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## **EXAMINING SALT VIOLATIONS AND THE PROBLEMS OF VERIFICATION**

### **INTRODUCTION**

Of central importance to effective strategic arms control is the ability of the parties to independently monitor each other's compliance with the provisions of negotiated agreements. Adequate verification procedures are essential to enhance confidence in the limitations on advanced weapons systems and to guard against the incremental violations of an accord which could alter the prevailing military balance.

As the United States and the Soviet Union move toward completion of a second-stage agreement in the Strategic Arms Limitation Talks (SALT II), concern about the reliability of our intelligence-gathering systems has assumed increasing significance. Indeed, some observers contend that the verifiability of the terms of a new pact may be the single most critical parameter for judging the merits of the entire package.

The initial SALT Accords of May 26, 1972, consisted of a five-year Executive Interim Agreement on Offensive Strategic Systems and an Anti-Ballistic Missile Treaty of indefinite duration. The Interim Agreement placed limits on the numbers and permissible conversion options of fixed, land-based intercontinental ballistic missile launchers (ICBMs), submarine-launched ballistic missiles (SLBMs), and ballistic missile-firing submarines, while the ABM Treaty limited the number and kinds of missile defense each nation could separately deploy. The present atmosphere of growing skepticism contrasts sharply with the euphoria of 1972, a change resulting from several interrelated factors. Among these are the following:

- (a) disclosure of allegations that the Soviet Union exploited to the perimeter of legal permissibility (if not actually violated) the provisions of SALT I,
- (b) the probable inclusion in SALT II of controversial "understandings" which, whether formalized or not, would further complicate an already questionable verification and enforcement process,
- (c) indications that the Soviets have developed, or are developing, various means to retard U.S. monitoring techniques, and
- (d) a series of political disputes between the two countries, a by-product of which is a perceived downgrading of detente and the expectation that the SALT negotiations could serve as a vehicle for enhancing mutual trust and cooperation.

On February 28, 1978, in response to a request by the Senate Foreign Relations Committee, the State Department's Arms Control and Disarmament Agency submitted a detailed summary of the various allegations of Soviet non-compliance with the provisions of SALT I. The objective of the report, said to represent the composite view of all executive branch agencies dealing with the arms control process, was to allay critics' fears that the Carter Administration's own political commitment to a SALT II Agreement, contingent upon Senate ratification, was such as to compromise our capacity to independently verify Soviet adherence to the agreement by accepting unwarranted risks.

While conceding the possibility of some undetected cheating under the pact's prospective terms, the report stated that any violations of such a magnitude as to modify the nuclear balance "would be discovered in time to make an appropriate response."<sup>1</sup> The response could be expansion of U.S. arms programs and possible abrogation of the pact. Nevertheless, an arms control package which the Soviet Union could admittedly evade even partially would severely reduce the prospects for congressional approval.

The purpose of this study is to analyze the various allegations cited in the State Department report, their disposition as they relate to current American verification practices, and their implications for follow-on agreements and the course of the super-power strategic relationship.

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1. Cited in The Baltimore Sun, February 25, 1978, p. 1.

## THE POLITICAL/STRATEGIC NATURE OF SALT VIOLATIONS

With respect to complex U.S. verification procedures, the State Department report notes that all intelligence information is analyzed within the framework of the provisions of an agreement, and recommendations on questions that arise are developed by inter-agency intelligence and policy advisory groups of the National Security Council system. Currently, these include an intelligence community steering group on monitoring strategic arms limitations and the Standing Consultative Commission working group of the National Security Council special coordination committee. If analysis of available intelligence data indicates possible Soviet non-compliance, the National Security Council working group submits recommendations to the President, who retains ultimate responsibility for deciding whether to raise the issue with the Soviet Union.<sup>2</sup>

It is virtually impossible to devise treaties and/or agreements regulating strategic nuclear armaments which would be devoid of all potential for conflicting legal interpretations of technical details. The latitude for discussion and disagreement is inherent in deliberately ambiguous treaty language which attempts to accommodate the complexities of diverse U.S. and Soviet force structures as well as competing political interests.

Where violations of an accord are alleged, the technical details are surely important, if only because they comprise the currency of debate. However, the confrontation of legalistic arguments must not be allowed to obscure the larger meaning of ambivalent, even potentially dangerous strategic behavior. What is indeed important is what the range and scale of alleged infractions reveal about the political and strategic attitudes which an adversary brings to the negotiations, and what may be anticipated in their aftermath. These attitudes relate not only to what an agreement makes explicitly or implicitly permissible, but also to what that adversary feels is technically exploitable, irrespective of its legality.

One might properly question why the United States feels compelled to resort to legalisms in order to redress perceived Soviet non-compliance with SALT I, particularly when the arms control function is itself heralded as a manifestation of the spirit of detente. However, save when it serves their interests, the Soviets have not demonstrated a similar inclination to endorse the notion that arms control agreements have an intrinsic spirit which is mutually binding. In fact, the relentless competition which motivates the Soviet approach toward SALT (as toward all outstanding political issues) helps to explain in part why those crucial elements

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2. For further reference, see Aviation Week and Space Technology, March 6, 1978, pp. 18-19.

that escaped common definition were left unresolved. These ambiguities resulted not from an accident of the negotiating process or a lack of Soviet comprehension, but rather from the exigencies of Soviet strategic interests as they related to systems under development or soon to be tested.<sup>3</sup>

Thus, U.S. insistence on legalistic defenses can be self-defeating if sufficient account is not taken of the political context within which strategic arms control negotiations are conducted. It is with these considerations in mind that the alleged Soviet violations of SALT I, as well as the State Department report's findings regarding the same, must be evaluated.

