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# ORIGINAL

## UNITED STATES ATOMIC ENERGY COMMISSION

VOLUME XIV

In the Matter Of:

J. ROBERT OPPENHEIMER

HISTORIAN'S OFFICE  
INVENTORY CONTROL

Job 1193  
Box 13  
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Place - Washington, D. C.

Date - April 29, 1954

Pages.....2505 to 2706

<b>DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW</b>	
DETERMINATION (CIRCLE NUMBER'S)	
1. CLASSIFICATION RETAINED	
2. CLASSIFICATION CHANGED TO:	
3. CONTAINS NO DOE CLASSIFIED INFO	
4. COORDINATE WITH:	
5. CLASSIFICATION CANCELED	
6. CLASSIFIED INFO BRACKETED	
7. OTHER (SPECIFY) 203 pp.	
1st Review Date: 10/15/2012	Authority: <input checked="" type="checkbox"/> DC <input type="checkbox"/> DD
Name: Allen Hinners	2nd Review Date: 10/23/12
Authority: DD	Name: S. Fivozinsky

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I N D E X

<u>Witness</u>	<u>Direct</u>	<u>Cross</u>	<u>Redirect</u>	<u>Recross</u>
JOHN J. McCLOY	2507	2527	2540	
DAVID TRESSEL GRIGGS	2546	2587		
LUIS WALTER ALVAREZ	2642			

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PAPICBOW

UNITED STATES ATOMIC ENERGY COMMISSION

PERSONNEL SECURITY BOARD

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 In the Matter of :  
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 J. ROBERT OPPENHEIMER :  
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Room 2022,  
 Atomic Energy Commission,  
 Building T-3,  
 Washington, D. C.  
 Thursday, April 29, 1954.

The above entitled matter came on for hearing,  
 pursuant to recess, before the Board, at 9:30 a.m.

PERSONNEL SECURITY BOARD:

- MR. GORDON GRAY, Chairman.
- DR. WARD T. EVANS, Member.
- MR. THOMAS A. MORGAN, Member.

PRESENT:

- ROGER ROBB, and
- C. A. ROLANDER, JR., Counsel for the Board.
  
- J. ROBERT OPPENHEIMER.
- LLOYD K. GARRISON,
- SAMUEL J. SILVERMAN, and
- ALLAN B. ECKER, Counsel for J. Robert Oppenheimer.
- HERBERT S. MARKS, Co-counsel for J. Robert Oppenheimer.

P R O C E E D I N G S

MR. GRAY: Do you wish to testify under oath, Mr. McCloy. You are not required to do so. I think I should say to you that every witness appearing has so testified.

MR. McCLOY: Yes.

MR. GRAY: Would you stand and raise your right hand, and give me your full name.

MR. McCLOY:: John J. McCloy.

MR. GRAY: John J. McCloy, do you swear that the testimony you are to give the Board shall be the truth, the whole truth, and nothing but the truth, so help you God?

MR. McCLOY: I do.

Whereupon,

JOHN J. McCLOY

was called as a witness, and having been first duly sworn, was examined and testified as follows:

MR. GRAY: It is my duty to remind you of the existence of the perjury statutes. May I assume you are familiar with them and their penalties?

THE WITNESS: Never personal, but I am familiar with them.

MR. GRAY: I would like to make one other statement to you in behalf of the Board, that is, we treat these proceedings as a confidential matter between the Atomic Energy Commission and its officials on the one hand, and Dr.

Oppenheimer and his representatives and witnesses on the other. The Commission is making no releases with respect to these proceedings, and on behalf of the Board, I express the hope that witnesses will take the same view.

THE WITNESS: I will be glad to do so.

DIRECT EXAMINATION

BY MR. GARRISON:

Q Mr. McCloy, will you state for the record your present position?

A I am presently the Chairman of the Board of the Chase National Bank.

Q Would you also state for the record the positions that you held in the Defense Establishment during the war?

A In the summer of 1940 I came to the War Department as a consultant to the Secretary of War, and remained in that position until I became Assistant Secretary of War some months later. I remained as the Assistant Secretary of War throughout the entire period of the war, and I left the War Department in the fall of 1945.

Then I have been on various special committees in connection with the defense. I was on the President's committee -- I forgot the name of it --- it was the one upon which Mr. Acheson and General Groves served, dealing with the question of the control of atomic weapons.

I think that completes my defense experience.

Q Will you tell the Board your contacts with the atomic energy program during the war and your acquaintance with Dr. Oppenheimer?

A During the war I was very closely associated with Mr. Stimson. In the early days of the war, I had many conversations with him in regard to the menace of a possible German development of an atomic weapon. He had been in conversation with the President and had deeply interested himself in this particular matter. Although I was not on any particular committee nor was I in direct charge of any element of the atomic development, as a result of my position with Mr. Stimson as a general consultant with him, he frequently talked to me about the state of the program, character of the threat, and what we should do about it. Generally these conversations took place at the house here in Washington which was called Woodley at the close of the day after the normal routine of the Department was over.

This contact lasted throughout the war and on into the conference at Potsdam, until finally I left the Department, as I did shortly after his departure.

I think I ought to say that I was also in contact with General Groves from time to time. I visited not all the establishments, but some of the establishments which had been erected, and from time to time helped in connection with the priorities and the allocations to insure that the atomic

project was given the fullest of priorities and the greatest of cooperation and support so far as the War Department was concerned.

I think that sketches it.

Q Did you have any occasion to talk with Mr. Stimson or General Groves about Dr. Oppenheimer?

A Yes; not at the beginning of the war. I did not hear of Dr. Oppenheimer until well toward the end of the war. I can't exactly fix the dates in my mind, but I do recall that some substantial period before we left for the Potsdam Conference we learned of the real progress that had been made at Los Alamos, and the name of Dr. Oppenheimer was mentioned in that connection. Somewhere I should say around 1944, or perhaps as early as 1943, I heard the name, but in 1944, and the beginning of 1945, it was a rather prominently mentioned name. Frequently Mr. Stimson referred to the work that Dr. Oppenheimer was doing, and the great possibility that Los Alamos things were developing which would shortly and within the measurable future produce rather spectacular results.

I may volunteer the information that it was only in respect of it that Dr. Oppenheimer was making. There was no question of security in that regard, although I do remember General Groves speaking to me from time to time as he sometimes did about his problems, saying that he did have some security preoccupations. I am trying to remember back

as best I can. They were, as far as I can remember, confined to a concern that information that the English were getting from our atomic developments might be leaked to the French, where General Groves had real suspicions, particularly because of the association of Dr. Curie with the atomic development in France. He referred somewhat to his security precautions and indicated to me that he had dismissed one or two or a few people from Los Alamos, but never was the question raised in any regard to Dr. Oppenheimer, nor did Mr. Stimson, as I say, have anything but great admiration and praise for the achievements that Dr. Oppenheimer was accomplishing.

Q Did you come into contact with Dr. Oppenheimer at the time of the Acheson-Lilienthal report?

A Yes. I would say there were three phases of my experience with Dr. Oppenheimer. The first I have already described, which I would say was the Stimson-War Department contact, and that was a very slight personal contact, but I knew him, and I knew his name, and knew what was going on in general.

The second was the Lilienthal-Acheson committee report, and the third, a part from some intermittent contacts of no consequence, was my association with Dr. Oppenheimer on the so-called Soviet study group, which is a group set up by the Council of Foreign Relations in New York City, which was

erected in consultation with the State Department to see what we could do by gathering together a group of knowledgeable people -- a rather small group, but well experienced and somewhat distinguished group -- that would quietly study this whole problem of our relations with the Soviet, to see if we could do anything that would be of benefit to the government or to general public opinion in that field.

Dr. Oppenheimer was a member of that group. He was selected primarily because of his outstanding reputation in the atomic field, and since the atomic element was important in the consideration of our relations with the Soviet. We felt that we should have someone on the Board who was well equipped to advise us in that connection.

Incidentally, in respect to that second phase, I think I probably should say that apart from Dr. Oppenheimer's membership on the panel, I think we called it -- a panel which was composed, as well as I remember -- you would have the records of it.

Q I think that is in the record.

A Winne, Thomas, Barnard, and so forth. Apart from his expositions to the committee at that time of the technical aspects of the problem, I endeavored to learn a little something about the art so that I would be more familiar and more capable of understanding some of the technical expositions and better equipped to discuss the whole problem. He undertook

to tutor me in the art, I don't think with any great success. But that was not his fault.

During the course of that experiment on his part, I got to know him fairly well, and that was just a side comment on the extent of my relationship with him.

Q Do you know anything at first hand about his attitude toward Russia and the whole problem at that point of time?

A Growing out of the concern we all had after the successful dropping of the bomb on Hiroshima and Nagasaki, and the great preoccupation that particularly Mr. Stimson, as well as many others, had as to what we were going to do from here out, there were many discussions in Washington and from time to time I was consulted by members of the government as to what I thought about it.

After Mr. Stimson retired, we talked about it a good bit in his home at Long Island. As you know, this committee was set up and a report was made.

In connection with the committee's action, as I say, Dr. Oppenheimer was a member of the panel and we looked to him for the technical expositions. Our technical questions were mainly directed to him. There was then a very intriguing problem of the possibility of denaturing this material so that it would not have an explosive or at least a lethal weapon effect. It was thought that by a certain process you

could denature it or delouse it in such a way so that it would not have the harmful effects that the weapon itself might have. That was gone into at some length and Dr. Oppenheimer explained the limitations and possibilities of that.

I remember at that time, or at least I gathered the impression at that time, that he was quite alert to the interests of the United States in connection with this. The proposals that were made for international control were to be hemmed about by certain provisions which we thought would secure the interests of the United States, as best we could consistent with the overall philosophy of having an international control in effect. I generally am of the impression that Dr. Oppenheimer at that time was as sensitive as I should say any one was in regard to the security interests of the United States.

There were, as I recall it, one or two points of difference in the committee on which I don't believe Dr. Oppenheimer, if he had any knowledge at all, certainly expressed no view. There was a question as to whether we would publish the report. Some members of the committee were in favor of publishing it, and others were opposed to it. I think a vote was taken and we decided not to oppose it, and then somehow or other it did see the light of day, but I never knew how it got out.

Q Not not to oppose, but not to publish.

A I meant to say not to publish. There were some

questions that developed in the committee as to whether we ought to be a little more rigid than we were with regard to security provisions. In that I remember General Groves differed somewhat with some of the other members of the Commission. But as I recall it, General Groves' position, which was supported by me and others, prevailed. I can't recall any participation by Dr. Oppenheimer in that discussion. I do recall very definitely in responding to questions, it seemed to me that he was very objective in just what we could expect in the way of safety precautions and what we could not.

