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THE SECRETARY OF DEFENSE
WASHINGTON D C 20301

January 28, 1977

MEMORANDUM FOR THE PRESIDENT

SUBJECT: Implications of Major Reductions in Strategic Nuclear Forces

The attached paper responds to your request for an early, quick analysis of the implications of mutual US and Soviet reductions in the number of strategic nuclear delivery vehicles to 200-250.

This paper was prepared in conjunction with the Joint Staff and analysts in ISA, but has not been discussed with other elements in DoD.

A number of concerns, some but not all of which have been included in the paper, have been voiced during its drafting. Because it is important to underscore that some believe it is unproductive to give serious attention to such levels, even as goals, I mention these concerns as follows:

-- Such a level would require a fundamental change in US policy. Some regard it as so unrealistic as to be counter-productive to achieving the practical, and yet far-reaching, measures which may not be possible in SALT.

-- Such a level would require almost total reliance on retaliation against population and industry to deter attack.

-- At such levels, there would be great potential payoffs to violating limits, covertly deploying ABMs (or upgrading air defense missiles), enhancing civil defense, or concentrating defenses on the limited numbers of offensive vehicles permitted.

I want to emphasize that the paper is not a discussion of a potential SALT position and has not been prepared through DoD SALT processes. (Analysis of reductions possibilities for SALT is proceeding as part of the PRM-MSC-2 study.) Rather, it is an effort -- sharply constrained by the very short deadline -- to examine the implications of a hypothetical situation.

Harold Brown

DOCUMENT #2

87-FOI-178

Attachment

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IMPLICATIONS OF MAJOR REDUCTIONS IN STRATEGIC NUCLEAR FORCES

This paper briefly discusses the issues raised by a hypothetical US-Soviet decision to achieve deep reductions in the strategic offensive forces on both sides. Time has not permitted a thorough analysis of such a reduction program; rather, there has been an attempt to highlight some of the major issues that would be associated with such a move. In developing the issues, no effort has been made either to advocate or to refute the underlying rationale. Nonetheless, it is clear that agreement on deep reductions would have vast implications for political relationships throughout the world.*

Before addressing the effects of deep reductions on the world-wide balance of power, it is necessary to assess its impact on the central US-Soviet strategic relationship including the implications for deterrence and stability.

Deterrence

A limited strategic force is often referred to as a "minimum deterrent force," meaning that the opposite side is deterred from using nuclear weapons by the probability that it would suffer unacceptable damage in any strategic exchange as contrasted to a more stringent force-sizing criterion of "assured destruction." The latter doctrine requires that US forces be able to withstand a full Soviet first strike and still respond with enough power to destroy the Soviet Union as a society. This certainty of total destructive capability is intended to provide increased confidence that no Soviet political leader could ever see an advantage in beginning a strategic exchange.

Deterrence depends not only on force capabilities; the Soviet leaders must also expect that the capability will be exercised. This is what is referred to as the "credibility" of the U.S. deterrent posture. Many believe it requires additional U.S. capabilities, among them a capability for attacking military targets in the Soviet Union while holding a city-busting capability in reserve.

* For purposes of this paper, deep reductions are assumed to be down to about 200 launchers on both sides. We do not discuss the necessity of such limitations -- which many believe to be effectively nil. Though we understand that the President referred to (and possibly prefers) a strategic nuclear force consisting only of about 200/250 SSBNs, we are considering in our discussion other possible mixes of forces as well. We further assumed that MIRVing is to be permitted, and that a basic objective is to maintain deterrence with the minimum number of nuclear weapons.

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A truly "minimum deterrent might undermine some of this confidence. But a force of 200 launchers, even restricted to today's technology, is not a "minimum" force. This is particularly true if MIRVing is assumed, as is consistent with stability for an SLBM (though not for fixed land-based) force.

Strategists over time have differed widely in their judgments as to what constitutes deterrence. Some have argued that the capability to destroy a single major city - such as Moscow or New York - would be sufficient to deter a rational leader. Others argue that a capability for assured destruction of 80 percent or more of the economic and industrial targets of adversaries is necessary and critical. The amount of potential destruction available in levels as low as the 200 launcher forces of both sides is clearly an important factor inasmuch as it provides some basis for deciding whether such potential would constitute a basis for assured deterrence -- and whether at such levels the horror of nuclear war is significantly reduced. MIRVing permits large numbers of warheads -- up to 2000 with Poseidon technology.

[REDACTED] Yields and loadings are on the conservative side:

- 200 SLBM tubes can easily be equated to 2000 warheads if MIRVing is permitted. [REDACTED]
- 200 aircraft could carry at least 1200 bombs. [REDACTED]
- 200 ICBM launchers could carry at least 600 warheads with MIRVing. [REDACTED]

Clearly such levels of destruction are great if attainable under realistic conditions (i.e., if the assumptions are valid, and that if all US forces survive.) They would not meet requirements for assured destruction [REDACTED]

nor would they permit coverage of large numbers of military targets. Of course, some weapons could be used for attacks on military targets, but urban industrial effectiveness would decline as a result.

