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MEETING OF  
THE COMMITTEE OF PRINCIPALS  
WITH THE PRESIDENT

Friday, July 27, 1962, at 10:15 a.m.  
The White House

AGENDA

United States Arms Control and Disarmament Agency Papers:

1. U.S. Program Regarding a Treaty to Ban Nuclear Weapons Tests and other Disarmament Proposals (Draft of July 26, 1962)

Reference Documents

2. Draft Comprehensive Test Ban Treaty (Draft of July 24, 1962)
3. Technical Aspects of an "International System on Nationally Operated Stations for Monitoring a Comprehensive Nuclear Test Ban Treaty" (Draft of July 24, 1962)
4. Draft Treaty Banning Tests in Atmosphere, Outer Space and Underwater. (Draft of July 24, 1962)
5. Recommendation on Production Limits in Stage I (Draft of July 23, 1962)
6. Stage I Reduction of Military Bases (Draft of July 23, 1962)

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**UNITED STATES ARMS CONTROL AND DISARMAMENT AGENCY**

July 26, 1962

**SUBJECT: U. S. Program Regarding a Treaty to  
Ban Nuclear Weapons Tests and Other  
Disarmament Proposals**

The attached paper is circulated for the consideration of the President of the United States and the members of the Committee of Principals for the meeting at the White House on July 27, 1962.

*W.C.F.*

**William C Foster  
Director**

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C O P Y

July 26, 1962

MEMORANDUM TO THE PRESIDENT

Subject: U.S. Program Regarding a Treaty to  
Ban Nuclear Weapon Tests and Other  
Disarmament Proposals

The Committee of Principals met on July 26, 1962 to consider issues which are outstanding in the disarmament negotiations now going on in Geneva. At that meeting, we considered alternative lines of approach with respect to negotiations for a ban on nuclear weapons tests. These lines of approach are based on a combination of technical and political developments which are described in the attached memorandum.

There are two proposed alternatives which are described below. The members of the Committee of Principals are prepared to discuss the issues with you tomorrow to help you in making your determination as to which is most in the national interest.

1. Alternative One. The United States should simultaneously pursue the following five courses:

a. Atmospheric test ban. The United States should table an atmospheric-outerspace-underwater test-ban treaty.

b. Comprehensive

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b. Comprehensive test ban. With respect to a comprehensive treaty, we should not table one now. We should declare a willingness to accept a comprehensive test-ban treaty involving no foreign-operated control posts on Soviet soil and involving fewer than 20 on-site inspections, but we should state that we see no point in suggesting or debating details or numbers until the Soviet Union agrees to at least some on-site inspections. We should at the same time provide the Conference with as much recent data as we can relating to detection, location and identification capabilities of internationally coordinated "national" systems. We should express our willingness to negotiate in any of these areas even though the Soviet Union commences an atmospheric test series.

c. No-transfer agreement. The United States should press for a world-wide agreement banning the transfer or acquisition of nuclear weapons or nuclear technology. This course of action would be related practically, but not organically to the other courses of action.

d. Underground testing. We should continue our underground testing program.

e. Readiness to test in the atmosphere. We should, to the extent feasible, maintain readiness to test in the atmosphere.

2. Alternative Two. The United States should pursue the following courses in the order indicated:

a. Tabling of data. The United States should provide the Conference with the recent data relating to detection, location and identification capabilities.

b. Comprehensive test ban. We should propose a comprehensive test-ban treaty involving the following changes:

(1) The

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(i) The total number of control posts in the USSR to be reduced from 19 to perhaps 5.

(ii) The control posts to be operated by nationals of the country where they are located but standardized and coordinated by an international organization. There would also be permanent international observers at these posts or periodic visits to them by such observers.

(iii) The number of on-site inspections in the Soviet Union to be reduced from the present range of 12 to 20 to a flat figure which might be less than the present minimum of 12.

c. Atmospheric test ban. We should be prepared to fall back to an atmospheric-outerspace-underwater test-ban treaty in the event that the Soviet Union is unwilling to agree to on-site inspections.