So I did gain the impression that he was alert to the necessity of protecting in so far as it was possible to protect the interests of the United States, as I say, consistent with the concept of international control.

There is one other contact with Dr. Oppenheimer that I am a little vague about, and I am not absolutely certain that he was present at a meeting that took place well before Potsdam in the War Department in Secretary Stimson's office, where we discussed with the committee that Mr. Stimson had set up, and with some scientists. I have the impression -- I know Van Bush was there -- that Dr. Oppenheimer was there, and that was as to whether or not we should drop the bomb and generally where this whole thing was leading, where we were going with it.

I recall either as a result of my presence at that

meeting, or Dr. Oppenheimer's present at that meeting, or from what Mr. Stimson told me, that all of the scientists, I believe, but certainly Dr. Oppenheimer, were in favor, all things considered, of dropping the bomb.

MR. ROBB: May I interpose and ask which bomb we are talking about?

THE WITNESS: I am talking about whether we should drop it on the Japanese.

MR. ROBB: Yes. We have had so many bombs.

THE WITNESS: Yes. I am talking about the first one. At that time we had not even picked the target. There was a good bit of discussion about the target before we left abroad and some further discussion at Potsdam about it.

BY MR. GARRISON:

Q Coming down to the Soviet study group which you mentioned in the Council of Foreign Relations, you were the presiding officer of that group?

A Yes, I was the presiding officer.

Q And Dr. Oppenheimer was a member of the group?

A Yes.

Q And who were some of the other members?

A I don't know that I have a list of the members. I think I can remember them mainly from memory.

Ferdinand Eberstadt was a member. Averill Harriman was a member. Dr. Wriston, president of Brown, is a member.

Devereux Josephs, president of the New York Life Insurance Company, was a member. Professor Fainsod of Harvard, who was the head of the Russian studies at Harvard, is a member.

We have observers from the government there who were not strictly members, but who have asked to sit in and who do sit in. General Lemnitzer is one of them. Mr. Bowie, advisor to the Secretary of State, and professor at Harvard Law School, acts as observer, and Mr. Allen Dulles or his deputy from CIA.

There are other members of the group, but I suppose I better get you a complete list.

Q Would you just say a word about Dr. Oppenheimer's participation in the group, and particularly the character of the views which he has expressed in his discussions with respect to our relations with Russia?

A We have adopted a rule in that group not to give any publicity to the views expressed around the table there, and certainly not to attribute anything in respect of a particular individual. But I suppose if I have Dr. Oppenheimer's consent, I can go ahead.

Q Yes.

A I feel a certain responsibility as chairman of that group, and being so insistent upon the fact that there should not be attributions and no leaks from that group, I don't like to be the first one to violate it. We selected in the first place, as I have already indicated, Dr. Oppenheimer,

because of his knowledge in this field, because of the pronounced importance of this whole subject in regard to our relations with the Soviet. He at one meeting expounded to us at considerable length.

Q Would you say about what year this was?

A I suppose that was last fall, I think.

Q That is near enough.

A Last fall, yes. He has been a member of the group from the beginning, but he was abroad.

Q When did the group begin?

A It began at the beginning of 1953. It has been going for a year, and it will probably go for another year. He was selected at the outset and attended one or two meetings and then he went to lecture abroad so we didn't have him present at a substantial number of meetings. Then he did give us a picture of where he thought we stood generally in relation to the Soviet in respect to atomic development.

Q Without going onto the details of what he said, what impression did his talk leave on you about his general attitude toward the situation?

A The impression that I gathered from him was one of real concern that although we had a quantitative superiority, that that didn't mean a great deal. That time was of the essence in this thing. That we didn't have very much time to cope with this tremendous problem. We were coming to the

point where we might be, he used the graphic expression like two scorpions in a bottle, that each could destroy the other, even though one may have been somewhat larger than the other, and he was very much concerned about the security position of the United States. He pressed vigorously for the continued activity in this field, and not letting down our guard, so to speak. Taking advantage of any opportunity that really presented itself that looked as if it was substantial, but if there was to be any negotiation, be certain that we were armed and well prepared before we went to such a conference. Indeed, I have the impression that he, with one or two others, was somewhat more, shall I say, militant than some of the other members of the group. I think I remember very well that he said, for example, that we would have to contemplate and keep our minds open for all sorts of eventualities in this thing even to the point of preventive war.

In the course of this, I think I should say that he was questioned by the members of the group from time to time. In a number of cases, he refused to reply, saying that he could not reply because in doing so that would involve some security information. His talk was generally in generalities, to some extent following the line that he took in an article which I saw later on published in Foreign Affairs.

I got the very strong impression of Dr. Oppenheimer's sensitivity to what he considered to be the interests of

the United States and to the security of the United States.

Q Based on your acquaintance with Dr. Oppenheimer, and your experiences with him, would you give the Board your opinion as to his loyalty and as to his security risk or want of risk?

A In the first place, just to get it out of the way, let me say that there is nothing that occurred during the entire period of my contact with Dr. Oppenheimer which gave me any reason to feel that he was in any sense disloyal to the United States. But I would want to put it more positively than that, and also add that throughout my contacts with him, I got the impression, as one who has had a good bit of contact and experience with defense matters, that he was very sensitive to all aspects of the security of the United States.

I gathered the impression that he was deeply concerned about the consequences of this awful force that we had released, anxious to do what he could towards seeing that it was not used or did not become a destroyer of civilization. He was somewhat puzzled as to what form that would take and still be consistent with the interests of the United States. That perhaps more than a number of others who were, so to speak, laymen in this field, who were members of that study group, was aware of the techniques of the defense of the United States. He was a little more aware than those who had not been really associated with the Defense Department of the

military position of the United States somewhat apart from the atomic situation. So much for loyalty.

I can't be too emphatic as to my impression of Dr. Oppenheimer in this regard. I have the impression of his being<sup>a</sup> loyal, patriotic citizen, aware of his responsibilities and that I want to accent.

As to his security risk -- to use the current phrase -- I again can state that negatively certainly. I know of nothing myself which would make me feel that he was a security risk. I don't know just exactly what you mean by a security risk. I know that I am a security risk and I think every individual is a security risk. You can always talk in your sleep. You can always drop a paper that you should not drop, or you can speak to your wife about something, and to that extent no human being is an absolutely secure person. I don't suppose we are talking about that.

I never heard of any of Dr. Oppenheimer's early background until very recently, and so that has never been an element in my thinking. I have only thought of him as being a figure whom I feel I know, and I feel I am somewhat knowledgeable in this field, and one I feel I know is as much responsible as anybody else if perhaps not more than anybody else in this particular field of the weapon for our preeminence in that field. Too many reports came in to us as to the work that he was doing, the difficulties under which

he was laboring, and they were difficulties because there had to be very great security precautions and a lot of barbed wire and whatnot which introduced serious human problems in connection with the plants where he was operating, and the reports all were that in spite of all this, and in spite of the little squabbles that took place among this confined group of scientists, there was a certain inspiration to their work and enthusiasm and a vigor and energy that many ascribed to Dr. Oppenheimer, and which I am quite clear played a major part in bringing about the achievement of the weapon at the critical point, and time that it was achieved.

There is another aspect to this question of security, if I may just go on, that troubles me and I have been thinking about it a good bit since I have read the charges and the reply of Dr. Oppenheimer, and have talked to a number of people who are somewhat familiar with this whole subject. It seems to me that there are two security aspects. One is the negative aspect. How do you gauge an individual in terms of his likelihood of being careless with respect to the use of documents or expressions, if he is not animated by something more sinister. There is also for want of a better expression the positive security. I remember very vividly the early days when the warnings that Neils Bohr -- I was not in Washington when Neils Bohr first came over, but I saw him from time to time after that -- when he announced to us and to the

President that the uranium atom had been split, and we might look forward with some concern to the possibility that the Germans would have an atomic weapon, and our eagerness at that time to take on practically speaking anyone who had this quality of mind that could reach in back of and beyond, from the layman's point of view, at least, and deal with this concept and reduce it to reality.

As I try to look back to that period, I think we would have taken pretty much anybody who had certainly the combination of those qualities, the theoretical ability, plus the practical sense, to advance our defense position in that field. In those days we were on guard against the Nazis and the Germans. I think we would have grabbed one of them if we thought he had that quality, and surrounded him with as much security precautions as we could. Indeed, I think we would have probably taken a convicted murderer if he had that capacity. There again is this question of the relative character of security. It depends somewhat on the day and age that you are in.

I want to emphasize particularly this affirmative side of it. The names we bandied about at that time included a number of refugees and a number of people that came from Europe. I have the impression -- I may be wrong about it -- but I have the impression that a very large element of this theoretical thinking did emanate from the minds of those who

immigrated from this country, and had not been generated here as far as it had been in Europe. There were names like Fermi and Wigner and Teller, Rabi, another queer name, Szilard, or something like that -- but I have the impression they came over here, and probably imbued with a certain anti-Nazi fervor which tended to stimulate thinking, and it is that type of mind that we certainly needed then.

We could find, so to speak, practical atomic physicists, and today there are great quantities of them being trained, and whether we are getting this finely balanced imagination which can stretch beyond the practicalities of this thing is to my mind the important aspect of this problem. The art is still in its infancy and we still are in need of great imagination in this field.

In a very real sense, therefore, I think there is a security risk in reverse. If anything is done which would in any way repress or dampen that fervor, that verve, that enthusiasm, or the feeling generally that the place where you can get the greatest opportunity for the expansion of your mind and your experiments in this field is the United States, to that extent the security of the United States is impaired.

In other words, you can't be too conventional about it or you run into a security problem the other way. We are only secure if we have the best brains and the best reach

of mind in this field. If the impression is prevalent that scientists as a whole have to work under such great restrictions and perhaps great suspicion, in the United States, we may lose the next step in this field, which I think would be very dangerous for us.

From my own experience in Germany, although they were very backward in this field, and in that respect there is a very interesting instance which I have seen referred to in print --

MR. GRAY: Mr. McCloy, may I interrupt you for a minute? As a lawyer, you must observe we allow very considerable latitude in these hearings, and we have tried in no way to circumscribe anything that any witness wishes to say, and in fact, almost anything the lawyers wanted to say has gone into the record. You were asked a question, I believe, by Mr. Garrison, about Dr. Oppenheimer's -- it has been a long time and I have forgotten.

MR. GARRISON: Loyalty, and him as a security risk.

MR. GRAY: Yes. Whereas I think your views are entitled to great weight on these matters generally, I would respectfully and in the most friendly spirit, suggest that we not wander too far afield from this question.

