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11 June 1969

L-11171

Director of Space Systems
Office, Secretary of the Air Force
Headquarters United States Air Force
Washington, D.C. 20330

Attention: Colonel Paul Worthman

Dear Paul:

Enclosed is a copy of a paper I am working on currently. Any comments or suggestions would be most welcome.

Sincerely,

Mert/ws

Merton E. Davies
Engineering Sciences Department

MED:ws

Enclosure: paper

*Under preparation
for personal approach
by Davies to U.A.J.*

INSPECTION BY SATELLITE FOR A STRATEGIC ARMS LIMITATION TREATY

by

Merton E. Davies

The use of observation satellites to monitor arms control treaties has been suggested many times in the past both in open publications and in government studies. Perhaps the first time it was discussed during negotiations was at the Surprise Attack Conference held in Geneva in 1958.

Currently
At this time, it has been proposed that an observation satellite system be developed to monitor ^a the Strategic Arms Limitation Treaty. The proposal has two forms: the first and best thought-out idea visualizes entering into direct negotiations with the Soviet Union for the simultaneous development of one inspection satellite system in the U.S. (by NASA) and another in the SU. These systems would be operated relatively openly by the nations involved. The second thought was to propose establishment of an inspection satellite system within the structure of the UN, to be operated by the UN and for the data to be freely available to all. As this second proposal implies greater openness than the first, it would probably be more difficult to obtain Soviet cooperation for its establishment. On the other hand, it might emerge in a few years as a UN response to a bilateral U.S./SU inspection agreement. The remaining ^{has} discussion will pertain only to bilateral U.S./SU relationships (first proposal) and should not be confused with possible multilateral relationships (second proposal) in regard to objectives, intent, or purpose.

1. What would be the technical characteristics of the inspection satellite system?

Performance and operational characteristics of the inspection systems would be determined by direct negotiations between the U.S. and the SU scientists. As a point of reference, the ground resolution of an observation satellite at 200 km altitude based on the U.S. Lunar Orbiter camera system would be 4.5 meters and based on the Soviet Zond 6 camera system would be 10 meters.

2. Who would normally see the pictures?

NASA would furnish the pictures to the U.S. ~~and SU~~ government as desired, ^{and be prepared to} ~~perhaps~~ exchange them for SU pictures. Only minimum public disclosure would be required, however, samples would be needed to demonstrate performance to the public and congress. In event of crisis or grave concern they would be available to the UN or other designated body.

*Common reason
coyote
+
way of
indicate
concern
w/ form
talks*

3. Why should the Soviets agree to such a system?

They understand the way our government and press operate and realize that something will have to be said about inspection before a treaty will be ratified by the Senate. This system would be less objectionable than previous proposals (on-site inspection, ground stations, aerial inspection, etc.).

4. Why not tell the Senate that no inspection is necessary?

Recalling how the Soviets broke the nuclear weapon test moratorium, lied during the Cuban missile crisis, and more recently invaded Czechoslovakia would lead to little support for such confidence in the Soviet Union within the Senate or by the American public.

5. Why not tell the Senate that inspection will be carried out by unilateral collection techniques?

This would lead to questions regarding the details and reliability of the collection effort and perhaps lead to the compromise of some classified programs. *In addition*, On the other hand, the Soviets might be embarrassed by the efficiency of "espionage" and choose to react violently to brazen claims or impressive unilateral demonstrations.

6. It will take two years to develop an inspection satellite system; what should be used in the meantime?

The long lead time would suggest that discussions with the Soviet concerning the system should take place soon so as to minimize the no-inspection period. Knowing inspection was coming would gain support for treaty as the public would have confidence it was to be monitored.

*time of treaty
entering into
of short term
violation.
both sides
have some
of other
capabilities*

7. Will the *ground* resolution of the inspection system be sufficient to identify all treaty violations?

Often it will not be nor does it need to be. When uncertainties of interpretation exist, this system will be adequate to illustrate the nature of the questions and to give precise geographical locations. The objective of this inspection system is not to supply unambiguous evidence of treaty violations for legal proceedings but rather is intended to identify localities whose function is possibly suspicious. Other means will be required to establish whether treaty violations are in fact taking place. Armed with these data it should be possible to discuss the concerns directly with the Soviets. The inspection of missiles leaving Cuba was by aerial photography of the ships as the crews uncovered the missiles, thus avoiding any need for boarding.