1. [REDACTED]
2. [REDACTED]
3. [REDACTED]

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It should also be noted that the casualties projected are very large — even these reductions would not make nuclear war a very survivable experience. However, the reduced numbers of weapons might reduce long term radioactivity effects — especially if throw-weight limits were included.

But since perceptions affect deterrence to a considerable extent, such calculations are not the only considerations. If major reductions were accompanied by reduced tension in the relations of the potential adversaries, deterrence might be effected with fewer weapons. Smaller numbers of weapons could decrease the expectation that they would be used, although the opposite could also be the case. Further, reductions might demphasize strategic forces (their numbers or technical characteristics) as indicators of national strength, thereby decreasing the likelihood that either side would attempt to use nuclear power for coercion. The probability of political miscalculation and nuclear war might also decrease.

Difficulties have always existed in determining how to affect the perception of costs and gains on the other side. A number of uncertainties permeate the deterrent relationship. At issue is what uncertainties would be associated with major reductions in strategic forces on both sides and whether the deterrent relationship would be more or less stable.

Crisis Stability

(1) Survivability. With the reduced redundancy implied by a smaller force, more emphasis on survivability of the individual systems would be required. The Opponent could concentrate resources on countering limited numbers, making a force mix advisable even at low totals. However, with fewer launchers to protect, each individual launcher could be made more likely to survive at less total expense. One might have SSENs with only 6-8 missiles instead of the present 16-24, thus having a greater number of boats on station at any time, and making the individual boats smaller and less detectable. The SLEM's could also have a substantially greater range than the current systems, increasing the ocean area that would have to be searched. There are potential ways to defend land-based missiles against attack, including super-hardening and other passive and active silo-defense mechanisms (not, however, including interceptor-based defenses which could have a population defense capability), and the siting of the ICSM's to maximize the "fratricide" effect.

The agreement itself could — and to be realistic should — contain provisions that would increase the survivability of the strategic forces. [REDACTED]

[REDACTED] ASW sanctuaries could be established (ASW sanctuaries are regions where ASW would be declared illegal and the deployment of ASW systems would be considered an act of war). The explosive yield or throw-weight of the missiles could be limited, and the types of guidance mechanisms used thereon could be restricted (terminal sensing could be banned, and the ballistic coefficient of reentry vehicles could be limited, although this latter limitation would increase the incentive to

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violate the ABM agreement). Finally, the testing of ICBMs and SLBMs could be restricted to a very low level which would reduce the confidence that military planners would have that they had the high reliability and accuracy required for an effective first strike and the second strike. A limit on the number of warheads to be placed in each missile could also enhance survivability, but as we will note below, MIRV multiplicity is important to reduce the incentive clandestinely to develop ABM systems. Many of these limits present complex problems of verification and/or interface with tactical or conventional forces.

Our present force structure insures against a "technological surprise," and complicates Soviet attack plans, by having three systems with different technical characteristics -- launchers, land-based missiles, and SLBMs. A satellite-based submarine precision location capability seems impossible today, but may not in 20 years. Bombers and ICBMs also provide a hedge the possibility of operational alterations to deal with the appearance of such new capabilities.

[REDACTED] (The technological surprise would not appear instantaneously. Systems embodying it first have to be developed and tested). For these reasons it may be desirable to maintain either land-based missiles or bombers, or both, in the post-agreement force. (Unfortunately, fewer bombers would have difficulty penetrating Soviet airspace with or without cruise missiles, unless there were limitations on air defenses.)

(2) Force Controllability - another criteria for crisis stability is that the force be controllable -- to support war termination negotiations and to prevent a "spasm response."

Treaty Stability: Possibilities and Consequences of Cheating

Another requirement for a stable treaty regime is that the incentives to violate the treaty not be incommensurate with our verification capability. At high levels of strategic forces, the military payoff for cheating may not be as significant as at low levels. Uncertainties and instabilities follow agreements where the possibilities of clandestine deployments are high -- especially if only a few more weapons might be significant -- and there are many different ways to hide the deployment of a few more launchers, e.g., mobile.

Defensive Active and Passive

Defensive systems have been rejected in the past because they were viewed as ineffective, not cost-effective, or destabilizing to the overall strategic balance.

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At issue is what effect active and passive defenses would have on the strategic relationship at very low levels of strategic launchers. If the magnitude of the central requirement of deterrence -- to be capable of inflicting unacceptable damage -- is unchanged at lower levels, then deployment of active and passive defenses for the protection of population would be potentially destabilizing. Thus, the ABM Treaty would need to be continued with the permitted number of ABM launchers reduced.

However, at low levels of strategic launchers, strategists would need to reconsider the question of whether it would be better to seek an effective defense against attack rather than the maintenance of deterrence. Such a defense might be achievable although all the uncertainties associated with defensive systems would remain.

Strategic Issues

Major reductions in strategic launchers raise a number of additional issues which are presented in capsule form. The list is not all-inclusive.