## ALLEGED SOVIET INFRACTIONS OF THE INTERIM AGREEMENT ON OFFENSIVE MISSILE SYSTEMS

### 1. Construction of Special-Purpose Silos (Launch Control Facilities)

According to Article I of the Interim Agreement:

The Parties undertake not to start construction of additional fixed, land-based intercontinental ballistic missile (ICBM) launchers after July 1, 1972.<sup>4</sup>

The numbers of operational ICBM launchers permitted each side when the Interim Agreement entered into force totaled approximately 1,618 for the Soviet Union and 1,054 for the United States. Subsequent U.S. surveillance in 1973 determined that the Soviets were constructing some 150 additional silos of a different design at their ICBM fields along the trans-Siberian railway in Soviet Asia. Far from denying the allegation, the Soviets explained the excavation efforts as involving hardened ICBM launch control facilities for testing and training purposes, since structures designed to potentially house operational ICBMs would directly contravene Article I.

A suspicious degree of similarity apparently existed, however, between the characteristics of the new "launch control" silos and those of conventional ICBM complexes. Like the latter, the facilities

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3. See Colin S. Gray, "SALT I Aftermath: Have the Soviets Been Cheating?" Air Force Magazine, November 1975, pp. 28-33.

4. All pertinent provisions of the SALT I Agreements cited in this paper, unless otherwise noted, appeared in Robert J. Pranger (ed.), Detente and Defense: A Reader (Washington, D.C.: American Enterprise Institute, 1976) p. 122. Hereinafter referred to as D & D, the appropriate page number will appear in parentheses immediately following the quotation.

in question were reported to be cylindrical in shape, with "blow-away" doors and launcher-type suspension equipment.

That these facilities could be virtually dual-capable, with little advanced warning, is less an allegation and more a potential cause for concern. However, launchers for the purposes specified by the Soviet Union are sanctioned by the Interim Agreement and further derive their legal justification from an American Letter of Submittal accompanying the ABM Treaty (U.S. Secretary of State to the President, June 10, 1972) which held that such launchers could "be constructed at operational sites."

The State Department's assessment of the issue concludes as follows:

In early 1977, following further discussions during 1975 and 1976 and a review of our intelligence on this subject, the US decided to close discussion of this matter on the basis that the silos in question are currently used as launch control facilities.<sup>5</sup>

It would appear implausible that the Soviets would risk the illegal installation of some 150 new missiles, knowing that a program of such magnitude could not go undetected. However, the Department report does not deal with the question of whether former launch control facilities have been properly dismantled, in light of which the additional silos could theoretically serve a purpose beyond that specified by the Soviet Union.

## 2. Soviet Dismantling and Destruction of Replaced ICBM Launchers

The Interim Agreement and accompanying Protocol permitted Soviet deployment of no more than 950 SLBM launchers and 62 modern, nuclear-powered ballistic missile submarines. Beyond the level of 740, moreover, Soviet SLBM launchers could become operational only as one-for-one replacements for older ICBM and SLBM launchers. The latter would be dismantled or destroyed in accordance with the agreed procedures which became effective on July 3, 1974, and which included detailed requirements regarding the timing and notification of compliance.

United States intelligence determined that by 1976, the Soviets "had developed a requirement to dismantle 51 replaced launchers." Available evidence indicated that the necessary activities would

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5. The State Department report was inserted into the Congressional Record, February 28, 1978, pp. S2552-2556. Hereinafter referred to as CR, the appropriate page number will appear in parentheses immediately following the quotation.

not be completed on time, but the Soviets pre-empted American notice of non-compliance by acknowledging in the Standing Consultative Commission the delay in dismantling 41 older ICBM launchers. They predicted that the replacements would be completed by June 1, 1976, and agreed to the U.S. demand that no more submarines with SLBM launchers would commence sea trials prior to such completion.

The State Department report stipulates that both conditions have been fulfilled, yet its conclusion regarding this issue is somewhat ambiguous:

Since that time, although we have observed some minor procedural discrepancies at a number of those deactivated launch sites and at others as the replacement process continued, all the launchers have been in a condition that satisfied the essential substantive requirements which are that they cannot be used to launch missiles and cannot be reactivated in a short time.  
(CR, S2555)

It is appropriate to inquire as to how forcefully the United States has impressed upon the Soviet Union our expectation that "care would be taken to ensure that...notification...was in strict accordance with the agreed procedures." (CR, S2555) The acknowledged "procedural discrepancies" suggest that the Soviets are not unprepared to take incremental advantage of what may be perceived as a relaxation of U.S. surveillance efforts. Two years ago, for example, the United States had to demand that the Soviet Union dismantle some SS-7 and SS-8 ICBM launchers to compensate for submarines armed with ballistic missiles.

