORBAT the actual number of warheads permitted to the US after START is 9,674 (6,000 + 3,674). This means that the US really only needs to cut her warhead arsenal by 28% to meet the START requirements, provided she retains her full heavy

bomber force along the lines indicated above:

| | |
|------------------------|------------------|
| Real US warhead total: | 13,398 |
| Real START limit: | 9,674 |
| Cuts: | - 3,724 (27.8 %) |

However under these conditions 55 % of the US strategic warhead arsenal is carried by the heavy bombers:

| | |
|------------------------|----------------|
| ALCM warheads: | 2,560 |
| Non-ALCM warheads: + | 2,748 |
| Total bomber warheads: | 5,308 |
| Real START limit: | 9,647 |
| LRB warheads: | - 5,308 (55 %) |
| Ballistic warheads: | 4,339 |

This represents an increase of heavy bomber share of the US strategic warhead arsenal of 13%, from the present 42% of warheads carried by the LRB up to 55%. This will make the LRB force the single strongest element in the nuclear triad. This is important if we take into account that this force has the nordic area as one of its primary operational zones, both for standoff ALCM launch and for transit of penetration bombers.

Finally one should also note one important point. All the above calculations are based on the assumption that the US wishes to retain her full force of 4,900 warheads on the ballistic missiles (ICBM and SLBM) permitted under START. However this is by no means certain. It is quite possible that the US will reduce the number of her ballistic warheads below the 4,900 limit in order to deploy more bombers.

There are two key arguments in favour of this option. Firstly it fits in with US strategy which is heavily in favour of an increase in the strategic bomber force, and particularly of dual-capable nuclear/conventional penetration bombers with a global range. This is favoured for several reasons⁵. On the nuclear strategic level because the manned penetration bomber provides the best means of delivering the type of discriminating strategic counterforce attack which appears to be a primary objective in US nuclear strategy in the 1990's. Secondly because the manned bomber can - unlike the ICBM and SLBM - also be used for conventional operations. Thus it is not limited exclusively to the frozen stalemate of nuclear deterrence but can be used to support US global interests and for regional contingencies. This is an argument which is equally attractive to

⁵

cf. RIES, op. cit., pp. 39-44.

Congress as it is to the Air Force, and in fact the move towards an increased emphasis upon dual capable heavy penetration bombers has been one of the key - if not the key - elements in the US START strategy.

Secondly, an increase in heavy non-ALCM bombers would also permit an increase in warheads under the START counting rules. Thus replacing one Minuteman III ICBM attributed with 3 warheads for three non-ALCM bombers which are also attributed with 3 warheads but which are permitted to carry 72 warheads would increase the number of US warheads by a factor of 24:

| Number | Weapons System | Warheads: START count | Warheads: Real count |
|--------|------------------|-----------------------|----------------------|
| 1 | Minuteman III | 3 | 3 |
| 3 | Non-ALCM bombers | 3 | 72 |

In fact if the US so desired she could double her number of strategic warheads after START and still remain fully within the formal START warhead limits. An example of this is shown below:

| SNDV | Number | Warheads per SNDV: START count | Total Warheads: START count | Total Warheads: Real count |
|---------|--------|--------------------------------|-----------------------------|----------------------------|
| Trident | 500 | 8 | 4,000 | 4,000 |
| MX | 120 | 10 | 1,200 | 1,200 |
| B-1B | 800 | 1 | 800 | 19,200 |
| | 1,420 | | 6,000 | 24,200 |

Such a force would leave the number of delivery vehicles (SNDV) well within the START limit (1,600) and exactly match the START warhead limit (6,000) while providing the US with a real warhead total of 24,200. This is of course strictly hypothetical and will not happen for many reasons, but serves to illustrate the way in which the heavy bombers can be used to exploit the START counting rules. However the extreme development given above is neither necessary nor economically justifiable (given the cost of modern heavy bombers). Nor is it likely that the heavy bombers would be fully loaded with warheads in an operational context, since it limits their flight performance and because multiple bombing missions on such a scale overtaxes the flight crew. However what is likely is that the non-ALCM heavy bomber force may be prioritised over the other systems. Since these also have the nordic airspace as a primary transit zone in wartime such a development would increase the strategic importance of the nordic area.