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In discussing the problem of nuclear testing, the Committee of Principals agreed that two concurrent studies should be undertaken on an urgent basis: an assessment of the risks to U.S. security under the alternative types of test bans, and an assessment of the risks to U.S. security that would result from the indefinite continuation of testing of nuclear weapons by the U.S., the Soviet Union, and other countries.

In addition to considering questions related to cessation of nuclear weapon testing, the Committee of Principals also considered and recommends for your approval the following positions related to general disarmament negotiations:

Stage I production. The Committee of Principals proposes that production of armaments during Stage I should be limited to replacement and repair of existing armaments.

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armaments. Replacement would be "in kind." The amount of production would be reduced at least as much as the reduction of armaments. Production of new types of weapons, of prototypes, and of new armament production facilities would be prohibited.

Bases. The Committee of Principals also proposes that the United States should state at the Geneva Conference that it would be willing to discuss the possibility of a Stage I reduction of military bases but that any such discussion should take place only after substantial progress has been made toward reaching agreement on the central problems of reducing armaments and armed forces and on verification and other measures providing necessary safeguards in a disarming world.

(signed)

William C. Foster  
Director

Enclosure:

U.S. Program Regarding  
a Treaty to Ban Nuclear  
Weapons Tests.

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U. S. PROGRAM REGARDING A TREATY  
TO BAN NUCLEAR WEAPONS TESTS

A. U. S. Interest in a Test Ban

It is agreed at the present time that a comprehensive test ban, if it could be enforced, would be in the interest of the United States. A ban on tests in the atmosphere, underwater and outer space would also be in the U. S. interest. Such a ban would not be as effective in securing the agreement of other countries not to develop a nuclear capability.

B. Situation in Geneva Disarmament Conference

The principal focus of conference discussion on the nuclear test ban question for the past three months has been a memorandum submitted on April 16, 1962, by the eight non-NATO, non-Warsaw Pact delegations. This memorandum has been accepted as it stands by the Soviet Union and has been accepted as one of the bases of negotiation by the United States and the United Kingdom. The memorandum was designed to stimulate negotiations on the basis of a compromise between the Soviet and US-UK positions. Those elements of the memorandum which reflect in general the US position are provisions for an International Scientific Commission and a strong inference that on-site inspections are

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obligatory. This inference is contested by the Soviet Union and the rather vague language of the eight-nation memorandum could legitimately be interpreted as providing for on-site inspection only at the invitation of the country to be inspected. Moreover, the eight-nation memorandum supports the Soviet view that national detection systems can be used as the basis for monitoring a test ban agreement.

For the past several weeks the US delegation has been engaged in the delicate business of using the eight-nation memorandum as one of the bases for negotiation while neither accepting nor rejecting its basic ideas. This tactic has sustained us throughout the potentially difficult period of a US atmospheric test series but it can no longer serve as a substitute for a definitive statement of what the US is willing to settle for in a nuclear test ban treaty. This conclusion is all the more compelling in the light of the new technical findings announced by the US on July 7.

C. Summary of Technical Considerations with respect to a Nuclear Test Ban Treaty encompassing Tests in All Environments, and Particularly Underground

1. The test detection research program called Project Vela, and some 40 underground tests in the U.S. recent underground test series and the operation of the unilateral U.S.

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detection system, have produced a large amount of data which have been subjected in recent weeks to intensive analysis. This analysis has resulted in two very important findings which improve the capability of seismic stations to detect, and to some extent also to identify, seismic events. The U. S. is probably in a better position with respect to scientific information on detection, identification and the problem of earthquakes than ever before. Some degree of quantitative uncertainty about precise numbers of earthquakes and limits of distant detection remains but in the judgment of those responsible, the uncertainty is not sufficient to delay a decision. Moreover, the resolution of the uncertainties is likely to be in the direction of greater rather than less detection capability.