THE WITNESS: I didn't mean to wander too far.

MR. GRAY: Yes, sir.

THE WITNESS: I did want to make one point. I have

been asked this recently in New York frequently: Do you think that Dr. Oppenheimer is a security risk, and how would I answer that. This is long before I had any idea I was going to be called here. What do you mean by security, positive, negative, there is a security risk both ways in this thing. It is the affirmative security that I believe we must protect here. I would say that even if Dr. Oppenheimer had some connections that were somewhat suspicious or make one fairly uneasy, you have to balance his affirmative aspect against that, before you can finally conclude in your own mind that he is a reasonable security risk, because there is a balance of interest there; that he not only is himself, but that he represents in terms of scientific inquiry -- I am very sorry if I rambled on about that and I didn't mean to.

MR. GRAY: I don't want to cut you off at all, but you were getting back about something of the Nazis during the war.

THE WITNESS: Yes. Let me tell you why I did that, if I may.

MR. ROBB: Mr. Chairman, may I interpose one thought. I think the rules do provide that no witness will be allowed to argue from the witness stand. I think the witness should bear that in mind, if I might suggest it.

THE WITNESS: Yes. I don't mean to argue. I am trying honestly to answer the question whether this man is a

security risk in my judgment from what I know of him.

MR. ROBB: I understand.

THE WITNESS: Take the case -- and perhaps I should not argue and maybe this ought to be off the record.

MR. ROBB: The rule is quite specific, Mr. Chairman, that is the only reason I bring it up.

MR. GRAY: Mr. Robb is correct that the regulations by which this proceeding is governed state that no witness shall be allowed to argue.

THE WITNESS: I am trying to think out loud rather than argue.

MR. GRAY: May I ask that you proceed.

THE WITNESS: I will come to the point on it. I think I could give a rather vivid example of what I am trying to say, but I won't refer to that. I will say that as far as I have had any acquaintance with Dr. Oppenheimer, I have no doubt as to his loyalty, and I have absolutely no doubt about his value to the United States and I would say he is not a security risk to the United States.

MR. GARRISON: Thank you.

MR. GRAY: Do you have any questions, Mr. Robb?

CROSS EXAMINATION

BY MR. ROBB:

Q How long have you been president of the Chase National Bank?

A A little over a year.

Q Had you previously had experience in the banking business?

A I was president of the so-called International Bank for Reconstruction and Development, which is known as the World Bank.

Q Chase is the largest bank in the world?

A No, it is the third. The Bank of America and National City are larger.

Q Have you a great many branches?

A Yes, 28.

Q As far as you know, Mr. McCloy, do you have any employee of your bank who has been for any considerable period of time on terms of rather intimate and friendly association with thieves and safe crackers?

A No, I don't know of anyone.

Q I would like to ask you a few hypothetical questions, if I might, sir.

Suppose you had a branch bank manager, and a friend of his came to him one day and said, "I have some friends and

contacts who are thinking about coming to your bank to rob it. I would like to talk to you about maybe leaving the vault open some night so they could do it", and your branch manager rejected the suggestion. Would you expect that branch manager to report the incident?

A Yes.

Q If he didn't report it, would you be disturbed about it?

A Yes.

Q Let us go a little bit further. Supposing the branch bank manager waited six or eight months to report it, would you be rather concerned about why he had not done it before?

A Yes.

Q Suppose when he did report it, he said this friend of mine, a good friend of mine, I am sure he was innocent, and therefore I won't tell you who he is. Would you be concerned about that? Would you urge him to tell you?

A I would certainly urge him to tell me for the security of the bank.

Q Now, supposing your branch bank manager, in telling you the story of his conversations with his friend, said, "My friend told me that these people that he knows that want to rob the bank told me that they had a pretty good plan. They had some tear gas and guns and they had a car arranged for the getaway, and had everything all fixed up",

would you conclude from that it was a pretty well defined plot?

A Yes.

Q Now, supposing some years later this branch manager told you, "Mr. McCloy, I told you that my friend and his friends had a scheme all set up as I have told you, with tear gas and guns and getaway car, but that was a lot of bunk. It just wasn't true. I told you a false story about my friend." Would you be a bit puzzled as to why he would tell you such a false story about his friend?

A Yes, I think I would be.

MR. ROBB: That is all.

MR. GRAY: Mr. McCloy, for the record, you were speaking about Mr. Stimson's report as to the position of the scientists with respect to the dropping of the first bomb?

THE WITNESS: Yes.

MR. GRAY: As I recall it there was some sort of interruption and I don't believe the record reflects what you were about to say the position of the scientists was on that matter.

THE WITNESS: That they were in favor of dropping the bomb, and that Dr. Oppenheimer was one of those who had been in favor.

MR. GRAY: Perhaps the interruption was in my own mind.

MR. ROBB: I think I asked him which bomb, and

then he said it was the Japanese bomb, and Dr. Oppenheimer favored the dropping of it.

MR. GRAY: Yes. Pardon my lapse.

Second, I think the record ought to reflect all the names of the members of this group you were discussing.

THE WITNESS: I think I may have it in my brief case if I may look it up. My brief case is in the other room. This is the Council of Foreign Relations that you are referring to?

MR. GRAY: Yes.

THE WITNESS: I certainly can supply you with that.

MR. GRAY: We will get that from you.

(The list is as follows:)

Membership of the Study Group on Soviet-American Relations:

John J. McCloy, Chairman - Chase National Bank.

Frank Altschul - General American Investors Corporation.

Hamilton Fish Armstrong - Foreign Affairs, Council on Foreign Relations.

McGeorge Bundy - Harvard University - Resigned from group in 1953.

Arthur Dean - Sullivan and Cromwell - Joined group Spring, 1954.

William Diebold - Council on Foreign Relations.

F. Eberstadt - F. Eberstadt and Co., Inc.

Merle Fainsod - Harvard University

William T. R. Fox - Columbia University

George S. Franklin, Jr. - Council on Foreign

**Relations.**

W. A. Harriman - Former Ambassador to the Soviet Union.

Howard G. Johnson - Ford Foundation

Devereux C. Josephs - New York Life Insurance Company.

Milton Katz - Ford Foundation.

Mervin J. Kelly - Bell Laboratories

William L. Langer - Harvard University

Walter H. Mallory - Council on Foreign Relations

Philip E. Mosely - Russian Institute, Columbia

**University.**

J. Robert Oppenheimer - Institute for Advanced Study.

Geroid T. Robinson - Columbia University

Dean Rusk - Rockefeller Foundation

Charles M. Spofford - Davis, Polk, Wardwell,

**Sunderland & Kiendl.**

Shepard Stone - Ford Foundation

Jacob Viner - Princeton University - Inactive because

**of ill health**

Henry M. Wriston - Brown University

**Government Observers:**

Robert Amory, Jr. - Central Intelligence Agency

Robert R. Bowie, Department of State

Lyman L. Lemnitzer, General - Department of the Army.

Research Staff for the Study Group on Soviet-American

Relations:

Henry L. Roberts, Research Secretary - Council on  
Foreign Relations.

Gerhart Niemeyer - Formerly with the Department of  
State.

Marina S. Finkelstein - Formerly with the Research  
Program on the USSR.

Perry Laukhuff - Formerly with the Department of  
State (with group for five months).

A. David Redding - Formerly with the Rand Corporation.

Donald Urquidi - Former student at the Russian  
Institute, Columbia.

Paul E. Zinner - Formerly at Harvard University.

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MR. GRAY: Have you read the letter of December 23  
from General Nichols to Dr. Oppenheimer, and Dr. Oppenheimer's  
reply perhaps as they appeared in the press?

THE WITNESS: Yes, I didn't read them critically,  
but I know pretty much what is in them, because I read them  
rather hastily.

MR. GRAY: Is this the first knowledge you had  
of the reported associations of Dr. Oppenheimer?

THE WITNESS: No. I think I heard somewhere about a year ago, and I can't place where I heard it, that there was some question about Dr. Oppenheimer's early associations, that his brother or wife had been a Communist. It was within a year that I heard it.

MR. GRAY: Mr. McCloy, following Mr. Robb's hypothetical question for the moment, let us go further than his assumption. Let us say that ultimately you did get from your branch manager the name of the individual who had approached him with respect to leaving the vault open, and suppose further that your branch manager was sent by you on an inspection trip of some of your foreign branches, and suppose further that you learned that while he was in London he looked up the man who had made the approach to him some years before, would this be a source of concern to you?

THE WITNESS: Yes, I think it would. It is certainly something worthy of investigation, yes.

MR. GRAY: Now, Mr. McCloy, you said in referring to Dr. Oppenheimer that he more than perhaps anybody else is responsible for our preeminence in the field of the weapon. You are referring now to the atomic bomb?

THE WITNESS: Yes, the atomic bomb.

MR. GRAY: Could you make the same statement with respect to the H bomb?

THE WITNESS: I don't know enough about the

development of the H bomb. That occurred after I left the Defense Establishment.

MR. GRAY: So you are confining your testimony to the development of the atomic bomb.

THE WITNESS: Yes, to the development of the atomic bomb.

MR. GRAY: On the basis of what you know, which specifically includes of course your associations with Dr. Oppenheimer, and on the basis of what you read in the newspapers, would you feel that any further investigation in this matter was necessary at all? Would you be prepared to say that the Atomic Energy Commission should just forget all about it?

THE WITNESS: I don't know what I read in the newspapers really. This thing that Mr. Robb questioned me about, I have imagined that relates to some incident in connection with Dr. Oppenheimer's past or has some bearing on it. I am not familiar with that. If that was in the answer and the reply I didn't read it critically. It was about some approach but it didn't stay in my mind. I just read it going downtown in the morning.

No, I would say that anyone in the position of Dr. Oppenheimer with his great knowledge on this subject, the very sensitive information that he has, most of which I guess is in his own brain, if association which was suspicious

turned up in connection with him, I think it would be incumbent upon this group or some other group to investigate it. I don't suggest in any way that it should not be investigated or that it can be cast off casually. All I say is that I think you have got to look at the whole picture and the contributing factors of this man, and what he represents, before you determine the ultimate question of security.

MR. GRAY: So that you would say as of today that it is appropriate and proper to have this kind of an inquiry?

THE WITNESS: As far as I know, certainly if you have something there that trips your mind, you ought to make an inquiry about it.

MR. GRAY: I meant this proceeding that we are involved in.

THE WITNESS: Yes.

MR. GRAY: Would you take a calculated risk with respect to the security of your bank?

THE WITNESS: I take a calculated risk every day in my bank.

MR. GRAY: Would you leave someone in charge of the vaults about whom you have any doubt in your mind?