2.2. Soviet Strategic Forces in the North after START

Tables 3. and 4. outline the present number of warheads in the Soviet strategic arsenal and included in the START Treaty, the warhead limits under the Treaty and the resulting cuts which the Soviet Union must make if it is to comply with the Treaty. The USSR has a similar latitude in determining the exact form of the cuts within the overall START limits and thus the exact consequences cannot be foreseen. However as for the US it is possible to identify the likely general trend.

The USSR must technically cut her overall number of warheads by 45% and her SNDV by 46% if she is to meet the Treaty limits:

| | Warheads | SNDV |
|--------------|-------------|-------------|
| Soviet total | 10,996* | 2,947 |
| START limit | - 6,000 | - 1,600 |
| | 4,996 (45%) | 1,347 (46%) |

* Using START counting rules.

The launcher limits are clear but the the warhead limits are as flexible for the USSR as for the US, as is the latitude for determining how the cuts will be distributed within the overall limits. The likely options are outlined below.

Soviet ballistic forces

The START counting rules include specific limits on the two most modern Soviet ICBM types: the Heavy ICBM (SS-18) and the Mobile ICBM (SS-24 and SS-25). Here the ceiling is set at 1,540 warheads for the heavy ICBM and 1,100 warheads for the mobile ICBM:

| | | | |
|----------------------|-------------|-----------------------|--------------|
| Heavy ICBM warheads: | 3,080 | Mobile ICBM warheads: | 825 |
| START limit: | - 1,540 | START limit: | 1,100 |
| | 1,540 (50%) | | + 275 (+33%) |

These counting rules are clear. This means that heavy ICBM warheads must be cut by at least 50% but that the mobile ICBM can still be increased by 33% since the upper limit has not yet been reached. Thus the aggregate heavy and mobile ICBM cuts are actually 32%:

| | |
|--------------|-------------|
| Modern ICBM: | 3,905 |
| START limit: | - 2,640 |
| | 1,265 (32%) |

These ICBM are the most modern in the Soviet arsenal and a vital part

of her nuclear planning. Thus it is likely that their full quota will be retained. If this is so, and assuming the USSR wishes to keep her full 4,900 ballistic warhead complement, there will be 2,260 warheads left to be split between the remaining older ICBM and the SLBM force:

| | |
|------------------------|---------|
| START ballistic limit: | 4,900 |
| Hvy & Mob limit: | - 2,640 |
| | 2,260 |

Of course more warheads could be allocated by cutting the heavy and mobile ICBM warheads below the upper START limits, but this appears unlikely for the reasons given above. This means that major cuts will have to be made in the large arsenal of older ICBM and SLBM warheads:

| | |
|----------------------|---------|
| Older ICBM warheads: | 2,640 |
| SLBM warheads: | + 3,636 |
| Sum: | 6,276 |

These 6,276 warheads must be cut by 64% if they are to reach the 2,260 warhead level:

| | |
|----------------------|-------------|
| Old ICBM/SLBM wrhds: | 6,276 |
| Available: | - 2,260 |
| | 4,016 (64%) |

The distribution of these cuts between the older ICBM and the SLBM forces is up to the USSR and thus difficult to foresee. However probably most cuts will be made in the older ICBM force. On the one hand the ICBM leg of the triad is already partly covered by the modern heavy and mobile ICBM warheads, and on the other hand since the Soviet SLBM force represents their only relatively secure strategic nuclear reserve. Since the Soviet SLBM force is of particular importance for the nordic region its development is examined in detail below.

Soviet SLBM forces

While the exact cuts to the Soviet SLBM force cannot be foreseen it appears that they under all circumstances will have to be cut considerably, even if they are prioritised over the older ICBM. On a minimum level - assuming that the Soviet leadership scrapped all older ICBM systems in favour of the SLBM's - the SLBM force would still have to be cut by 10%. Such an extreme development is unlikely. More probable is that at least some of the older ICBM are retained and that somewhere between 40% to 60 % of the SLBM warheads are cut. The exact size of the SLBM reductions within these two extremes depends upon how many of the older ICBM's the Soviet leadership chooses to preserve.