Voluntary Soviet restraint cannot realistically be anticipated, particularly in programs where the opportunities for securing unilateral advantages appear promising. Indeed, the recent controversy over the number of operational ballistic missile submarines underscores this point. Intelligence sources have confirmed that the Soviets have 64 submarines at sea, two more than the number authorized by the Interim Agreement. In 1972 Secretary of Defense Laird stated that "I would consider it a violation of the intent of this agreement to go beyond 62 submarines of the Y class." Moreover, "We would consider any new construction starts which were merely for the purpose of maintaining the momentum of the Soviet Union construction program to be contrary to the intent of the agreement."<sup>6</sup>

The Carter Administration claims that, because the additional boats have not undergone sea trials, the Soviets have not technically violated the provisions concerning deployment levels. However, the U.S.S.R. also has three Delta-class submarines outfitted for operational use as well as six or seven Hotel-class boats which exceed the SALT I limits. Viewed against the backdrop of overall Soviet strategic efforts, the Administration cannot dismiss lightly even minor abridgments of provisions governing the launcher replacement process.

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6. "Military Implications of the Treaty on the Limitations of Anti-Ballistic Missile Systems and the Interim Agreement on Limitation of Strategic Offensive Arms," hearing before the Committee on Armed Services, 1972, page 544.

### 3. Light and Heavy ICBMs (The Modern Large Ballistic Missile Issue)

Under Article II of the Interim Agreement:

The Parties undertake not to convert land-based launchers for light ICBMs, or for ICBMs of older types deployed prior to 1964, into land-based launchers for heavy ICBMs of types deployed after that time. (D & D, p. 122)

The Soviet Union was permitted 313 so-called "heavy" ICBMs (SS-9s and follow-ons) in SALT I. The ostensible purpose for delineating a "heavy missile" sublimit was to restrict Soviet missile payload and thereby constrain its hard-target counterforce potential. The entire issue was characterized by definitional vagaries, however, in particular with regard to what quantitatively constitutes a "heavy" ICBM. Indeed, the U.S.-Soviet "Common Understanding(s)" dealing with the modernization and replacement process stated only that the dimensions of land-based ICBM silo launchers could not be significantly increased, an obscure guideline whose subsequent elaboration simply restricted any planned increase to "no more than 10-15 percent."

In the absence of a formal agreement on the permitted volume of ICBMs themselves (the relevant SALT texts and accompanying protocols refer only to silo-launchers, not to missiles), the United States delegation submitted a Unilateral Statement on May 26, 1972, which expressed regret

...that the Soviet Delegation has not been willing to agree on a common definition of a heavy missile... The United States would consider any missile having a volume significantly greater than that of the largest light ICBM now operational on either side to be a heavy ICBM. The United States proceeds on the premise that the Soviet side will give due account to this consideration.<sup>7</sup>

The Soviet Union was charged with violating the Interim Agreement when it was established in early 1975 that the SS-11 ICBM system, the largest light ICBM then operational on either side, with a volume of 69 cubic meters, was being replaced with the SS-19 "heavy" ICBM, whose volume was approximately 100 cubic meters. For the record, the United States had served notice on the Soviets that it would consider any missile with a volume exceeding 70 cubic meters to be a "heavy" missile, thus absolutely qualifying the SS-19 for inclusion in this category. However, intelligence sources did not detect that the Soviet Union had increased the dimensions of its silo launchers beyond the 10-15 percent stipulated in the Common Understanding.

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7. Cited in Gray, op. cit., p. 32.

The State Department report treats the SS-19 issue in the following manner:

The USSR Delegation maintained the position throughout SALT I that an agreed definition of heavy ICBMs was not essential to the understanding reached by the sides in the Interim Agreement on the subject of heavy ICBMs, and made clear that they did not agree with the U.S. statement...When deployment of the SS-19 began, its size, though not a violation of the Interim Agreement provisions... caused the U.S. to raise the issue with the Soviets...Our purpose was to emphasize the importance the U.S. attached to the distinction made in the context of the SALT II agreement under negotiation at the time...

Since that time, the United States and the Soviet Union have agreed in the draft text of the Salt II agreements on a clear demarcation, in terms of missile launch-weight and throw-weight, between light and heavy ICBMs.  
(CR, S2554)

The modern large ballistic missile (MLBM) issue must be assessed from the proper strategic perspective, especially with respect to the nature of increases in silo dimensions. The 10-15 percent limit on enlargement, when translated into the volume of a cylinder-shaped silo, could actually sanction an expansion of nearly 30 percent for one dimension (length or diameter) or almost 52 percent if a fifteen percent increase is registered in both length and diameter. In hearings in 1972, Secretary Kissinger referred to the specific "safeguard" that "silo configuration cannot be changed in a significant way...this meant that it could not be increased by more than 10 to 15 percent."<sup>8</sup> Elaborating on this point, Paul Nitze, a member of the negotiating team, emphasized that "the background to the negotiations makes it clear that an increase of up to 15 percent would be permitted in only one dimension (or possibly a combination of two dimensions), not in both depth and diameter."<sup>9</sup> Furthermore, according to defense analyst Colin Gray:

The permitted increase in silo volume...in tandem with the technology of the cold launch, which allows ICBMs to be expelled from silos by means of compressed air (meaning that the usable diameter of a silo is increased by up to fifty percent), amounts to an absence of any meaningful restraint upon the size of "light" ICBMs. All that the Soviets are violating with the deployment of the SS-19 (which is hot-launched in the conventional manner) is a unilateral American understanding of what is and what is not a "light" ICBM.<sup>10</sup>

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8. Hearings, 1972, p. 129.