THE WITNESS: No, I probably wouldn't.

MR. GRAY: My question I can put in a more straightforward way, and it is one of the basic issues before the

country, and certainly one involved in this country. And that is, when the paramount concern is the security of the country, which I believe is substantially the language of the Atomic Energy Act, can you allow yourself to entertain reasonable doubts?

Before you answer, let me say if this leads you to think that I or the members of the Board have any conclusions about this matter at this point, I wish you would disabuse yourself of that notion.

THE WITNESS: Surely.

MR. GRAY: What I am trying to get at is this relates yourself in your discussion about the other things you have to take into consideration.

THE WITNESS: Surely. That brings me back again on this problem which I was checked a little because I was going a little far afield, and I don't think I can get the pat analogy to the bank vault man. But let me say, suppose that the man in charge of my vaults knew more about protection and knew more about the intricacies of time locks than anybody else in the world, I might think twice before I let him go, because I would balance the risks in this connection.

Take the case of the bank teller business, because I saw Mr. Wilson's remark, and I pricked up my ears when he said that, because I am a banker, and he was comparing my profession to this thought of reforming a bank teller. This

was the incident I was about to speak of, if I may now introduce it with your consent.

MR. GRAY: Yes.

MR. ROBB: Mr. Chairman, may I make myself plain? I have no objection to Mr. McCloy giving a full explanation of any of his answers.

THE WITNESS: One of my tasks in Germany was to pick up Nazi scientists and send them over to the United States. These Nazi scientists a few years before were doing their utmost to overthrow the United States Government by violence. They had a very suspicious background. They are being used now, I assume -- whether they are still, I don't know, because I am not in contact with it -- on very sensitive projects in spite of their background. The Defense Department has been certainly to some extent dependent upon German scientists in connection with guided missiles. I suppose other things being equal, you would like to have a perfectly pure, uncontaminated chap, with no background, to deal with these things, but it just is not possible in this world. I think you do have to take risks in regard to the security of the country. As I said at the beginning, even if they put you -- I won't be personal about it -- but let us say put Mr. Stimson or anybody in charge of the innermost secrets of our defense system, there is a risk there. You can't avoid the necessity of balancing to some degree.

So I reemphasize from looking at it, I would think I would come to the conclusion if I were Secretary of War, let us balance all the considerations here, and take the calculated risk. It is too bad you have to calculate sometimes. But in the last analysis you have to calculate what is best for the United States, because there is no Maginot Line in terms -- it is just as weak as the Maginot Line in terms of security.

MR. GRAY: Do you understand that it is beyond the duty of this Board to make the ultimate decision as to who shall be employed by the government on the basis of his indispensability or otherwise?

THE WITNESS: Surely.

MR. GRAY: We are more narrowly concerned with the field of security as we understand the term.

THE WITNESS: I understand that.

MR. GRAY: I think I have no more questions. Dr. Evans.

MR. EVANS: Mr. McCloy, you say you talked to Bohr?

THE WITNESS: Yes, Neils Bohr.

DR. EVANS: Where did you talk to Neils?

THE WITNESS: I talked to him abroad and here. He visited Washington, you know.

DR. EVANS: I know. Did he tell you who split the uranium atom over there?

THE WITNESS: Wasn't it Hahn and Straussman?

DR. EVANS: Yes. I am just giving you a little quiz

to find out how much you associated.

THE WITNESS: You terrify me.

DR. EVANS: Did you read Smyth's book?

THE WITNESS: Yes, I did. I was also tutored by Rabi, I may say that when Dr. Oppenheimer gave me up as a poor prospect.

DR. EVANS: And you think we should take some chances for fear we might disqualify someone who might do us a lot of good?

THE WITNESS: Yes, I do.

DR. EVANS: You do?

THE WITNESS: Yes.

DR. EVANS: There is nothing in the regulations applying to this Board that mentions that point.

THE WITNESS: Yes.

DR. EVANS: You understand this is not a job we tried to seek.

THE WITNESS: Goodness knows, I know that.

DR. EVANS: You think that there are very few scientists that could do Dr. Oppenheimer's work?

THE WITNESS: That is my impression.

DR. EVANS: That is, you think he knows perhaps more about this as you mentioned in your vault business than anybody else in the world?

THE WITNESS: I wouldn't say that, no. But I would

certainly put him in the forefront.

DR. EVANS: And you would take a little chance on a man that has great value?

THE WITNESS: Yes, I would, particularly in the light of his other record, at least in so far as I know it. I can't divorce myself from my own impression of Dr. Oppenheimer and what appeals to me as his frankness, integrity and his scientific background. I would accept a considerable amount of political immaturity, let me put it that way, in return for this rather esoteric, this rather indefinite theoretical thinking that I believe we are going to be dependent on for the next generation.

DR. EVANS: That is, you would look over the political immaturity and possible subversive connections and give the great stress to his scientific information?

THE WITNESS: Provided I saw indications which were satisfactory to me, that he had reformed or matured.

DR. EVANS: I have no more questions.

MR. GRAY: Mr. Garrison?

MR. GARRISON: I would like to put one question, if I may.

MR. GRAY: Yes.

#### REDIRECT EXAMINATION

BY MR. GARRISON:

Having in mind the question that Dr. Evans last put

to you, I would just like to read you a paragraph from the Atomic Energy Commission's criteria for determining eligibility, which is a guide to the Board here, as I understand it, and ask you if this is something of what you yourself had in mind when you talked about positive and negative security:

"Cases must be carefully weighed in the light of all the information and a determination must be reached which gives due recognition to the favorable as well as unfavorable information concerning the individual, and which balances the cost to the program of not having his services against any possible risks involved."

I also should read you the section from the Atomic Energy Act which provides that, "No individual shall have access to restricted data until the FBI shall have made an investigation and report to the Commission on the character, associations and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security."

Having read the portion of the Commission's criteria which I read to you and the section of the statute which I read to you, would you or would you not say that your observations about positive, as well as negative, security have a place within this framework?

A Yes, I would say so.

MR. ROBB: Mr. Chairman, may I just point out for the record -- I don't wish to get into any debate about the matter -- the section that Mr. Garrison read from the criteria, I believe, applies to the decision which is to be made by the General Manager as an administrative matter in determining whether the subject is to be kept on.

DR. EVANS: It is not the action of this Board.

MR. ROBB: It does not refer to this Board.

DR. EVANS: This Board doesn't have to do that.

MR. GRAY: I think it is sufficient in the presence of this witness to simply raise that question. I think otherwise there would appear as a part of Mr. McCloy's testimony very considerable argument about the meaning and provisions of this.

THE WITNESS: May I say I was not familiar with that provision.

MR. GRAY: That is one reason I don't want to debate it while you are in the witness chair, Mr. McCloy. I think I ought to say to you that there are a good many other provisions in this criteria document which was referred to by Mr. Garrison, establishing categories of derogatory information, et cetera, and I would just call your attention to the fact that these other things appear and the discussion you have is by no means conclusive as to the duties of this Board.

MR. ROBB: That is all I wanted to point out.

DR. EVANS: Mr. McCloy, our business is simply to advise. We don't make the decision.

THE WITNESS: I see. You make an advisory report to the General Manager.

MR. GRAY: We make a recommendation.

DR. EVANS: And sometimes the recommendations of a Board like this are not carried out at all.

BY MR. GARRISON:

Q I would like to put one final question to you. Is it your opinion that in the light of the character, associations and loyalty of Dr. Oppenheimer as you have known him, that his continued access to restricted data would not endanger the common defense and security?

A That is my opinion.

MR. GARRISON: That is all.

MR. ROBB: That is all. Thank you, Mr. McCloy.

(Witness excused.)

MR. GARRISON: May I read one sentence from the criteria into the record, not by way of argument, but simply because I would like to respond to it.

MR. GRAY: I have no objection to your reading one sentence from the criteria, but I don't want to get into a discussion of the meaning of these regulations. You may read your sentence and if Mr. Robb wants to read a sentence, I will give him one crack.

MR. GARRISON: This is section 4.16 of the United States Atomic Energy Commission Rules and Regulations. This is entitled, "Recommendations of the Board:

"(a) The Board shall carefully consider all material before it, including reports of the Federal Bureau of Investigation, the testimony of all witnesses, the evidence presented by the individual and the standards set forth in AEC personnel security clearance criteria for determining eligibility."

MR. GRAY: We will recess for a short period.

(Short recess.)

MR. GRAY: Mr. Griggs, do you wish to testify under oath? You are not required to do so, but all witnesses have.

MR. GRIGGS: Yes.

MR. GRAY: What is your full name?

MR. GRIGGS: David Tressel Griggs.

MR. GRAY: Would you raise your right hand, please. David Tressel Griggs, do you swear that the testimony you are to give the Board shall be the truth, the whole truth and nothing but the truth, so help you God?

MR. GRIGGS: I do.

Whereupon

DAVID TRESSEL GRIGGS

was called as a witness, and having been first duly sworn, was examined and testified as follows:

MR. GRAY: It is my duty to remind you of the existence of the so-called perjury statutes. I should be glad to review those with you if you feel the need of it, or may we assume you are generally familiar with them.

THE WITNESS: I am not familiar with it.

MR. GRAY: Forgive me if I briefly tell you that section 1001 of Title 18 of the United States Code makes it a crime punishable by a fine of not more than \$10,000 or imprisonment for not more than five years or both for any person to make any false, fictitious or fraudulent statement or representation in any matter within the jurisdiction of any agency of the United States.

Section 1621 of Title 18 of the United States Code makes it a crime punishable by a fine of up to \$2,000 and/or imprisonment of up to five years for any person to state under oath any material matter which he does not believe to be true.

Those are in general the provisions of the statutes to which I had reference.

THE WITNESS: Thank you.

MR. GRAY: I should like to request, Mr. Griggs, that if in the course of your testimony it becomes necessary for you to refer to or to disclose restricted data, you let me know in advance so that we may take the necessary steps in the interest of security.

THE WITNESS: May I ask, sir, does this apply to only

restricted data or any classified matters?

MR. GRAY: I think clearly it applies to restricted data. If you find yourself getting into matters with respect to which there is a serious classification, as contrasted with what I used to know as the restricted label not in the atomic energy sense. I don't think you need to bother about that. But if you get into secret matters, I think you better let me know you are entering into that field.

THE WITNESS: I understood that I had a measure of protection in this in that there was a person here who would --

MR. GRAY: If any question arises and no one here can give you the answer to it, a classification officer can be made available.

MR. ROLANDER: That is right.