However from a nordic perspective a precise prediction is not necessary, since the strategic consequences for the nordic area are essentially the same at both ends of the scale. This is because even at the minimum end of the range, entailing 40% cuts, the USSR will have to eliminate virtually all of the older SSBN's. This in turn means that the only remaining SSBN forces will be based on the Kola, since this is where all of the modern SSBN forces are based today. This is illustrated in the table below, which shows how many SSBN's the USSR will have to cut if she is to reduce her SLBM warhead arsenal by 40 and 60 % respectively, and assuming that the Soviet Navy tries to retain as many modern SSBN as possible:

| SSBN | 40 % SLBM WARHEAD CUT | | 60 % SLBM WARHEAD CUT | |
|-----------|-----------------------|--------------|-----------------------|--------------|
| | SSBN cuts | Warhead cuts | SSBN cuts | Warhead cuts |
| Yankee I | 12 (100 %) | 192 | 12 (100 %) | 192 |
| Delta I | 18 (100 %) | 216 | 18 (100 %) | 216 |
| Delta II | 4 (100 %) | 64 | 4 (100 %) | 64 |
| Yankee II | 1 (100 %) | 12 | 1 (100 %) | 12 |
| Delta III | 8 (57 %) | 896 | 14 (100 %) | 1,568 |
| SUM | 43 SSBN | 1,380 (38%) | 49 SSBN | 2,052 (56%) |

These cuts can partly be offset by downloading - reducing the number of warheads on a missile. The START Treaty permits the downloading of up to a total of 1,250 re-entry vehicles on up to three different types of ballistic missile. This would permit a greater number of SNDV (and hence SSBN launch platforms) to be retained if desired. However even if this option is used the Soviet SSBN fleet will have to be cut substantially. At a minimum this will probably involve the removal of 43 SSBN's - or roughly 70 % of the present SSBN force. If this is the case, and if the Soviets try to keep their most modern systems, then virtually all SSBN's with the exception of the Typhoon and Delta IV classes will have to be eliminated. This in turn permits us to draw two main conclusions concerning the Northern Fleet. These are:

1. On the basis of present deployments the bulk of the Soviet Navy's remaining SSBN's will probably be based with the Northern Fleet and operate in Arctic waters. All Typhoon and Delta IV SSBN's deployed so far operate with the Northern Fleet, whose Kola bases provide the only good access to the Arctic Ocean, for which the Typhoon and Delta IV classes are specially designed. As a result the role of the Northern Fleet in global nuclear strategy is likely to increase.
2. An overall reduction of the number of strategic nuclear

launchers will make the remaining systems even more important. Because of the size of the likely SSBN cuts this applies particularly to this force. At the same time the remaining Soviet SSBN force would also - because it would be far smaller - become far more vulnerable to US strategic ASW. Hence we may expect US efforts to improve her strategic ASW capability - and Soviet efforts to defend her SSBN's - to increase as well and to be focussed to a considerable degree to the North Atlantic and Arctic.

The aggregate result is that the importance of the Northern Fleet in global nuclear strategy will probably increase during the 1990's. This fleet will contain the lions share - if not all - of the Soviet SSBN forces, whose smaller number will constitute a primary strategic asset and target for the USSR and the US respectively. This will probably maintain - and possibly increase - both great powers strategic interests in the associated Arctic and North Atlantic waters.

Soviet LRB forces

Finally the same warhead counting rules apply to the Soviet heavy bomber warheads as for the US, which again makes the exact outcome of the START Treaty uncertain. However it is not certain that the USSR will seek to exploit the bomber option as fully as the US might. This is because the air breathing leg of the triad has not - yet - emerged as such an important element in Soviet strategic planning as it has in US planning. However this could change.

Under any event the Soviet Union can still increase her heavy bomber warheads without breaking the START limits, since she has not yet matched them. If we assume that the USSR wishes to retain her full ballistic warhead quota of 4,900, then she will have 1,100 left for the heavy bombers. However the USSR presently only deploys 815 bomber warheads (according to the START counting rules) which means that this force can under all circumstances still be increased by 35% before it reaches the START bomber warhead limit.