(1) What effect would low levels of strategic launchers have on the deterrent relationship between the US and the Soviet Union? The questions of warfighting capability, perceptions, and deterrence would require total re-evaluation. For example, civil defense becomes a far more critical factor, as does equivalency measurement criteria. What asymmetries can be permitted? If a mix of launchers is allowable, such matters as greater Soviet ICBM throw-weight and the number of MIRVed warheads become significant. The elements that are necessary to create the perception required to achieve deterrence may differ considerably from the present.

(2) What effect would low levels of strategic launchers have on other Soviet and US nuclear and conventional forces?

The Bockfibre and F-111 bombers, and other "grey-area" and "forward-based" systems, which have been thorny questions in the SALT negotiations already, would take on greatly increased significance in a context where they could be armed with a substantial fraction of the number of weapons carried by the central strategic forces.

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And though it can be argued that the FBS issue has been at least as much political as military in the past, it will certainly and justifiably assume an overriding importance under conditions of a low strategic force ceiling. In fact, it would be highly improbable that either side could seriously consider the acceptance of a low strategic ceiling without extensive and pervasive limitations on nuclear armed forward-based systems, tactical nuclears, and grey-area systems that might be armed with nuclear warheads. This problem could be expected to be the most serious bilateral obstacle to achievement of a low strategic ceiling touching as it does at the heart of the global and regional military balances.

Conventional forces would likewise assume greater importance, and the credibility of relying on nuclear weapons to compensate for inadequacies in conventional forces would further diminish. The US strategic deterrent might well be perceived as completely decoupled from NATO defense. The question would arise as to whether we would want to continue current negotiations in MBRF for limitations on conventional forces or instead move toward increases in conventional forces in Europe. However, to move additional US forces to Europe would leave the US with no contingency flexibility unless a large increase in GP forces were approved. To fail to move forces and increase their numbers might provide a conventional attack temptation the Soviets would seize, unless a large increase in effectiveness were achieved.

A corollary to the above issue is the cost. If the cost of strategic forces went down the US might have to increase spending on conventional forces, thereby negating the potential for defense budget reductions.

(3) What effect would low levels of strategic nuclear forces have on Soviet and US relations with other nuclear powers? There might be a general deemphasis of nuclear power as a measure of national "greatness." China, France, Great Britain and others could match the US and USSR in nuclear power at a much earlier point in time. World power relationships would be significantly altered. Thus, it almost goes without saying that other nuclear states would have to be brought into a deep reduction agreement at some point if it were to be militarily viable and politically acceptable. It is beyond the scope of this paper to estimate how other nuclear states might respond. Suffice it to say that persuasive arguments

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could be marshalled in behalf of positive and negative reactions. At any rate, one of the political consequences of general adherence to a nuclear ceiling proposal would be a further and extraordinary erosion of bipolarity and a major impetus to the growth of other power centers and international actors. It is difficult to estimate whether the reduction would help or hinder US non-proliferation strategy. It is possible that parallel reductions in conventional forces might be necessary. The political linkage would be complex.

Whether or not this would lead to greater, or lesser international stability is a highly complicated issue, and again, impossible to say without further analysis.

(5) The Soviets probably would expect some concession in allowable numbers of weapons relative to the US mainly because of the number of nuclear powers arrayed against them.

(6) ABM technology would become paramount in importance — "cheating" here, as in total numbers of weapons, could become inviting.

(7) The process of the US and the Soviet Union moving to low numbers of strategic forces — e.g. the timing and details of "getting there from here" — would create a variety of problems and instabilities.

(8) The impact on US relations with NATO [redacted] would be important, particularly their perception of the credibility of the "nuclear umbrella."

(9) Verification and the construction of corollary constraints covering a low strategic ceiling would be enormous and practically impossible to implement with high levels of confidence with or without on-site inspection. The possibilities for cheating (or breaking out) would be vast, and even with an army of inspectors, it might be possible to evade compliance, particularly since the process of reaching low levels of strategic weapons would presumably take place over time, and involve destruction and dismantling of existing weapons and the construction of new ones. Depending on the nature of the retained forces, modest additions to a low-level force could conceivably have greater strategic significance than small additions to the high level forces presently deployed on both sides, thus creating the incentive to cheat.

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SUMMARY:

In sum, such reductions, if they were to be agreed to by the US and the USSR and were to be acceptable to other nations, would decrease destruction if a nuclear war occurred and would reduce the cost of nuclear force. Whether the uncertainties associated with the current deterrent relationship would be altered is not clear. However in terms of casualties, the result might still be catastrophic. The overall Defense budget might go up or down depending on whether new, more technologically advanced strategic weapons were procured and whether more expensive conventional forces were required to replace nuclear weapons. Agreement would almost certainly be required on other fundamental arms control measures, especially strategic defenses, and theater nuclear weapons but also possibly conventional forces as well.

In conclusion, there are at this stage more questions raised by a proposal to achieve major reductions in nuclear forces on both sides than there are answers. A number of problems have already been identified. Noteworthy among them are:

- Insuring that the reduced force contains all of the elements necessary to create the perceptions required by the concept of deterrence.
- Accommodating ourselves to the vast changes that may be necessary in our political relationships with allies as well as adversaries, regional as well as bilateral, if stable balance of power is to be maintained.
- Developing feasible means of verification.

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