MR. GRAY: Finally, I should say, Mr. Griggs, that we consider this proceeding a confidential matter between the Atomic Energy Commission, its officials and witnesses on the one hand, and Dr. Oppenheimer and his representatives on the other. The Commission is making no releases with respect to this proceeding and on behalf of the Board, I express the hope to all the witnesses that they will take the same view.

THE WITNESS: Yes, sir.

DIRECT EXAMINATION

BY MR. ROBB:

Q Mr. Griggs, where do you live at present, sir?

A My home address is 190 Granville Avenue, Los Angeles, California.

Q You are appearing here today in response to a subpoena?

A Yes, I am.

Q You are not here, Mr. Griggs, because you want to be here?

A No. I do feel it is my duty to testify as requested, however. The reason that I am glad that there is a subpoena in the case is because some of the testimony that I may have to give may involve matters of Air Force concern.

Q You said you felt it was your duty to testify as requested. Just to make it clear, you don't mean that you had been requested to testify in any particular way, do you?

A No.

Q Mr. Griggs, what is your present occupation or employment?

A I am professor of geophysics at the University of California at Los Angeles.

Q How long have you been in that position?

A Since May of 1948.

Q Would you tell us something of your academic training and background?

A I graduated from Ohio State University in 1932, and

stayed there for a year taking a master's degree. I went to Harvard where for seven years I was a member of the Society of Fellows. In approximately June of 1940, I left to be a member of the Radiation Laboratory at MIT. You have asked only about my academic training. That includes my academic training.

Q Just for the benefit of those of us who are not experts, would you tell us what you mean by geophysics? What kind of physics is that? We have heard about nuclear physics and physical chemistry. What is a geophysicist? I don't mean a complete explanation.

A In general it is the application of physical methods to the problems of the earth.

Q You mentioned that you began work on radar in 1940?

A In 1940, yes.

Q At MIT?

A Excuse me. I beg your pardon. I made a mistake. This is in 1941. I hope the record can be corrected on that.

Q How long did you stay there in that work?

A I was there until August of 1942.

Q What did you do after that? Would you go ahead now and in your own way tell us chronologically what you did after that?

A Yes. During my time at the Radiation Laboratory I was concerned primarily with the development of airborne radar.

In August of 1942, I was requested to come down to the War Department to serve as an expert consultant in the Office of the Secretary of War, and particularly within the Office of the Secretary I was working in the office of Dr. Edward L. Bowles. My duties there were to do what I could to insure the integration of our new weapons, principally radar, since that was the subject with which I was familiar, into the operational units of the War Department, and since the Air Force was the principal customer of this, I worked primarily with the Air Force.

I went overseas for extensive periods and spent between two and a half and three years, I believe, overseas in the European theaters, and after VE day I was transferred to the Far Eastern Air Forces, where I served as chief of the scientific advisory group to the Far Eastern Air Forces, still, however, on assignment from the Office of the Secretary of War.

Q Who was the head of your group over there in the Far East?

A I was the head of the scientific advisory group directly under General Kenney as the Commanding General of the Far Eastern Air Forces.

Q Was Dr. Compton over there?

A After VJ day, Dr. Compton headed a mission of which I was a part --

MR. SILVERMAN: Which Dr. Compton?

THE WITNESS: Dr. K. D. Compton.

This was called the Scientific Intelligence Advisory Section, I believe, of GHQ, General MacArthur's command based in Tokyo after the occupation.

I was there for two months and returned to the United States in November of 1945.

BY MR. ROBB:

Q What did you do then?

A I had looked for the end of the war hoping that I could immediately return to my academic pursuits. After having seen so much destruction of principally urban destruction, both in Germany and Japan, I had hoped that the world would have come to a realization that steps necessary to prevent war must be taken. I left the War Department and spent perhaps six weeks trying to get back into the swing of things. I had no position to return to at that time, so I was looking for an academic position.

Then I became convinced that as a result, I think, largely of the activities of the United Nations with regard to Persia, that we were in for a long term military problem. Because of my nearly unique experience in integrating new weapons into the military, I felt that I should remain in that work for some time until a new group of people could be brought along. For that reason I responded in the affirmative

when I was asked to join what later became the Rand Project in the Rand Corporation, and I did join them in February 1946.

Q In what capacity?

A I was the first full time employee of the Rand Project and as the project grew and divided into sections, I was head of the atomic energy section, I believe it was called, at that time. It is now called the nuclear energy division of the Rand Corporation.

Q Go ahead.

A I remained there until May of 1948, when I left to go to the University of California. At that time the section had been built up to the point where I felt that if anything, it could carry on better after I left than it had been doing.

Q You went back to the University of California where?

A At Los Angeles.

Q In what capacity?

A As I have already said, I was professor of geophysics in the Institute of Geophysics at Los Angeles.

Q Did you entirely terminate your relationship with Rand or not?

A No. My agreement with President Spraulle at the time I joined the University, I felt free to and did act in consulting capacity on defense problems. I have been ever since consultant to the Rand Corporation with the exception of the one year I served here in the Air Force, and at various

times I have been consultant to the Armed Forces Special Weapons Project, to the Radiation Laboratory at the University of California, to the Air Force, and the Corps of Engineers.

Q Will you tell us whether or not Rand was doing work for the United States Government in the field of nuclear weapons?

A Oh, yes.

Q You mentioned that you were with the Air Force. When did that start?

A I left on leave of absence under a strong request from the Chief of Staff of the Air Force to serve as chief scientist of the Air Force, which I did for the period of September 1, 1951, through June 30 of 1952.

Q In that capacity did you concern yourself with the thermonuclear problem?

A Yes.

Q May I interrupt the course of your narrative for a moment to ask you whether or not you met Dr. Oppenheimer?

A Oh, yes.

Q When?

A I can't be sure of the first time that I met him, but I have seen him on a number of occasions since 1946.

Q In other words, you know Dr. Oppenheimer?

A Oh, yes.

Q And have known him since about 1946?

A Yes. I think I did not know him before.

Q Getting back to your work with the Air Force in respect of thermonuclear matters, what was your first connection with that when you were with the Air Force?

A I should say that through my Rand connections largely I had been following as well as I could from afar the course of developments in this field at Los Alamos and about the time I came to Washington there was, as you have abundant testimony, intensification of this program and reason for much more optimism than had been generally present in the past.

Q You mentioned that we had abundant testimony. Of course you have not been present. What did you mean by that?

A I referred to the implications I got from conversations with you and Mr. Rolander.

Q All right. Go ahead.

MR. MARKS: What was the testimony about? I am very sorry.

MR. ROBB: Mr. Griggs said "as you have abundant testimony there was optimism about the program in 1951." I merely wanted to draw from him what he meant by the testimony.

BY MR. ROBB:

Q You mean in the course of interviewing you as a witness, we took it for granted that there was in 1951 increased optimism in respect of the thermonuclear program, is

that it?

A I would have assumed this whether you said anything to me or not. I presume you have been getting into this business pretty thoroughly and I certainly hope that the Board has.

Q All right, sir. Go ahead. I am sorry I interrupted your course of thought. You were about to tell us about what you had to do with the thermonuclear program, and I believe you were explaining why you were interested in it when you came to the Air Force.

A Shortly after I started work in the Air Force at that time as chief scientist, it became apparent that it was possible to think of actual weapons of this family, and there were estimates as to performance of these weapons which made them appear to be extraordinarily effective as weapons for the Air Force. If these estimates could be met, it was perfectly clear to my colleagues in the Air Force that it was of the utmost importance that the United States achieve this capability before the Russians did.

In this regard the opinions of the Air Force coincided with the opinions expressed by General Bradley for the Joint Chiefs of Staff in his memorandum of October 1949.

Q Go ahead.

A This is a long story.

MR. SILVERMAN: What is the question?

MR. ROBB: I asked him to tell us about his connection with the thermonuclear program, and just what you first did when you came with the Air Force.

BY MR. ROBB:

Q What was the first step you took in respect to the thermonuclear program?

A I can hardly remember what the first step I took was. The first step I took was to get additional information as to the status.

Q To whom did you go for that information?

A To the Office of Atomic Energy of the Air Force and to the Atomic Energy Commission.

Q What did you find out about the status of the program?

A As I have already testified, everything I found at that time gave indication or gave promise of the fairly early achievement of an effective weapon.

MR. GARRISON: Could I understand what time was this?

BY MR. ROBB:

Q Was this in the fall of 1951?

A Yes.

Q Did there come a time when you had some discussion about the establishment of a second laboratory?

A Yes, we were very deeply concerned in this.

Q Why?

A In the President's directive of January 31, 1950,

it was stated the rate and scale of effort on thermonuclear weapons should be jointly determined by the Department of Defense and the Atomic Energy Commission. It was therefore a part of our responsibility as a part of the military to make known our views on this matter. We felt at the time we are speaking of, namely, late 1951 and early 1952, the effort on this program was not as great as the circumstances required under the President's directive.

Q So what did you do?

A I personally first tried to find out from the AEC what action they were taking in this direction. The things that I found out led me to believe --

Q Well, pardon me. Go ahead.

A You were going to ask a question?

Q I was going to save time. Did the Air Force commend the establishment of a second laboratory?

A The Air Force did. So did the Department of Defense.

Q Did you at that time ascertain what the position of Dr. Oppenheimer was on that?

A I did not talk as near as I can recall to Dr. Oppenheimer about this question. By hearsay evidence, I formed a firm impression that he was opposed to it. I have since read the appropriate minutes of the General Advisory Committee, and believe that this is substantiated in those minutes.

Q Did there come a time when a project known as Vista was carried out?

A Yes.

Q Were you familiar with that project?

A Yes, surely.

Q Would you tell us what you can of the origin of that and its history?

A May I volunteer a statement?

Q Yes, indeed, sir.

A The testimony that I have to give here before this Board, as I understand the line that your questions are following, is testimony which will be concerned at least in part with two very controversial issues on which I was a participant in the controversy in my clear understanding on the opposite side of this controversy from Dr. Oppenheimer.

Q And you wish what you have to say to be taken in that context?

A Yes. I want to make it clear that I was an active participant in the controversy, and may not be fully capable of objectivity.

Q Because you were an active participant, we have asked you to come here because you know about it. Now, would you go ahead, sir, and tell us what you know about the origin of this Vista Project, and in particular reference to any connection Dr. Oppenheimer had with it, and then what happened

in the Vista Project?

A I am not hesitant to answer this question and I don't want that impression to be conveyed if I can avoid it. However, I do feel the need of some clarification of what is obviously going to follow from your present trend of questions, because a great many of my scientific colleagues are involved in this controversy and on both sides. In my mind there existed at the time and today a possible distinction between the position of my other scientific colleagues and that of Dr. Oppenheimer.

Q When did you first become aware of the starting of the so-called Vista Project?