It seems likely that the USSR will seek to fill this gap, which cannot be filled by ballistic warheads, and thus there will probably be an increase in the Soviet LRB leg of the triad. As noted earlier this weapons system has a partial nordic orientation (estimated at some 40% of the full force) which in turn means that the strategic significance of the nordic airspace

may also grow along with the increase in the Soviet LRB force.

It is also possible that the USSR will choose to boost her bomber forces above the 1,100 warhead limit, by cutting the number of ballistic warheads below the maximum level of 4,900. However this seems unlikely, given the Soviet penchant for ICBM and the already large cuts which she will have to inflict on her SSBN forces. One should also note that the US has a large technological advantage of the USSR in the manned bomber field, and hence it is not sure to what extent the USSR would want to focus on this area of comparative disadvantage.

3. Conclusion

The following general conclusions can be drawn regarding the consequences of the START Treaty for the nordic area:

1. The relative number of warheads on the US heavy bomber leg of the strategic triad will increase and the heavy bombers will probably constitute the largest launch platform in the strategic arsenal. This increases the significance of this weapons system in the US-Soviet strategic nuclear relationship. Since this weapons system also has a strong potential nordic operational profile this could in turn increase the strategic importance of the nordic airspace.
2. The Poseidon SLBM force will probably be eliminated, removing the last of the US SLBM systems with a clear north Atlantic patrol profile. This will remove this link between the nordic waters and the US-Soviet strategic nuclear relationship.
3. The remaining SLBM and ICBM force will be cut, reducing their relative importance in the strategic arsenal marginally.
4. The Soviet SLBM force will be cut substantially, leaving only the modern Delta IV and Typhoon SSBN classes and possibly a few of the Delta III class. At present all Soviet Delta IV and Typhoon SSBN's are based on the Kola and they are likely to remain based there since this is the only area which presently provides access to their Arctic patrol zones. As a result all or virtually Soviet remaining SSBN's will be based here, increasing the relative importance of these bases and the adjacent sea areas.
5. The overall Soviet ICBM force will be cut substantially, reducing its strategic importance in the Soviet arsenal marginally.

The aggregate result is that the significance of the systems which have a nordic operational profile will increase after START. This will also

increase the strategic importance of the nordic area marginally, and particularly in two areas:

The importance of the far northern waters as a Soviet SSBN basing and patrol zone will increase considerably.

The importance of the nordic airspace for the US strategic forces will increase.

The probably development is outlined in the table below:

| | Pre-START % of SNDV | Airspace | Sea | Land | % of Arsenal | Trend |
|------|------------------------|----------------|--------|-------|--------------|----------|
| US | 30 % SLBM | - | Patrol | - | 12 % | Decline |
| | 90 % LRB | Transit/launch | - | - | 38 % | Increase |
| | 0 % ICBM | - | - | - | - | Decline |
| USSR | 72 % SLBM | - | Patrol | Bases | 22 % | Increase |
| | 40 % LRB | Airspace | - | FOB | 5 % | Increase |
| | 0 % ICBM | - | - | - | - | Decline |

APPENDICES

TABLE 1. US WARHEAD OVERVIEW⁶

| BALLISTIC | START COUNTING RULES | | | | REALITY |
|----------------|----------------------|--------------|----------------|---------------|---------------|
| | Warheads | Limit | Difference | Percent | Warheads |
| ICBM | 2,450 | | | | 2,450 |
| SLBM | + 5,376 | | | | + 5,376 |
| Total: | 7,826 | 4,900 | + 2,926 | + 37 % | 7,826 |
| BOMBERS | | | | | |
| ALCM | 1,764* | | | | 2,824 |
| Non-ALCM | + 134 | | | | + 2,748 |
| Total: | 1,898 | 1,100** | + 798 | + 42 % | 5,572 |
| TOTALS | 9,724 | 6,000 | + 3,724 | + 38 % | 13,398 |

* Based on START counting rules: $150 \times 10 = 1,500$
 $22 \times 12 = 264$
 $= 1,764$

** Assumes US chooses to keep full quota of ICBM and SLBM: 6,000
 4,900
 1,100

However the US may choose to limit the Ballistic warheads further and favour the bombers. The bombers are in fact permitted to carry an extra number of warheads above the formal START limits. Thus having more bombers permits the US to have more warheads. There is no specific limit on bomber warheads. The US is permitted 150 ALCM bombers which are counted as carrying 10 ALCM each though they are actually permitted to carry 20 ALCM:***