9. Ibid, p. 312.

10. Gray, op. cit., p. 33.

By specifying constraints upon the size of the replacement of "light" ICBMs and by restricting the increase in the size of ICBM silos, the United States had intended to partially resolve, or at least defer, its potential counterforce problems. This was considered urgent in view of the increasing vulnerability of our land-based Minuteman ICBM force. However, the negotiated means were inadequate to achieve the desired ends. American policymakers assumed that

- (a) the volume and thus the throw-weight and the payload of Soviet ICBMs would be regulated by the arms control discipline, and
- (b) it would be impossible for the Soviet Union to retrofit its SS-11 silos with a new, significantly larger missile.

Subsequent Soviet evading activities, in the form of new ICBMs which affronted the (American-defined) spirit of SALT I, but not its letter, proved sufficient to dispel these assumptions and frustrate the United States' rationale in drawing a distinction between light and heavy ICBMs. Indeed, the Soviet hard-target counterforce capability has been augmented since SALT I with the testing of several new generations of "silo-busting" ICBM systems. Depending on how (or even if) the MLBM issue is resolved in SALT II, the distinction between light and heavy ICBMs might be nothing more than a rhetorical convenience, yet one whose strategic and legal currency will be grossly depreciated.

#### 4. Mobile ICBMs

The development and testing of mobile ICBMs are not prohibited by SALT I, yet the United States long since placed the Soviet Union on notice that land-mobile ICBMs are systems of particular sensitivity in American strategic perceptions. To this end, the U.S. delegation authorized a Unilateral Statement on May 20, 1972, which observed that, although the issue of land-mobile ICBMs was deferred

...to subsequent negotiations..., the United States would consider the deployment of operational land-mobile ICBM launchers during the period of the Interim Agreement as inconsistent with the objectives of the Interim Agreement.<sup>11</sup>

It is an interesting sidelight that, while American strategic thinking on the feasibility of retaining a land-mobile option has evolved rapidly since 1972, U.S. officials---until perhaps the Vladivostok Accord of November 1974---feared that the Soviets might pursue their land-mobile option as a means of circumventing the

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11. Ibid., p. 32.

provisions of the Interim Agreement. A similar occurrence is possible in SALT II if the United States proves unsuccessful in restricting the deployment of the Backfire bomber within the common aggregate ceiling on strategic launchers.<sup>12</sup>

The Soviet mobile system which aroused American curiosity in early 1976 was the SS-20. Though ostensibly an intermediate-range missile, the SS-20 could be modified for land-mobile purposes from a stationary position and could acquire an intercontinental capability by reducing the total weight of its payload or by adding another propulsion stage. Moreover, it incorporates the first two rocket stages of the intercontinental-range SS-X-16 system, the verification of whose testing had been complicated by presumed deliberate concealment efforts. (See the section on "Concealment at Test Ranges").

Related to the testing of the SS-20 missile, moreover, was the charge that the Soviets had encrypted the data outlining its performance, which is transmitted continuously to ground stations by telemetric signals. Since the United States could receive and analyze this telemetry, the apparent indecipherability of the imagery was considered an impediment to verification in violation of Article V(iii) of the Interim Agreement. Subsequent U.S. decoding of SS-20 telemetry led analysts to believe that the missile had been tested with some 2,000 pounds of ballast which, if replaced by fuel, would assure an intercontinental capability.<sup>13</sup>

After noting that the potentialities for intercontinental range conversion of the SS-20 system had "been discussed in the press," the State Department report concludes:

The SS-20 is being deployed to replace older medium and intermediate-range missiles. It is judged to be capable of reaching the Aleutian Islands and western Alaska from its present and likely deployment areas in the USSR; however, it cannot reach the contiguous 48 states from any of its likely deployment areas in the Soviet Union...There is no evidence that the Soviets have made any...modifications to the SS-20. We have confidence that we would detect the necessary intercontinental-range testing of such a modified system.  
(CR, S2556)

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12. See Backgrounder #57, "The Soviet Backfire Bomber: Capabilities and SALT Complications," (The Heritage Foundation, April 4, 1978).

13. Noted in Melvin R. Laird, "Arms Control: The Russians are Cheating," The Reader's Digest, December 1977, p. 100.

Furthermore, the Department's findings /Section V(E)/ exonerate the Soviet Union from any culpability in denying test information (via the encoding of telemetry) which would inhibit verification of compliance with Agreement provisions.

The legal accountability of Soviet actions is ambiguous inasmuch as the USSR never initialed or signed any provisions in SALT I dealing with offensive mobile systems. Moreover, the language of the American Unilateral Statement referred only to the "deployment" of mobile land-based ICBM launchers. As such, the testing and development of these systems would theoretically be outside the sanctions of the Interim Agreement, although the United States would have the right to monitor certain activities (e.g. deliberate concealment measures) which might contravene SALT I terms.

That the SS-20 could be upgraded for intercontinental missions is beyond serious academic dispute. However, the Soviets have not confirmed U.S. intelligence detection of deployment of the SS-16 or the SS-20. Actual deployment of these systems would be inconsistent with the American Unilateral Statement, and the SS-20, as a "gray-area" system, would compound verification problems as well as the manner in which such systems were dealt with in follow-on SALT pacts.