A The Vista Project was started, as near as I can remember, in the spring or summer of 1951, largely through the activities of Dr. Ivan A. Getting and Dr. Louis N. Ridenour, who were at that time serving full time with the Air Force. Dr. Getting was serving as assistant for evaluation in the Office of the Deputy Chief of State for Development. Dr. Ridenour was serving as chief scientist. In other words, as my predecessor. They after a very considerable persuasive effort induced the California Institute of Technology to undertake the Vista Project which can be briefly characterized as a project to study the tactical warfare with particular reference to a possible campaign in Europe. This project was undertaken by Cal Tech as a joint project between the

three services, the Army, Air Force and the Navy.

Q Were there various meetings of scientists in Pasadena in connection with this study?

A Yes.

Q When did those meetings come to a close approximately?

A As nearly as I can remember, the Vista Report was submitted in January of 1952, and the Vista Project was terminated essentially with the presentation of the Vista Report.

Q Was there a section of that report, Section 5, I believe, which dealt with atomic and nuclear matters?

A Chapter 5.

Q Did you attend any of the sessions in California?

A Yes, I did.

Q Were you present at the sessions about the middle of November 1951?

A I visited the Vista Project about the middle of 1951, yes, sir.

Q Will you tell us whether or not you recall an occasion when a draft of Chapter 5 was presented to the assembly?

A Yes, I do recall.

Q Do you recall who it was who presented it?

A Some of us from the Air Force were there to have a preview of the Vista Report as it then existed in draft form -- partially at least in draft form -- and this included

Mr. William Burden, who was Assistant to the Secretary of the Air Force for Research and Development; Mr. Garrison Norton, who was Deputy to Mr. Burden; Lt. Col. T. F. Walkowicz, and myself. We had a session which was officially presided over, I think, by Dr. Fowler, but in which Dr. DuBridge as senior member of Cal Tech took the leading role, essentially, and in which Dr. Lauritsen, Dr. Milliken and Robert Bacher were active. There were doubtless others there. Your question I believe was who presented this draft?

Q Yes, sir.

A I don't remember in detail, but I think the proper answer to your question is that parts of it were presented by all of these people.

Q Do you recall anyone making any statement as to who prepared the introduction to this draft?

A There was a part of the Vista in draft form which we were told had been prepared by Dr. Oppenheimer, and we were told that what we were shown was a verbatim draft as he had prepared it.

Q Who told you?

A We were told that by DuBridge, Bacher, Lauritsen and perhaps others.

Q Did you examine that draft?

A Yes.

Q Was there anything about it which impressed itself

on your mind?

A Yes, indeed.

Q What was it?

A There were three things about this general area of the Vista Report that I regarded as unfortunate from the standpoint of the Air Force. I can't be sure that all three of these things were in the draft that was written by Dr. Oppenheimer, but I think they were. However, the first and perhaps most controversial point as far as we in the Air Force were concerned, I am quite sure, was in the part that was said to have been prepared by Dr. Oppenheimer. This was a statement substantially to the effect that it was recommended that the President of the United States announce that the United States would not use its strategic air force in attack on cities or industrial economy, as I recall the statement, until our cities had been attacked.

I regarded this as a very dangerous recommendation and that if it were adopted by the United States at that time -- and my recollection is that it was proposed for immediate adoption -- that it would have deprived us of the one important military advantage that we had vis a vis the Soviet, except in the case of course in which they attacked our cities as the first act of war. In other words, from where I sat, this recommendation if adopted would have greatly restricted our freedom of action and could have been

catastrophic, for instance, in the event of an attack on Europe, which was after all the Vista frame of reference.

Q Was there anything else in that draft that struck you?

A As I said there were two other points. I can't swear to it that these were in the draft written by Dr. Oppenheimer, but I am sure that he was aware of these points.

Q Did you understand that Dr. Oppenheimer approved these points?

A Yes, I did. I think there is no question about that.

The first was a recommendation that our atomic stockpile -- is somebody checking our security here?

MR. ROLANDER: Yes.

THE WITNESS: -- he divided into three parts, that is, three roughly equal parts, one of which would be allocated to the Strategic Air Force, one of which would be allocated to tactical warfare, and the third held in reserve. Who is security monitor here?

MR. GRAY: Mr. Rolander is the security officer.

BY MR. ROBB:

Q Why did that strike you so forcefully?

A At the time this recommendation was made, there was no allocation of the stockpile. We thus had comparative freedom of action to use the stockpile in any way that the Department of Defense and the President saw fit. Had this decision been accepted as in the case of the earlier

decision, it would have reduced our freedom of action, would specifically have reduced the ability of SAC.

Q What is SAC?

A The Strategic Air Command. And because of these facts, I considered this to be contrary to the national interest.

Q What was the third point which impressed itself upon you?

(No response.)

Q I might ask you this question. Was there anything in the draft at that time concerning the feasibility or the use of thermonuclear weapons?

A May I say before I respond to your last two questions that coupled with this second point, namely, the suggested tripartite allocation of the stockpile, there was a recommendation as to the specific nature of the weapons which should form a stockpile. This recommendation was substantially different from the recommendation of the Joint Chiefs of Staff and the Department of Defense, and in my mind coupled with the other recommendation of the tripartite allocation, had that second recommendation as to the specific nature of the weapons to be stockpiled been accepted, it would also have acted to restrict our military atomic capability.

Q Yes, sir.

A Now, as to the third point of the Vista Report which

troubled me, there was the statement to the effect that in the state of the art it was impossible to assess the capabilities of thermonuclear weapons adequately to evaluate their tactical significance. Bear in mind this was in the late fall of 1951. As near as I can recall this particular piece was written by Dr. Oppenheimer, according to the testimony as I have already cited.

MR. SILVERMAN: You mean according to what you heard?

THE WITNESS: According to the testimony of DuBridge and Bacher. I am using testimony in too loose a word,

MR. SILVERMAN: You don't mean their testimony.

THE WITNESS: No.

MR. GRAY: Let me suggest that you will have the opportunity to cross examine.

MR. SILVERMAN: This was not intended as cross examination. It seemed to me that there was a slight error which I thought -- If I am wrong forgive me -- that the witness would like to have corrected.

THE WITNESS: I do appreciate clarification of that point. I meant what we had been told by DuBridge, Bacher, Lauritsen, and others at that time.

This statement seemed to me to be quite contrary to the technical expectations in the field of thermonuclear weapons at that time, with which Dr. Oppenheimer as Chairman of the General Advisory Committee, should certainly have had

complete familiarity. I have said that poorly, but I hope the sentence is clear.

I might say further on that, that Dr. Teller had previously spent a period of a few days, I believe, at the Vista Project, specifically suggesting ways and means in which thermonuclear weapons could be useful in a tactical campaign. There have since been other analyses of this specific problem and the conclusions have not been consistent with that statement in the Vista Report.

Have I made clear what I am talking about?

BY MR. ROBB:

Q I am told I may not ask you specifically what the final recommendations of the Vista Report were -- at least not in open session here -- but I would like to ask you whether or not the statements which you have told us about the draft were substantially modified or changed?

A Yes, they were. These statements that I have talked about.

Q Yes.

A These were ones which our party -- the people I have named from the Air Force who were there -- felt very strongly about and which Mr. Finletter felt strongly about and General Vandenberg, and I believe as a result of their action, in part directly with Dr. Oppenheimer, these statements were revised.

Q May I ask you, sir, was there any particular reason at that time why you paid especial attention to any recommendations or views of Dr. Oppenheimer?

A This is what you would call a leading question?

Q I don't think so.

A May I interrupt to say some other things about the Vista Report?

Q Yes, sir.

A With the exception of these three statements -- perhaps a few other things -- we found, the Air Force, and I as a part of the Air Force, that the Vista Report was a very fine job, and particularly in connection with the recommendations for the use of atomic weapons. This contrasted to thermonuclear weapons. The activities of the Air Force at that time were aided in this direction by the Vista Report, and specifically, I think, it is quite appropriate to say that Dr. Oppenheimer's contribution in this direction was helpful to the Air Force. This is a matter that I personally know to have extended over a period of several years.

Have I made what I am trying to say clear?

MR. GRAY: Yes.

MR. ROBB: Read the question, please.

(Question read by the reporter.)

THE WITNESS: It seems to me this question can be answered only in broad context, if you will allow me.

MR. GRAY: Yes, you may answer it any way that seems best to you, Mr. Griggs.

THE WITNESS: It seems obvious to me that what you are asking as I understand it is one of the purposes of these hearings, namely, to investigate loyalty. I want to say, and I can't emphasize too strongly, that Dr. Oppenheimer is the only one of my scientific acquaintances about whom I have ever felt there was a serious question as to their loyalty. The basis for this is not any individual contact that I have had with Dr. Oppenheimer or any detailed knowledge that I have had of his actions. But the basis is other than that and perhaps it is appropriate that I say what it is.

I first warned about this when I joined the Rand project, and was told that Dr. Oppenheimer had been considered during the Los Alamos days as a calculated risk. I heard very little more about this until I came to Washington as chief scientist for the Air Force.

In that capacity I was charged with working directly with General Vandenberg, who was then Chief of Staff of the Air Force, on matters of research and development, and I was charged with giving advice as requested to the Secretary of the Air Force, who was then Mr. Finletter. I worked closely with General Doolittle who was Special Assistant to the Chief of the Air Force.

Shortly after I came to Washington, I was told in

a way that showed me it was no loosely thought out -- let me correct that statement. I was told in a serious way that Mr. Finletter -- or rather, I was told by Mr. Finletter that he had serious question as to the loyalty of Dr. Oppenheimer. I don't know in detail the basis for his fears. I didn't ask. I do know that he had access to the FBI files on Dr. Oppenheimer, at least I think I am correct in making that statement. I had this understanding.

I subsequently was informed from various sources of substantially the information which appeared in General Nichols' letter to Dr. Oppenheimer, which has been published. I feel I have no adequate basis for judging Dr. Oppenheimer's loyalty or disloyalty. Of course, my life would have been much easier had this question not arisen.

However, it was clear to me that this was not an irresponsible charge on the part of Mr. Finletter or on the part of General Vandenberg, and accordingly I had to take it into consideration in all our discussions and actions which had to do with the activities of Dr. Oppenheimer during that year.

BY MR. ROBB:

Q You mentioned General Vandenberg; did you have conversations with him about the matter?

A Oh, yes.

Q Tell us about that.

A I had numerous conversations with General Vandenberg

about this.

Q To shorten it up, could you tell us whether or not the purport of what General Vandenberg said was similar to what was said by Mr. Finletter?

A Yes.