Permitted ALCM load: $150 \times 20 = 3,000$
 START counting: $150 \times 10 = 1,500$
 Difference: + 1,500

Thus the deployment of warheads on ALCM bombers is favoured under the START counting rules, since the US is permitted an extra 1,500 warheads over and above the 6,000 warhead limit. From this perspective it is in the US interest to deploy the full number of ALCM launchers within the START counting rules. In addition all US non-ALCM carrying bombers are counted as carrying only 1 warhead though they are actually able to carry several SRAM or bombs. The present SAC non-ALCM bomber force has the following load capability:

39 B-52G x 12 warheads = 468
 95 B-1B x 24 warheads = 2,280
 Sum: 2,748

Permitted warheads: 2,748
 START counting: 134
 Difference: 2,614

Thus the deployment of warheads on non-ALCM bombers is strongly favoured under the START counting rules, since the US is permitted an extra 2,614 warheads over and above the 6,000 warhead limit. From this perspective it is in the US interest to deploy a large number of non-ALCM bombers.

*** Not all SAC ALCM bombers can carry 20 ALCM. The 77 B-52G can carry 12 ALCM and the 95 B-52H can carry 20 ALCM, for a total of 2,824 ALCM. If this force is trimmed to fit the START ALCM counting limits and optimized for maximum ALCM loads ($22 \text{ B-52G} = 150$) then it can presently carry:

B-52G $55 \times 12 = 660$
 B-52H $95 \times 20 = 1,900$
 2,560

⁶ Based on data from: 'Current Soviet strategic forces under START counting rules.' The Military Balance 1990-1991. IISS, London, 1st. ed., October 1990: p. 212.

TABLE 2. US LAUNCHER OVERVIEW⁷

| | Launchers deployed | START Difference limit | Wrhds /Inchr | Total Warheads | Sub-totals | START Difference limit |
|------------------|--------------------|------------------------|--------------|----------------|------------------|--|
| BALLISTIC | 1,624 | | | 7,826 | | 4,900 + 2,926 |
| ICBM | 1,000 | | | 2,450 | | |
| Minuteman II | 450 | | 1 | 450 | | |
| Minuteman III | 500 | | 3 | 1,500 | | |
| MX | 50 | | 10 | 500 | | |
| SLBM | 624 | | | 5,376 | | |
| Poseidon C-3 | 192 | | 10 | 1,920 | | |
| Trident C-4 | 384 | | 8 | 3,072 | | |
| Trident D-5 | 48 | | 8 | 384 | | |
| | | | | | Permitted | |
| BOMBERS: | 306 | | | 1,854 | | 1,100* + 754 |
| ALCM | 172 | 110** + 62 | | 1,720 | 150 w 2,560 | 1,100* + 620 |
| B-52G | 77 | | 10 | 770 | 55x12= 660 | |
| B-52H | 95 | | 10 | 950 | 95x20=1,900 | |
| Non-ALCM | 134 | | | 134 | unl. 2,368 | |
| B-52G | 39 | | 1 | 39 | 39x12=468 | |
| B-1B | 95 | | 1 | 95 | 95x20=1,900 | |
| TOTAL: | 1,930 | 1,600 + 330 | | 9,680 | | 6,000 + 3,680 all whd - 2,926 bal wh 754 bbr wh |

* Assumes US retains full quota of ballistic missile warheads. (6,000 - 4,900 = 1,100.)

** Assumes US limits no. of ALCM's to 1,100. (10 / 1,100 = 110)

7

Based on data from: 'Current Soviet strategic forces under START counting rules.' The Military Balance 1990-1991. IISS, London, 1st. ed., October 1990: p. 212.