#### PRINCIPAL ALLEGED SOVIET VIOLATIONS RELATING TO THE ANTI-BALLISTIC MISSILE TREATY

1. Testing of Air Defense Radars and/or Missiles, in particular the SA-5 Griffon and SA-2 Guideline, "in an ABM mode"

In addressing itself to the contentious "SAM-upgrade" issue, Article VI of the ABM Treaty enjoins the Parties

(a) ...not to give missiles, launchers or radars, other than ABM interceptor missiles, ABM launchers or ABM radars, capabilities to counter strategic ballistic missiles or their elements in flight trajectory, and not to test them in an ABM mode, and

(b) not to deploy in the future radars for early warning of strategic ballistic missile attack except at locations along the periphery of its national territory and oriented outward. (D & D, pp. 117-124)

United States intelligence analysts have long believed that the SA-5 Griffon air defense missile, currently emplaced around approximately 110 urban areas, has inherent dual-purpose capabilities and could rapidly be configured to accommodate the sophisticated computer and radar technologies appropriate to anti-missile systems. The initial revelations in 1973 of suspected Soviet violations of limitations on ABM testing were complicated by prior disagreement over what was actually proscribed.

The United States had authorized a Unilateral Statement on April 7, 1972, according to which infractions of the ABM Treaty would be alleged if "an interceptor missile... (was) flight-tested to an altitude inconsistent with interception of targets against which air defenses are deployed."<sup>14</sup> (The reference is to testing altitudes in excess of 100,000 feet). Satellite reconnaissance of Soviet SA-5 test firings at the Kapustin Yar desert range north of the Caspian Sea provided circumstantial indications that the missile's radar system may have been tracking ballistic vehicles during the re-entry phase of their flight trajectory into ABM test ranges.

The Soviet Union asserted (May 5, 1972) that high-altitude, non-ABM radars were permissible in "range safety and instrumentation" roles for purposes of precision tracking and data collection outside of (and inferentially on) agreed test sites such as Sary Shagan. In categorically rejecting charges of developing nascent ABM capabilities through the upgrading and possible conversion of surface-to-air missile systems, however, the Soviets nevertheless were non-committal about the types of radar technologies (specifically, phased or non-phased array) that could acceptably be deployed at facilities apart from the regular ABM test sites.

The State Department report exhibits an unsettling ambiguity in its conclusions on the subject of possible ABM testing with air defense radars and missiles. Regarding the ABM radar problem (involving the SA-5 system), Section III (D) of the report observes that, shortly after the formal notification,

...the radar activity of concern during Soviet ballistic missile tests had ceased. The U.S. has continued to monitor Soviet activities carefully for any indications that such possible testing activity might be resumed.  
(CR, S2554)

Yet Section V (C), dealing with the ABM testing of air-defense missiles, states:

Our close monitoring of activities in this field has not indicated that ABM tests or any tests against strategic ballistic missiles have been conducted with an air defense missile; specifically, we have not observed any such tests of the SA-5 air defense system missile, the one occasionally mentioned in this connection in the open press. (CR, S2556)

It seems strange that one component of the system would undergo extensive testing, while the other, necessary for its effective functioning, was supposedly not tested at all. Beyond the apparent discrepancy in the Department's report lies an important fact corroborated by intelligence sources: Although the Soviet Union

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14. Gray, op. cit., p. 30.

eventually ceased the radar activities of concern, more than a dozen tests had been conducted prior to the formal United States notification demanding suspension, a number sufficient to accumulate the information desired.

## 2. The Development and Testing of Mobile ABM Radars

At first glance, Article V (i) of the ABM Treaty appears sufficiently straightforward as to dispel those uncertainties which might otherwise complicate the verification process. It states that "each Party undertakes not to develop, test or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based." (D & D, p. 119) The margin of ambiguity relates to the definition of "mobile."

In order to minimize potential misunderstanding, the United States had declared (January 28, 1972) that "a prohibition on deployment of mobile ABM systems and components would rule out the deployment of ABM launchers and radars which were not permanent fixed types."<sup>15</sup> The vague Soviet response (April 13, 1972) affirmed the "general common understanding" which characterized evaluation of the matter.

Since 1971, the Soviets have installed at designated ABM test sites several radars associated with an ABM system currently under development. In particular, the radars installed at the Sary Shagan range are reported to possess properties which obscure the necessary distinctions between normally verifiable stationary systems and those with mobile capabilities which could evade detection. Some evidence exists that phased-array radars are employed, with both electronic and mechanical steering of the beam for direction and elevation. These upgraded systems can be erected far more rapidly than earlier versions and are likewise capable of emplacement on alternate basing structures. They are widely assumed to be transportable by secondary means, though whether they are independently mobile and hence readily concealable continues to plague resolution of the issue. Assuming that allegations of mobility could not be sustained, the system's capabilities would still be contingent upon whether it was employed in conjunction with other ABM radars during specific phases of the missile defense function.

In any event, United States analysts believed that the new radars could, with minor modifications, be integrated with present ABM radar systems to track American ICBM routes and avoid a radar blackout during a ballistic warhead detonation. The State Department report concludes that the Soviet Union has not legally violated the Treaty by deploying a mobile ABM radar system, noting also that the time involved for installation of such a radar would be excessive. The lingering skepticism in the intelligence community, however,

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15. Ibid., p. 30.

owes to the original absence of a mutually accepted definition of "mobile," and the potential for recurrence of a problem with obvious strategic implications.