Q Mr. Griggs, did there come a time when a project known as the Lincoln Summer Study was undertaken?

A Yes.

Q Can you tell us briefly what that was and when it took place?

A May I answer a broader question in my own way?

Q Yes. I am merely trying to bring these matters up and let you tell us about them in your own words.

A It became apparent to us -- by that I mean to Mr. Finletter, Mr. Burden and Mr. Norton, that there was a pattern of activities all of which involved Dr. Oppenheimer. Of these one was the Vista Project -- I mean was his activity in the Vista Project, and the things I have already talked about. We were told that in the late fall, I believe, of 1951, Oppenheimer and two other colleagues formed an informal committee of three to work for world peace or some such purpose, as they saw it. We were also told that in this effort they considered that many things were more important than the development of the thermonuclear weapon, specifically the air defense of the continental United States, which was the subject of the

Lincoln Summer Study. No one could agree more than I that air defense is a vital problem and was at that time and worthy of all the scientific ingenuity and effort that could be put on it. We were, however, disturbed at the way in which this project was started.

It was reported to me by people who were asked to join the Lincoln Summer Study that this study was to consider the relative importance of the Strategic Air Command and the Air Defense Command, make recommendations as to budget allocations.

It was further told me by people who were approached to join the Summer Study that in order to achieve world peace -- this is a loose account, but I think it preserves the sense -- it was necessary not only to strengthen the Air Defense of the continental United States, but also to give up something, and the thing that was recommended that we give up was the Strategic Air Command, or more properly I should say the strategic part of our total air power, which includes more than the Strategic Air Command. The emphasis was toward the Strategic Air Command.

It was further said in these initial discussions with people who it was hoped would join the project that the Lincoln Summer Study would concern itself with antisubmarine warfare.

I hope it is clear to the Board. If it is not, I

should like to make clear why it is that I felt upset by the references to the relative importance of the Strategic Air Command and the Air Defense Command, and to the suggestion that we, the United States, give up the Strategic Air Command. Should I amplify that?

MR. GRAY: Yes, if you will.

THE WITNESS: The reason that I felt this was unfortunate as a part of the Lincoln Summer Study is similar to the reason that I felt that a similar suggestion which I have already referred to was unfortunate in the case of the Vista study, namely, that neither of these two studies had the background nor were charged with the responsibility of considering in any detail or considering at all the fact of the activities of the Strategic Air Command. I felt that for any group to make such recommendations it was necessary that they know as much about the Strategic Air Command and the general strategic picture as they knew about the Air Defense Command.

Also we have learned to be a little cautious about study projects which have in mind making budget allocations or recommending budget allocations for major components of the Military Establishment gratuitously, I might say. There are of course groups charged with this, but the Lincoln group was not charged with this.

There was another aspect of the initial phases of

the Lincoln Summer Study which upset me very greatly, and that is that the way in which it was first started gave considerable promise -- considerable threat, I might say -- of destroying the effectiveness of the Lincoln Project. The Lincoln Project was one which the Air Force relied onto a very great extent in developing the future air defense capability of the United States Air Force, and of the United States in large measure.

Sir, if I am getting too detailed about this --

MR. GRAY: No, you proceed.

BY MR. ROBB:

Q Had you completed your answer on that?

A Yes, unless you desire amplification.

May I say one more thing in that connection? I probably have not made it very clear, but as near as we could tell the Lincoln Summer Study came about as one of the acts of this informal committee of three which I mentioned of which Dr. Oppenheimer was one.

Q Who were they?

A As I have said, Dr. Oppenheimer and two other scientists.

Q Who were the other scientists?

A Dr. Rabi and Dr. Lauritsen.

Q There has been some mention of a group called ZORC.

Was there any such group as that that you knew about?

A ZORC are the letters applied by a member of this group to the four people, Z is for Zacharias, O for Oppenheimer, R for Rabi and C for Charlie Lauritsen.

Q Which member of the group applied it?

A I heard it applied by Dr. Zacharias.

Q When and under what circumstances?

A It was in the fall of 1952 at a meeting of the Scientific Advisory Board in Boston -- in Cambridge -- at a time when Dr. Zacharias was presenting parts of a summary of the Lincoln Summer Study.

Q In what way did he mention these letters? What were the mechanics of it?

A The mechanics of it were that he wrote these three letters on the board --

DR. EVANS: Did you say three letters?

THE WITNESS: Four. You said three.

BY MR. ROBB:

Q That was my mistake. Wrote them on what board, a blackboard?

A Yes.

Q And explained what?

A And explained that Z was Zacharias, O was Oppenheimer, R was Rabi and C was Charlie Lauritsen.

Q How many people were present?

A This was a session of the Scientific Advisory Board,

and there must have been between 50 and 100 people in the room.

Q To sum up, Mr. Griggs, in the Lincoln Study did they come up with a report of some sort?

A I don't know.

Q There has been some --

A When I say I don't know, I mean I don't know whether there was a formal written report.

Q Did you attend the sessions or any of the sessions?

A I attended only the initial sessions, the first three days or so of the Summer Study. That was while I was still chief scientist of the Air Force, and after I left I had no further contact with it. That is, no further attendance at these meetings.

Q There has been testimony here, I think, to the effect that the burden of thinking of the Lincoln Study was that there should be a balance between an offensive or strategic air force and the continental defense of the United States. Would you care to comment on that?

A I have already tried to give the Board the impression that I may not be a thoroughly objective witness in controversial matters, and this was a controversial matter, but the impression I had was that there was a strong element in the Lincoln Summer Study activities and subsequent activities which can best be described as being similar to the article by Joseph Alsop, I believe, in the Saturday Evening

Post, about the Lincoln Summer Study. As I recall it, this article recommended a Maginot Line type of concept in which we depend on air defense rather than our retaliatory capability. I think in this article the impression was given that through the technological breakthroughs, which had been exploited in the Lincoln Summer Study, it would be possible if their recommendations were followed to achieve a very high rate of attrition on attacking aircraft.

This, of course, can easily be checked by referring to the article. But as I recall it, rates of attrition approaching 100 per cent were considered to be possible in that article.

This article reflected, as near as I could see, the spirit of a part of the Lincoln Summer Study. From what I knew then and from what I know now, I think that any such optimism is totally unjustified, and if we based a national policy on such optimism, we could be in terrible trouble.

Q Now Mr. Griggs, coming to May 1952, I will ask you whether you recall visiting Dr. Oppenheimer at Princeton?

A Yes.

Q In general what was your purpose in going to see him?

A Do you mind if I answer this again fairly fully?

Q No, sir.

A During the meetings of the National Academy of Science in Washington in the spring of 1952, we had a luncheon

meeting at Mr. Burden's house at which Dr. DuBridge and Dr. Rabi were present, as well as Mr. Burden, Mr. Norton of the Air Force, whose name I have mentioned before, and myself.

The purpose of this meeting was to allow Mr. Burden and Mr. Norton, who were charged with important recommendations with respect to our thermonuclear program, to talk to two eminent people who were familiar with aspects of the activities of the Atomic Energy Commission bearing on the thermonuclear problem -- much more familiar with these -- than I was and who were on the opposite side of this particular controversy which has already been mentioned, namely, the second laboratory controversy, who were on the opposite side of that than I was.

During that meeting I made some statements to DuBridge and Rabi as to what I thought of the activities of the General Advisory Committee of the AEC with respect to the development of the thermonuclear weapons. These statements of mine were such as to imply that I didn't feel that the General Advisory Committee had been doing anywhere near as much as it could do to further the development of the thermonuclear weapon, nor anywhere near as much as it should, under the President's directive, and the subsequent directives which came out setting the rate and scale of effort on the thermonuclear program.

When I made these statements based on as good information as I was able to obtain prior to that time, Dr.

Rabi said that I was quite wrong, and that my sources of information had been inadequate. I responded as near as I can recall that I would be glad to get all the information I could so that I would have a proper view of the activities of the General Advisory Committee in this respect.

He then said that I couldn't get a clear picture of this without reading the minutes of the General Advisory Committee. I responded that I would be very happy to have the opportunity to read these minutes, and asked how I could get access to them, and whether I should request clearance for this by a member of the Atomic Energy Commission.

He responded very much to my surprise that the Atomic Energy Commission was unable to grant access to the minutes of the General Advisory Committee, that these were the personal property of the Chairman, Dr. Oppenheimer.

MR. SILVERMAN: Who was it that this conversation was with?

THE WITNESS: This was Dr. Rabi. I don't recall exactly the next thing in the conversation, but before we parted, Dr. Rabi suggested that he arrange a meeting at Princeton with Dr. Oppenheimer and myself and himself, Dr. Rabi, at which time I would have a chance to review the minutes of the General Advisory Committee so that I would be set straight on these matters.

That meeting turned out to be impossible, because Dr.

Rabi had an illness at the time when we tentatively set up the date, and somewhat after that time I was in Princeton on other business, and called Dr. Oppenheimer, reminding him of this and suggesting that I would be happy to meet with him on this general subject if he so desired. Thereupon we had this meeting.

BY MR. ROBB:

Q What was the subject of your discussion when you did meet with him?

A I, of course, brought up this background and the reason for my interest, as I recall it. I didn't really expect that I would be allowed to read the minutes of the General Advisory Committee, and it turned out that this was not offered by Dr. Oppenheimer.

Q Did you ask?

A Yes.

Q What did he say?

A I don't recall.

Q In all events, you didn't get to read them.

A No. I was shown by Dr. Oppenheimer at that time two documents which have been referred to in Dr. Oppenheimer's letter in response to General Nichols. These were the documents with which I am sure the Board is familiar, submitted, I believe, as annexes to the report of the General Advisory Committee in late October of 1949. These were the

recommendations as to action in the thermonuclear weapon and the two documents were, one signed by -- perhaps I need not go into this.

Q I think it is pretty clear in the record already. This was in May 1952?

A I would have to check my records on this. I can find out exactly when it was. I recall only that it was in the late spring of 1952.

Q What, if anything, did Dr. Oppenheimer say in response to your suggestion that the GAC had not been doing everything possible in furtherance of the thermonuclear program?

A We had, as near as I can recall, a fairly extensive or fairly lengthy discussion which I would estimate lasted something like an hour. This was of course one of the main topics of our discussion. So we both said quite a lot. So I can't answer your question simply.

Q In general did he accept your suggestion or did he say on the contrary that he thought they had been doing everything possible?

A I am reasonably sure that I am accurate in saying that he attempted to convince me that they had in fact been doing everything possible. He mentioned specifically at that time the actions of the General Advisory Committee -- I may not have this technically right when I say the actions of the General Advisory Committee -- but the actions taken by people,

including members of the General Advisory Committee, at a meeting in Princeton following the Greenhouse tests.