TABLE 3. SOVIET WARHEAD OVERVIEW⁸

| BALLISTIC | START COUNTING RULES | | | | REALITY |
|----------------|----------------------|--------------|----------------|---------------|---|
| | Warheads | Limit | Difference | Percent | Warheads |
| Heavy ICBM | 3,080 | 1,540 | + 1,540 | + 50 % | 3,080 |
| Mobile ICBM | 825 | 1,100 | - 275 | - 33 % | + 825 |
| Subtotal: | 3,905 | 2,640 | + 1,265 | + 32 % | 3,905 |
| Other ICBM | 2,640 | | | | 2,640 |
| SLBM | 3,636 | | | | + 3,636 |
| Subtotal: | 6,276 | 2,260* | + 4,016 | + 64 % | 6,276 |
| Total: | 10,181 | 4,900 | + 5,281 | + 52 % | 10,181 |
| BOMBERS | | | | | |
| ALCM | 720 | | | | 1,080 |
| Non-ALCM | 95 | | | | 380 |
| Subtotal: | 815 | 1,100** | - 285 | - 35 % | 1,460 |
| TOTALS | 10,996 | 6,000 | + 4,996 | + 45 % | 11,641 |
| | | | | | * Assumes USSR chooses to keep full quota of heavy and mobile ICBM's: |
| | | | | | 4,900 |
| | | | | | - 2,640 |
| | | | | | 2,260 |
| | | | | | ** Assumes USSR chooses to keep full quota of Ballistic warheads: |
| | | | | | 6,000 |
| | | | | | - 4,900 |
| | | | | | 1,100 |

However the Soviet Union may choose to limit the Ballistic warheads further and favour the bombers. This is because the bombers are in fact permitted to carry an extra number of warheads above the formal START limits. Thus having more bombers permits the Soviet Union to have more warheads.

There is no specific limit on bomber warheads. The USSR is permitted 180 bombers which can be loaded with up to 16 ALCM but are counted as carrying only 8 ALCM each:

Permitted ALCM load: $180 \times 16 = 2,880$
 START counting: $180 \times 8 = 1,440$
 Difference: $+ 1,440$

Thus the deployment of warheads on bombers is favoured under the START counting rules, since the Soviet Union is permitted an extra 1,440 ALCM warheads over and above the 6,000 warhead limit. From this perspective it is in the Soviet interest to deploy the full number of ALCM bombers within the START counting rules. If the USSR deploys more than 180 ALCM bombers the additional bombers are attributed with their actual ALCM load.

In addition all Soviet non-ALCM carrying bombers are counted as carrying only 1 warhead though they in practice can carry several SRAM and/or bombs. There is no limit to the non-ALCM bombers. Thus the deployment of non-ALCM heavy bombers also permits the USSR to boost her warhead total over and above the fixed START limit.

⁸ Based on data from: 'Current Soviet strategic forces under START counting rules.' The Military Balance 1990-1991. IISS, London, 1st. ed., October 1990: p. 213.

TABLE 4. SOVIET LAUNCHER OVERVIEW⁹

| | Launchers deployed | START limit | Difference | Wrhds /Inchr | Total Warheads | Sub- totals | START limit | Difference |
|--------------------|-----------------------|----------------|----------------|-----------------|-------------------|----------------|----------------|----------------|
| BALLISTIC | 2,322 | | | | 10,181 | | 4,900 | + 5,281 |
| Heavy ICBM | 308 | 154 | + 154 | | 3,080 | | 1,054 | + 1,054 |
| SS-18 | 308 | 154 | | 10 | 3,080 | | | |
| Mobile ICBM | 285 | | | | 825 | | 1,100 | - 275 |
| SS-24 | 60 | | | 10 | 600 | | | |
| SS-25 | 225 | | | 1 | 225 | | | |
| Other ICBM | 805 | | | | 2,640 | | | |
| SS-11 | 350 | | | 1 | 350 | | | |
| SS-13 | 60 | | | 1 | 60 | | | |
| SS-17 | 75 | | | 4 | 300 | | | |
| SS-19 | 320 | | | 6 | 1,920 | | | |
| SLBM | 924 | | | | 3,636 | | | |
| SS-N-6 | 192 | | | 1 | 192 | | | |
| SS-N-8 | 280 | | | 1 | 280 | 472 | | |
| SS-N-17 | 12 | | | 1 | 12 | 484 | | |
| SS-N-18 | 224 | | | 7 | 1,568 | 2,052 | | |
| SS-N-20 | 120 | | | 10 | 1,200 | 3,252 | | |
| SS-N-23 | 96 | | | 4 | 384 | 3,636 | | |
| BOMBERS: | 185 | | | | 815 | | 1,100* | - 285 |
| ALCM | 90 | 137** | - 47 | | 720 | | 1,100* | - 380 |
| Bear | 75 | | | 8 | 600 | | | |
| Blackjack | 15 | | | 8 | 120 | | | |
| Non-ALCM | 95 | | | | | | | |
| Bear | 95 | | | 1 | 95 | | | |
| TOTAL: | 2,947 | 1,600 | + 1,347 | | 10,996 | | 6,000 | + 4,996 |

* Assumes USSR retains full quota of ballistic missile warheads. (6,000 - 4,900 = 1,100.)