### 3. Installation of an ABM Radar at Kamchatka Peninsula

Construction and operation of a new phased-array radar system at the Kamchatka impact area of the Soviet Union's ICBM test range was detected in October 1975. Prior to the signing of the SALT I accords, the United States, in something of a preventive initiative, compiled and submitted a list of permitted American and Soviet test sites. The objective was to remove the ambiguity of Article IV of the ABM Treaty, which provides that limitations "shall not apply to ABM systems or components used for development or testing, and located within current or additionally agreed test ranges." (D & D, p. 118)

Kamchatka was not included in the tentative draft, yet the Soviets neither confirmed nor denied its accuracy or completeness, observing instead that national technical means of verification assured against misunderstanding. The issue was further complicated by the presence of an older ABM-type radar which "could be viewed as having established the Kamchatka impact area as an ABM test range at the time the ABM Treaty was signed." (CR, S2555)

American policymakers feared that the Kamchatka radar, while ostensibly part of the Soviet Union's test range equipment, might be used to augment its overall perimeter ABM coverage. The State Department report notes:

The Soviets indicated that a range with a radar instrumentation complex existed on Kamchatka Peninsula on the date of the signature of the ABM Treaty and that they would be prepared to consider the Kamchatka range a current test range within the meaning of Article IV of the ABM Treaty. The U.S. continued the exchange to establish that Kamchatka is an ABM test range, that Sary Shagan and Kamchatka are the only ABM test ranges in the USSR, and that Article IV of the ABM Treaty requires agreement concerning the establishment of additional test ranges. (CR, S2555)

The indeterminacy of the initial Soviet response raises the question of how far (and long) one party to an agreement can proceed with questionable activities before accountability is demanded. United States exclusion of Kamchatka from the list of ABM test ranges certainly facilitated Soviet evasiveness, particularly given the existence of an older ABM-type radar when the Treaty was signed.

Moreover, the United States found itself in the interesting position of having to prove to the Soviets that the Kamchatka impact area and the radars installed there were regulated by Article IV, in addition to having to further explain the permissible actions consistent with the provisions of the same Article.

#### 4. Reporting of Soviet Dismantling of Excess ABM Test Launchers

Article IV likewise restricts each side to 15 ABM launchers at test sites. The detailed procedures regulating the dismantling of test launchers beyond the agreed limit were developed in the Standing Consultative Commission and entered into force on July 3, 1972. In 1973, via the Commission, the Soviet Union served notice that excess launchers had been dismantled in compliance with the provisions set forth. Data collected subsequently by the United States, however, revealed that, contrary to Soviet assertions, several launchers were still in place. According to the State Department's findings:

Even though the launchers were deactivated prior to entry into force of the procedures, and their reactivation would be of no strategic significance, the U.S. raised the matter as a case of inaccurate notification or reporting to make known our expectation that in the future, care would be taken to ensure that notification, as well as dismantling or destruction, was in strict accordance with the agreed procedures. (CR, S2555)

Given the Soviet propensity to exploit loopholes to the outer limits of legal acceptability, this admonition has a somewhat hollow ring. Even though the alleged infraction was not considered strategically significant, the implications of even minor deviations are of greater interest for what they reveal about Soviet behavior than is the fact of temporary Soviet compliance. The inaccuracy of preliminary Soviet notifications inevitably calls into question the USSR's commitment to arms control measures which strengthen mutual confidence and promote "equal security."

### CONCEALMENT ACTIVITIES AND POSSIBLE DELIBERATE INTERFERENCE

#### 1. Covered Facilities and Concealment

Several alleged infractions relate to attempted concealment measures at test ranges and construction sites, measures which, if not legal violations, at least technically complicate the verification process. The strategic significance of these issue merits extended consideration.

Article V of the Interim Agreement and Article XII of the ABM Treaty provide that each Party

...shall not interfere with the national technical means of verification of the other Party...nor...use deliberate concealment measures which impede verification by national technical means of compliance with the provisions...of the Agreement or the Treaty. (D & D, pp. 120,123)

However, the two Articles also stipulate that the latter obligation "...shall not require changes in current construction, assembly, conversion, or overhaul practices" (emphasis added). The national technical means of verification cited refer primarily to reconnaissance satellites and electronic monitoring systems, which Article V (i) of the Interim Agreement stresses shall be employed "in a manner consistent with generally recognized principles of international law." The ambiguity of the phrasing is notable.

Although irregular Soviet concealment practices had been closely monitored by the United States "both before and after conclusion of the 1972 SALT agreements," the State Department observed that "during 1974, the extent of those concealment activities associated with strategic weapons programs increased substantially." (CR, S2554) Of major concern in this regard was the charge that the Soviets had illegally placed canvas covers and planking over extensive sections of the prefabrication, assembly and refit facilities for ballistic missile submarines (in particular, the Delta-class) at the Severomorsk construction yard on the Kola Peninsula. Similar camouflage efforts reportedly took place at the Khabarovsk facilities in Siberia as well as at other strategic construction sites throughout the Soviet Union.

Concerning these allegations, the State Department findings sound more speculative than definitive:

None of (the concealment activities) prevented U.S. verification of compliance with the provisions of the ABM Treaty or the Interim Agreement, but there was concern that they could impede verification in the future if the pattern of concealment measures were permitted to continue to expand.

