

SECRET
UNCLASSIFIED
DEPARTMENT OF STATE

5323

AEC - Mr. McCone

Approved CDD. 7/14/59

Memorandum of Conversation

LIMIT DISTRIBUTION

DATE: July 9, 1959

SUBJECT: Geneva Nuclear Test Negotiations -- Meeting of the Principals

PARTICIPANTS:	<u>State</u>	<u>White House</u>	<u>DOD</u>	<u>AEC</u>
	Mr. Dillon	Dr. Killian	Mr. Gates	Mr. McCone
	Mr. Farley - S/AE	Dr. Kistiakowsky	General Loper	Dr. English
	Mr. Spiers - S/AE	Dr. Bacher	Mr. Irwin	
	Mr. Morris - S/AE	Mr. Keeny		
	Mr. Toon - EE	Mr. Skolnikoff		
	Mr. Gray	<u>CIA</u>		
		Mr. Dulles		

COPIES TO:

S/S - 2
S/P
S/AE - 4(lcc:4A)
EUR
INR

White House: Dr. Killian
 Mr. Gordon Gray

Defense: Mr. Gates
AEC: Mr. McCone ✓

CIA: Mr. Allen Dulles
US Delegation, Geneva
Ambassador Wadsworth

Mr. Gray said he thought it important that we consider how we obtain public understanding of the U.S. position and goals at the negotiations. Mr. McCone agreed, saying he felt strongly that there is not a good public understanding of the aims of our Government at the nuclear test negotiations. Two things have served to obscure the issue in the public mind: the Soviets have taken great pains to create the impression that they have made substantial and important concessions at the negotiations; at the same time, the U.K. has repeatedly, and most recently in a Macmillan statement last week, given the impression that agreement is just around the corner. In his opinion there remain many substantial problems to be solved before an agreement can be reached. For this reason he had suggested in his letter of July 7 to Secretary Herter that a "white paper" on the U.S. position be prepared. Mr. Dillon said that he felt the public was fully aware of the primary U.S. objective, which is to attain agreement on a fully safeguarded, inspected suspension of nuclear weapons tests. As far as the negotiations are concerned, we should proceed rapidly to set out our views of the technical problems. For instance, we are currently preparing a working paper setting forth our concept of the technical criteria which would have to be met before an event would be identified as natural. We believe that such a course will do a great deal to clarify the technical issues with regard to underground test monitoring and would serve to "smoke out" the Soviet position.

He had discussed with Secretary Herter the question of tactics during the immediate future when the Foreign Ministers Conference will be in session. They

DECLASSIFIED WITH DELETIONS
Agency Case NSC F&S-1018
NLE Case 85-446-8
By *SP* NLE Date 1/31/90

SECRET
UNCLASSIFIED

INFORMATION COPY



both felt that we should not seek a recess during the Foreign Ministers Conference. This period could be used to detail our views concerning the large numbers of unidentified seismic events which would have to be dealt with..... and to seek resolution of such remaining procedural and organizational problems as we can. Thus, while he felt the timing of release of such a "white paper" as Mr. McCone had suggested should be deferred, he agreed that we should begin preparation of such a document.

Mr. Dillon then called on Dr. Robert F. Bacher, Chairman of the ad hoc committee on on-site inspection, to report on the findings of his group.

Dr. Bacher reviewed the history of the underground test detection problem, touching on the considerations of the Conference of Experts last summer, the complicating data resulting from the HARDTACK II underground explosions and the recommendations of the Berkner Panel on Seismic Improvement. He emphasized that the science of seismology was largely in its infancy and, at the present state of the art, full of uncertainties. With regard to the question of concealment, he noted that decoupling theories, which had been thought to be relatively insignificant at the time of the Experts' Conference, now held forth possibilities which could change the underground detection situation completely. He emphasized, however, that the decoupling technique developed by Dr. Albert Latter was a very complicated and uncertain matter. This large-hole method would require an approximately 1 million-cubic-meters hole for a 10 kiloton explosion at a cost of from 2 to 4 dollars per cubic meter, i.e., 2 to 4 million dollars. He pointed out that there is essentially no experimental information to support this theory; however, the theory has stood up against severe theoretical scrutiny. It is expected that the HE experiments scheduled to begin in the near future by the AEC ought to be able to shed considerable light on the validity of the theory. There will remain, of course, other problems since no one knows whether a hole of the size suggested could hold together or whether there would be physical deviations from the experience with experiments in salt mines when dealing with a homogeneous medium such as would be used for an actual clandestine test.

Our thinking since last summer has been that inspection of a certain percentage of unidentified events should take place. Recently, however, the concept of an annual quota of on-site inspections has been introduced, first by British Prime Minister Macmillan and subsequently by Soviet Premier Khrushchev. His group, which met July 1-2, had been called upon to study the problems in inspection bearing on determination of a percentage or quota for inspection and to estimate the likelihood of detection which could be achieved by various percentages or quotas. Obviously after only such a short time he could not present a complete and detailed report on this complicated problem, but could merely sketch out the preliminary conclusions reached by the group. He noted that although there remained differences of opinion among the members of the Panel, he felt it was possible at this time to report some reasonably firm conclusions.

He noted that in dealing with the over-all underground problem, there were three major variables: (1) the ability to identify an underground event as natural on the basis of instrument readings; (2) the number of annual inspections which would be available in a quota; and (3) the probability of finding and proving a violation by on-site inspection. A factor of improvement in any of these variables would improve the over-all situation by the same factor.

[Redacted]

arose.