** Assumes USSR limits no. of ALCM's to 1,100. (8 / 1,100 = 137.5.)

⁹ Based on data from: 'Current Soviet strategic forces under START counting rules.' The Military Balance 1990-1991. IISS, London, 1st. ed., October 1990; p. 213.

TREATY ON STRATEGIC OFFENSIVE ARMS

From the US-USSR Summit 31/07-1991.

GENERAL

LAUNCHER TOTALS:

Maximum 1,600:

- deployed ICBM's and associated launchers,
- deployed SLBM's and associated launchers,
- heavy bombers.

Within this limit, maximum 154:

- deployed heavy ICBM and associated launchers.

WARHEAD TOTALS:

Maximum 6,000 warheads attributed to:

- deployed ICBM's,
- deployed SLBM's,
- heavy bombers.

Within this limit, maximum 4,900 warheads on:

- deployed ICBM's,
- deployed SLBM's.

Within this limit, maximum:

- 1,540 warheads on heavy ICBM's.
- 1,100 warheads on mobile ICBM's.

THROW-WEIGHT TOTALS:

Maximum throw-weight of deployed ICBM and SLBM to be cut to ca 50% below present level of Soviet throw-weight.

TIME-TABLE:

Reductions will be carried out over a period of seven years in three phases.

HEAVY BOMBER LIMITS

HEAVY BOMBERS:

Heavy bombers are divided between:

- heavy bombers with long-range nuclear ALCM,
- other heavy bombers. (sic)

COUNTING RULES:

Heavy bombers with other nuclear armaments are counted as:

- one delivery vehicle against the 1,600 limit,
- one warhead against the 6,000 limit.

Heavy bombers with long-range nuclear ALCM are counted as:

- one delivery vehicle against the 1,600 limit,
- an agreed number of warheads against the 6,000 limit.

WARHEADS:

Existing and future long-range nuclear ALCM heavy bombers are attributed with:

- 10 warheads for each US heavy bomber,
- 8 warheads for each Soviet heavy bomber.

Existing and future long-range nuclear ALCM heavy bombers shall be equipped with no more than:

- 20 long-range nuclear ALCM for US heavy bombers,
- 16 long-range nuclear ALCM for Soviet heavy bombers,

LAUNCH VEHICLES:

Within the 1,600 limit on delivery vehicles there shall be:

- maximum 150 US heavy bombers with long range nuclear ALCM,
- maximum 180 Soviet heavy bombers with long range nuclear ALCM.

If the US or USSR exceed the above limits (150 & 180):

- each additional heavy bomber equipped for long-range nuclear ALCM will be attributed with the number of long-range nuclear ALCM for which it is actually equipped.

ALCM DEFINITION:

Long-range ALCM will be considered those with:

- range in excess of 600 km.

There will be no restrictions on deployment of non-nuclear long-range ALCM on aircraft not limited by the Treaty. Future long-range ALCM will not be considered nuclear if they can be distinguished from long-range nuclear ALCM.

SLCM LIMITS

- PRINCIPLES:**
1. SLCM's will not be constrained by the START Treaty.
 2. Each side will provide the other with an unilateral declaration of its policy concerning nuclear SLCM's.
 3. Each side will provide the other with an annual unilateral declaration regarding its planned deployments of nuclear long-range SLCM's. These declarations will be politically binding.
 4. In the annual declarations the maximum number of deployed nuclear SLCM's will be specified, provided that the number declared will not exceed 880.
 5. Both sides agree not to produce or deploy nuclear SLCM with multiple independently targetable warheads.

DEFINITION: A nuclear long-range SLCM has a range in excess of 600 km.