The U.S. stated this concern and discussed it with the Soviet side. In early 1975, careful analysis of intelligence information on activities in the Soviet Union led the United States to conclude that there no longer appeared to be an expanding pattern of concealment activities associated with strategic weapons programs. We continue to monitor Soviet activity in this area closely. (CR, S2554)

Does the stated lack of an "expanding pattern of concealment activities" imply that some infractions are continuing in defiance of the provisions, or are themselves somehow consistent with "generally recognized principles of international law?" Beyond the assumption

that such activities contravene the spirit of the accords, their legality must be evaluated against treaty language which is susceptible to contrasting interpretations. In particular, that sentence in Article V (iii) of the Interim Agreement which qualifies the prohibition on deliberate concealment virtually invites circumvention.

Indeed, the Soviet Union has claimed that the covering of certain work areas in the SSBN yards is a standard construction and conversion practice which long predates the signing of SALT I and hence is perfectly legal. In other words, without directly violating the terms of SALT I, the Soviet Union has managed to render practically worthless its central provisions on verification. Rather than attempt to clarify the ambiguous treaty language with the appropriate legal wording, the United States was content to issue a Unilateral Statement on May 20, 1972, which emphasized

...the importance that the United States attaches to the provisions of Article V, including in particular their application to fitting out or berthing submarines.<sup>16</sup>

If the SALT process is to retain significance, then it is incumbent upon both Parties to ensure against those activities which degrade mutual confidence-building. Even if technical violations of given provisions have not been committed (or in any case could not be definitively proved), measures which feed perceptions of duplicity undermine the process and thus must be considered of equal significance.

## 2. Concealment at Test Ranges

In early 1977, the United States observed a large net covering over an ICBM test launcher undergoing conversion at a test range in the Soviet Union. (The range in question is presumed to be Plesetsk, where the mobile SS-X-16 has been tested). The apparent concealment effort theoretically contravened not only Article V (iii) of the Interim Agreement and the Agreed Statement concerning launcher dimensions, but also was considered to be inconsistent with an Agreed Statement on test and training launchers, which holds that

...there shall be no significant increase in the number of ICBM and SLBM test and training launchers or in the number of such launchers for modern, land-based heavy ICBMs...Construction or conversion of ICBM launchers shall be undertaken only for purposes of testing and training. (CR, S2555)

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16. Cited in Gray, op. cit., p. 32.

The United States accordingly raised this issue in connection with the ongoing SALT II negotiations dealing with the subject of deliberate concealment measures. The State Department report notes:

In addition, we expressed our view that the use of a covering over an ICBM silo launcher concealed activities from national technical means of verification and could impede verification of compliance with provisions of the Interim Agreement, specifically, the provision which dealt with increases in dimensions of ICBM silo launchers as recorded in the Agreed Statement...The U.S. took the position that a covering which conceals activities at an ICBM silo from national technical means of verification could reduce the confidence and trust which are important to mutual efforts to establish and maintain strategic arms limitation.

It has been the Soviet position that the provisions of the Interim Agreement were not applicable to the activity in question. Nevertheless, they subsequently removed the net covering. (CR, S2555)

Assuming that the SS-X-16 mobile ICBM is involved, it must be emphasized that the Soviets have been less than forthcoming with regard to information about the production rate and/or deployment posture of the system. As such, any deliberate concealment activity complicates the process of determining whether a permissible replacement has been effected or an illegal expansion of the Soviet land-based missile force is being pursued. It is somewhat problematic to speak of mutually agreed limits, inasmuch as the Soviet Union has provided no hard data concerning its weapons inventories. The figures derive instead from U.S. intelligence estimates. At any rate, the burden of proof that only (legally) acceptable developments are concealed must be held to rest with the Party attempting the concealment.

It may be that Soviet compliance was ultimately induced less by American blandishments, and more by the simple fact of their having acquired the level of test information necessary for certain strategic purposes. Moreover, the language of Article V of the Interim Agreement equally obscures interpretations of permissible silo-launcher conversion practices.

### 3. Blinding of U.S. reconnaissance satellites

In 1975, United States intelligence analysis suggested that the Soviet Union had possibly experimented with ground-based lasers to degrade infrared sensors on certain U.S. surveillance systems. Such an activity would obviously be inconsistent with the previously cited Articles XII of the ABM Treaty and V (iii) of the Interim Agreement, which rule against deliberate interference with national

technical means of verification. The State Department report observes that

...it was determined that no questionable Soviet activity was involved and that our monitoring capabilities had not been affected by these events. The analysis indicated that the events had resulted from several large fires caused by breaks along natural gas pipelines in the USSR. (CR, S2556)

The explanation sounds less than convincing to military analysts. Infrared imagery from the Defense Meteorological Satellites was examined for the period when the alleged experimentation occurred and no natural sources for such strong radiations were found. Indeed, the energy levels detected were 10-1,000 times the intensity obtained from an ICBM launch or a natural occurrence such as fire.<sup>17</sup> What is of further interest is that the locations of these laser radiation sources in the western part of the USSR did not correspond to known Soviet test facilities.

Circumstantial indications of sustained Soviet development of a satellite-blinding capability would question the apparently facile conclusion contained in the State Department report. At any rate, even incremental evidence supporting the initial allegation would run counter to Soviet declarations concerning the need for enhanced mutual confidence to which reliable national technical means of verification contribute.