2. The first important finding is that there has been an improvement in the capability to detect tests by a distant network. Qualified scientists now believe it to be possible to design a network composed of 25 internationally coordinated superior seismic stations including perhaps 3 in the U.S. and 5 in the USSR augmented by a somewhat larger number of cooperating seismic stations of existing "university type." Such a network could detect seismic events down to a magnitude of 4.0 on the unified scale. This is considered to be

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equivalent to a 1 kt. explosion in granite, a 2 kt. explosion in tuff, and a 14 kt. explosion in alluvium. This estimate is based on the assumption that only stations outside the USSR can be relied on to detect suspicious events in the USSR. Because the capability of the stations outside the USSR appears to be reasonably good, it is possible to envisage a system based upon nationally operated stations which were internationally coordinated. In periods of normal operation, the information from the stations in the USSR would make it possible to increase the ability to detect and locate events in the USSR from stations outside the USSR.

3. The detection limit of 4.0 for such a system compares reasonably well with the estimated capability of the Geneva system of 180 internationally operated stations contemplated in the April 18, 1961 US treaty draft the detection limit of which is 3.75, equivalent to 1/2 kt. in granite, 1 kt. in tuff and 7 kt. in alluvium. The Geneva system had 19 stations in the USSR and relied largely on the stations inside or immediately adjacent to the USSR to detect events in that country. The nationally operated internationally coordinated system could be completed in less than a year as compared with an estimated six years for the Geneva system.

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4. The second finding is the discovery that the number of earthquakes relative to a given magnitude is substantially reduced from what had been previously calculated. The finding is that the reduction is at least  $2\frac{1}{2}$  and maybe as much as a factor of 5. For example, it had previously been estimated that of the shallow earthquakes in the Soviet Union, at least 700 would give a seismic signal equivalent to an explosion of 2 kt. in tuff (the detection threshold of the internationally coordinated system now considered) and which might be either earthquakes or explosions. It now appears that the true number is in the neighborhood of 170. A large fraction of these would be located in relatively small seismic areas in the USSR.

5. The recent developments have not reached the point where it is possible to identify a seismic event as an underground nuclear explosion by seismic means alone. The reduction in the number of earthquakes equivalent to an explosion of given magnitude is extremely important because it means that there are fewer earthquakes to confuse with possible nuclear explosions. In other words, the number of unidentified seismic events in a given period will be substantially reduced. This should make possible a reduction in

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the number of on-site inspections -- the present US position is that it should be a maximum of 20 and a minimum of 12 depending upon the number of seismic events. The concentration of the unidentified events in a small portion of the USSR should make it possible to divide the on-site inspections into the seismic and aseismic areas. If a total of 12 on-site inspections were proposed and only 6 of those were permitted in the previously delineated aseismic area (the vast majority of area of the Soviet Union) the negotiability of the proposal might be increased.

6. The fact that the detection capabilities of the internationally coordinated system now proposed are somewhat lower than the Geneva system will again cause the discussion of possible cheating. It has been pointed out that many of the underground tests in the recent US series were of yields so low that they would have been undetected either by a system composed of national control stations or by the Geneva system. Of the 44 Nevada tests, 37 were conducted in alluvium, which is a medium that "muffles" seismic effects by a factor of 7 relative to tuff, the usual standard medium. Alluvium, as has been realized at least since last March, might be considered to be the medium in which a potential violator of a

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test ban agreement would want to conduct clandestine tests. However, alluvium also produces very large craters even for small shots. If the tester attempted to reduce the size of the crater by digging deeper, he runs the risk of increasing the coupling factor because alluvium is not a deep medium, and the deeper one goes the more likely the water table or another medium will be reached and the muffling effect be lost. It is unlikely, therefore, that a would-be violator would attempt to test extensively in alluvium. Any test ban agreement, however, will contain a threshold below which detection of tests would be highly unlikely. The basic considerations are: the military significance of such small tests; whether a series of such small tests could be conducted without some intelligence information becoming available; and whether the advantages in stopping the big tests override the disadvantage of possible cheating on relatively small underground tests.

July 26, 1962

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The staff level meeting requested in the attached memo was held at ACDA on 24 August 1962. Consequently, ACDA does not require or expect a reply.

As a result of that meeting and 15 August briefing of Mr. Foster by CIA, ACDA is preparing a staff paper on US positions on the Peaceful Uses of Outer Space for future consideration by the Committee of Deputies and Committee of Principals.

To 3 for info.