[Redacted]

Dr. Bacher summarized the following conclusions indicated by the panel's discussion:

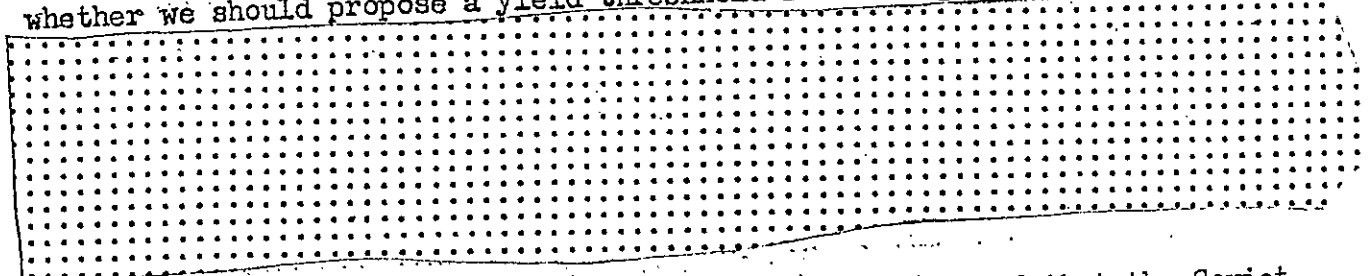


1. If large decoupling factors prove to be possible using the Latter technique, we will then be driven back essentially to reliance on intelligence, since the network will have very little capability of detecting such events, much less identifying them. However, he personally felt that the possibility of constructing holes for tests larger than 10 KT was extremely speculative.
2. The probability of being caught in a violation in the low-yield ranges is most heavily dependent on the effectiveness of the actual on-site inspection procedure since the other factors have less influence than in the higher yield ranges.
3. Urgent study of the following problems is needed: (a) experimental testing of the Latter decoupling theory; (b) operational study of effective inspection techniques; (c) a hard look at the possibility of using unmanned seismic stations on a 150 to 170 kilometer network. This could be the main solution to the decoupling problem.

[Redacted]

Dr. Killian said he felt that the results of this quick study made clear that the underground detection problem is very difficult. He emphasized, however, that these analyses were very much on the conservative side and that the situation might in actuality be very much better.

Mr. Dillon said he was impressed with the fact that the real problem existed in the lower yields and that in the higher yield range we seemed to be much better off. Mr. McCone noted that this fact raised again the question of whether we should propose a yield threshold for the agreement.



Referring to his recent trip to Geneva, Mr. McCone said that the Soviet Delegate, Ambassador Tsarapkin, had told him that his country could never accept the concept of unmanned seismic stations so closely spaced because of the large numbers involved and the need for servicing. Dr. Bacher pointed out that although a large number of such slave stations would be required, they would almost entirely do away with the inspection problem since such a network would identify almost all earthquakes without such inspection.

Mr. Dillon asked what we might do to improve the state of our knowledge of on-site inspection techniques. Dr. Scoville replied that a great deal of work had been done last fall and that there was no question but that there were possible technical and detective methods to find underground nuclear explosions. He felt that it would be most useful if the AEC could prepare a study on ways in which tests could be hidden and minimum amount of diagnostic instrumentation which would be needed. Then, the "detectives" could pit their wits against the "hidiers". Dr. Bacher agreed that the HARDTACK II events had been very easy to find. However, no particular effort was made to conceal these shots.

In response to Mr. Irwin's question as to whether the Berkner recommendations for 100 seismometers at each control post would be practical, Dr. Bacher explained that it was common in the oil industry to use arrays of 1,000 such units, Dr. Killian stressed that in general the Berkner estimates had deliberately been very conservative.

Mr. Dillon asked whether Dr. Killian thought we had enough information to set forth for the President in lay language the present state of the problem. Dr. Killian said he thought that we can certainly give him a reasonable estimate of the implications of this latest study on our over-all position. It was agreed that Dr. Killian would undertake to prepare such a paper.

Dr. Killian said he would like to suggest a possible over-all conclusion based on Dr. Bacher's report. He said that it would seem, on the basis of the

existing state of knowledge and without further experiments, that the soundest course for us would be to accept an atmospheric test cessation alone until we get further data on the underground problem. He said that he would be willing to suggest that this ought to be our position. Mr. Farley said that he understood Dr. Killian to be suggesting that we adopt such a position ourselves as the only realistic approach, but in our tactics at the negotiations and with regard to the public, we must be careful to prepare a logical and detailed case supporting such a course. Dr. Killian and Mr. McCone agreed.

Mr. Dillon called the attention of the group to the cost estimates previously circulated by the State Department and asked that the principals look carefully at the implications of such large costs.

In response to a suggestion by Mr. McCone that it might be advisable to recess the negotiations, Mr. Dillon said Secretary Herter wished to avoid any consideration of the test cessation issue in the Foreign Ministers Meeting and for this reason had decided that it would be wisest not to recess the negotiations while the Foreign Ministers are in Geneva. Mr. Irwin said he thought that it would be wisest if the Conference would recess in order to save the ammunition provided by the various issues, such as numbers of unidentified events, etc., for use in presenting any solution such as the threshold approach or the atmospheric-cessation-only-approach. Mr. Dillon said that in the light of the discussion at the meeting today, he and the Secretary would reconsider this point.

After Dr. Killian had reminded the group that when the latter concealment theory is proven to be feasible or infeasible, we would again be faced with a new set of circumstances on underground testing, Mr. McCone said that the AEC expected to finish the HE experiments designed to test out the theory by the beginning of September.

Mr. Keeny then gave a brief review of the proceedings at the technical discussions on high altitude detection held in Geneva the last two weeks. He said that essentially the Soviet Union has agreed to our entire position on a system for monitoring the high altitude environment, including our assessment on shielding. The only area in which he felt they would not agree was the use of ground-based back scatter radar, since they maintained this equipment had dangerous potential for intelligence gathering on their missile program.