#### 4. Development of an Anti-Satellite System

Concerning informed speculation that the Soviet Union is developing a hunter-killer satellite capability aimed at American reconnaissance systems, the State Department report notes that such development is alleged to be

...a violation of the obligation not to interfere with national technical means of verification of compliance with SALT provisions. Since development of such systems is not prohibited, this program does not call into question Soviet compliance with existing agreements. The actual use of an ASAT system against U.S. national technical means is prohibited, but this has not occurred. (CR, S2556)

That the Soviets are even presumed to be developing an anti-satellite capability should be sufficient cause for concern to

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17. Aviation Week and Space Technology, December 8, 1975, p. 12.

American policymakers. When the Soviets first tested exploding killer satellites in the late 1960's, they used Soviet-manufactured target spacecraft, which could be modified to transmit telemetric signals regarding the extent of damage. These experiments prompted the United States to develop techniques for reducing satellite vulnerability to bombardment. Both countries have recently decided to enter into negotiations devoted to resolving the potential threat posed by ASAT capabilities. Though violations of relevant treaty provisions have not technically been committed, the implications for effective U.S. monitoring of the more complex terms of follow-on SALT agreements are obvious.

## CONCLUSION

In light of the foregoing analysis, several points suggest themselves as possible guidelines for assessing the issue of verification relative to SALT II.

- (1) Under certain conditions, and given the absence of mutual trust between the superpowers, obscure treaty language can be counter-productive to expectations of reciprocal compliance. The Soviet Union has repeatedly demonstrated its willingness to exploit loopholes consistent with its perceived strategic interests. If the Soviets favor vaguely-worded treaty provisions or decline association with particular interpretations, there are probably clearly-defined, though unarticulated, political reasons for doing so. Soviet silence does not imply consent, and agreements for the sake of abstractions like detente are subordinate to calculations of the long-range political and strategic arms control.
- (2) The series of American Unilateral Statements in SALT I constituted a tactic for impressing upon the Soviets the U.S. conception of behavior appropriate to the (also unilaterally-defined) spirit of SALT. Reliance on Unilateral Statements may lead to unsupportable allegations of non-compliance or will be less than legally useful to substantiate legitimate charges where evidence is available. Inasmuch as they lack the force of law and do not rest upon even tacit acquiescence by the Soviet Union, such statements may be inadvertently harmful by inducing American policymakers to assume that the Soviets will respect them.
- (3) United States security interests demand that the terms of critical provisions relating to the development, testing and deployment of advanced weapons systems be spelled out with precision. Given the momentum of current Soviet weapons programs, little constrained by SALT I, failure to insist upon a careful stipulation of terms could lead to an agreement that is both technically

indefensible and potentially dangerous. As the protracted violations debate demonstrates beyond reasonable doubt, SALT I was not a sound set of agreements from a strategic standpoint, whatever the momentary contribution to an improved political atmosphere.

- (4) Related to (3) is the question of what might transpire in the absence of a subsequent arms control agreement. While the United States has delayed or terminated several major weapons programs, the pace of Soviet military developments has apparently continued unabated and indicates a potential to rapidly exploit a vacuum left by a breakdown in the arms control process. Indeed, the advantage in this regard which the Soviet Union could reasonably anticipate, given the advanced technologies being incorporated into new generations of weapons systems, would be highly destabilizing to the strategic nuclear balance. When the lead-time factor is taken into account, the conceivable margin of disparity may be even more pronounced.
- (5) Certain complex issues destined for inclusion in SALT II, such as the production rate/deployment posture of the Backfire bomber, would be extremely difficult to verify under the best of circumstances. The record of Soviet attempts at concealment and possible interference with American reconnaissance systems suggests that enforcement of Soviet adherence to the prospective terms of a follow-on pact will undergo severe trials. Since the Soviets are resolutely opposed to on-site inspection, the United States must bend efforts to ensure against degradation of existing verification practices.
- (6) A realistic evaluation of the verification issue must transcend legalistic wrangling over those Soviet activities which have been detected and cited as violations of the treaty. The possibility must likewise be considered that the Soviets have undertaken questionable activities of similar or greater magnitude in areas which escaped monitoring by the United States, yet which may be more detrimental to American security interests than the infractions detected. Despite the assumption by some analysts that, beyond a certain level of sufficiency, marginal additions of power cannot be decisive, the combined effects of clandestine Soviet developments may promote significantly adverse trends in the strategic balance, a situation which the arms control process (from the American perspective) is manifestly intended to preclude.

The State Department's findings contain several ambiguities concerning the disposition of certain alleged Soviet violations of SALT I, and thus raise questions about whether the issues have been definitively resolved. Furthermore, to assert that major violations of SALT II would be detected "in time" does little to enhance assurance in the United States' ability to monitor incremental infractions, and the cumulative effect these might have on the strategic balance. The supposed confidence-building function of the SALT negotiations, to which the U.S. ostensibly attaches such importance, would likewise be undermined. Above all, American policymakers must withstand the tendency to devote inordinate attention to legalisms and atmospherics, and consider more carefully the larger political and perceptual framework within which strategic arms control serves a specified purpose.

John G. Behuncik  
Congressional Fellow  
National Security Affairs