Q In the course of that conversation that you told us about, will you tell us whether there was anything said by you about certain remarks which you attributed to Dr. Oppenheimer about Mr. Finletter?

A I don't believe I attributed remarks to Dr. Oppenheimer during this discussion. However, I did have a question as to the origin of a story which I had heard repeated from a number of sources, I believe including Dr. Oppenheimer, about Finletter.

Q Would you tell us what was said between you and Dr. Oppenheimer about that subject?

A First I better repeat the story or the burden of the story.

MR. SILVERMAN: Mr. Chairman, I assume Mr. Robb knows what is coming, and he thinks it has some bearing on this, because I am having a great deal of difficulty even trying to guess.

MR. ROBB: So far as anybody can know the workings of another man's mind, I think I know what the testimony will have to be. I spent until half past one o'clock this morning trying to find out.

MR. SILVERMAN: It is hard for me to see, but all right.

BY MR. ROBB:

Q Would you go ahead and answer the question?

A During the spring of 1952, there had been a series of briefings within the Defense Department on the thermonuclear weapon possibilities and on their military effectiveness. The story to which I refer is said to have occurred or was said to have occurred during one of these briefings. As near as I could find out the story was supposed to have reported a statement said to have been made by Mr. Finletter during one of these briefings.

The story was that Mr. Finletter had said in the course of the briefing, if we only had ten of these bombs we could rule the world. This story had been told in my hearing in a context which suggested that we had irresponsible warmongers at the head of the Air Force at that time.

I was anxious to find out what part Dr. Oppenheimer had in spreading this story, and what basis there was for such a story. I asked specific questions --

Q Of whom?

A Of Dr. Oppenheimer.

Q On this occasions?

A Yes. I specifically asked Dr. Oppenheimer as I recall it if he had repeated this story. His answer as near as memory serves was that he had heard the story. I then tried to question him as to the person to whom these remarks

which I have already quoted were attributed. While I don't think he said so by name, he left no doubt in my mind that these remarks were supposed to have been made by Mr. Finletter. I believe I assured Dr. Oppenheimer -- excuse me. May I say one other thing first.

I tried to get enough information in this conversation with Dr. Oppenheimer to be sure in my own mind at which one of these several briefings these remarks were supposed to have been made. This remark was supposed to have been made. I became convinced that this was supposed to have been made at a briefing of Mr. Lovett by Dr. Teller and the Rand group at which I had been present, and which I still remember clearly the list of all those people who had been present. I believe I told Dr. Oppenheimer that Finletter made no such remark, and that in so far as I knew anything about Finletter's feelings on the matter, nothing could have been further from Mr. Finletter's thoughts. And I think I knew Mr. Finletter well enough to be sure of this. I was certain that no such remark had been made.

Dr. Oppenheimer said to me, I believe, that his source was one which he could not question. In other words, I clearly got the impression that he believed that Mr. Finletter said these remarks, and that my story of the occasion was not correct.

Q Let me ask you whether you had ever heard Dr.

Oppenheimer repeat this story?

A I believe I have, although here my memory does not suffice, but according to my notes of the time which I looked at yesterday they say that I had heard him say that.

Q Did you at that time make some memorandum of this matter?

A Yes. No. Excuse me. I did not at that time make a memorandum, but on a later occasion I did.

Q Either at that time or shortly thereafter?

A Yes. I did as I recall a few weeks thereafter. The reason, as I recall it, for my making a memorandum at all, and I may point out that this memorandum I typed myself, and put an "Eyes only" classification on it, because I thought it should be kept very close. The reason I made this memorandum was because Mr. Finletter was scheduled to have a meeting with Dr. Oppenheimer and because of what I had been told as to the possible nature of subject to be discussed, I thought he ought to have this information as accurately as I could describe it.

Q In that conversation with Dr. Oppenheimer at Princeton was there any mention of a statement or announcement by the United States with respect to the development of the thermonuclear -- any public announcement as to whether we would go ahead with it or not?

A As I have already mentioned, Dr. Oppenheimer showed

me these documents of the General Advisory Committee which were on this subject.

Q In that context, did you follow up that matter with Dr. Oppenheimer in any way, and if so, what response did he make?

A Let me make clear or let me emphasize that at this time I was on the opposite side of the controversy with respect to the second weapons laboratory, and Dr. Oppenheimer knew full well I was on the opposite side.

Q I will put the question to you directly.

A Excuse me, but let me say hence I was surprised that he would show me these documents. They were shown to me as near as I can recall in the context of the actions of the General Advisory Committee, and to me they seemed wholly bad. In other words, I have not mentioned this before, but my view was and is that if the policy recommended by the General Advisory Committee had been adopted, it could be a national catastrophe.

Q Do you recall whether or not you expressed some such view to Dr. Oppenheimer on that occasion?

A I don't think I used words like that, but I made it quite clear I am sure that these documents seemed to me unfortunate.

Q What was his response to that?

(No response.)

Q I will put the question to you directly.

Was there any discussion between you and Dr. Oppenheimer about your views on his loyalty?

A Yes, there was.

Q What was that?

A I have forgotten the sequence of these things. I have of course forgotten the details of it, but I believe at one point Dr. Oppenheimer asked me if I thought he was pro-Russian, or some word of this sort, or whether he was just confused. As near as I can recall, I responded that I wished I knew. I might say that is my position today, and I hope that all of us who have question will be reassured by the proceedings of this Board one way or the other.

Does that answer your question?

Q Did Dr. Oppenheimer say anything further in that context?

A I believe it was after this that he asked me if I had impugned his loyalty to high officials of the Defense Department, and I believe I responded simply, yes, or something like that. If I were to answer that question -- I think that before an answer should have been given, because as I understand the literal meaning of this word, I had not impugned his loyalty, but his loyalty had been impugned in my hearing, and we had discussed this -- I had discussed this with high officials of the Defense Department, as I have already

said, Mr. Finletter and General Vandenberg.

Q Do you recall whether Dr. Oppenheimer had any comment to make on your mental process?

A Yes, he said I was a paranoid.

MR. ROBB: That is all I care to ask.

MR. GRAY: I think we better recess now and meet again at 1:45.

(Thereupon at 12:25 p.m., a recess was taken until 1:45 p.m., the same day.)

AFTERNOON SESSION

1:45 P.M.

MR. GRAY: Are you ready to proceed, Mr. Silverman?

Whereupon,

DAVID TRESSEL GRIGGS

the witness on the stand at the time of taking the recess resumed the stand and testified further as follows:

CROSS EXAMINATION

BY MR. SILVERMAN:

Q Dr. Griggs --

A Excuse me, Mr. Griggs.

Q Mr. Griggs, I think you testified about a dispute about a second laboratory.

A Yes, sir.

Q Did you at first favor a separate Air Force laboratory?

A I can only answer that question properly since we have not laid the foundation for it by a rather extensive answer. Is that all right?

Q Let me ask you this first.

A In other words, you don't want me to make an extensive answer.

Q If you can fairly do so.

A I would like to, because if I answer the specific question out of context, I think it might give the wrong impression.

Q I assure you you will have your opportunity to

answer quite in context and immediately. I just want to know whether there was a time when you favored a separate Air Force laboratory.

A There was a time at which we suggested that the Air Force, if necessary, undertake a separate laboratory.

Q Now, do you feel that you want to add something to that?

A Yes. In late January or nearly that time --

Q Which year, sir?

A Excuse me, of 1952. I tried to find out what the status of the effort was within the AEC in terms of furthering the nuclear weapon development. I found that there had been a suggestion for the formation of a second laboratory that went under a variety of names at that time. If we need not qualify it further than that, I won't.

At one stage in the proceedings preliminary negotiations had been undertaken with the University of California, specifically with Dr. Ernest Lawrence, to this end.

In my discussions with Commissioner Murray on this subject, I confirmed my suspicion, speaking loosely, that roadblocks are being put in the way of this development. Unless I misinterpreted what he said, he confirmed my fear that the General Advisory Committee, and specifically Dr. Oppenheimer had been interfering with the development of the institution or the initiation of the second laboratory.

We in the Air Force waited a period to see what was going to happen and when progress was not positive in this direction, we then discussed with Dr. Teller the possibility of forming a second laboratory. One of the things that motivated us in this was that Dr. Teller was no longer working regularly at Los Alamos on the project. Knowing his ability and contributions in the past, I felt and it was felt by the Air Force that he should be encouraged to participate.

We felt further that the effort that was then being applied at Los Alamos was not commensurate or was not large enough to be commensurate with the need for effort in order properly to pursue the President's directive and the subsequent directives setting the rate and scale of effort.

The question had already been looked into within the Air Force as to whether it was appropriate -- whether it was legal for the Air Force to establish such a weapons laboratory. Our legal advice from the Air Force counsel was that the provisions of the Atomic Energy Act placed a responsibility on the Air Force as a branch of the military services to insure that the weapon development was adequate.

It was further the legal opinion of our counsel that it was legally possible within the framework of the Atomic Energy Act for the Air Force to establish a second laboratory.

We knew as a practical matter that this would be a very difficult way in which to increase our effectiveness in

the development of nuclear weapons. We further knew that although it might be legally possible to set up a second laboratory, it could not have any possible chance of success unless this activity received the real blessing and support of the Atomic Energy Commission. We did, however, look into the possibilities of setting up a second laboratory and had preliminary negotiations about this with the University of Chicago, who had an Air Force contract, at which University Dr. Teller was at that time.

Dr. Teller already had relations with this Air Force contract at the University of Chicago, and he had confidence of the ability of the people on this project to undertake the development of a second laboratory, and felt that he could get support -- in fact, he had discussed with his colleagues, Fermi and others -- who could be very helpful in such a laboratory, and there were preliminary discussions with the administration of the University of Chicago already preparatory in the forms of staff work to see if the Air Force could accept such a responsibility if the Atomic Energy Commission desired it.

Does that answer your question?

Q I think your first answer answered my question. The rest of the explanation was what you wanted to make.

MR. ROBB: I am sorry, I can't hear.

MR. SILVERMAN: The witness asked me if I thought he answered my question and I said the first answer answered

my question, and the next was the explanation he wished to give.

THE WITNESS: May I ask the Chairman, since I am not too familiar with your procedure, whether such an explanation on my part is desirable from your standpoint, or whether you would rather get on with the proceedings?

MR. GRAY: Mr. Griggs, our procedures are very flexible, here, and we are not in any way adhering to ordinary rules which would apply in a court of law, and therefore within limits a witness can say anything he believes to be pertinent to the question asked him, except that he is not supposed to engage in argument.

In reply to your question as it related to that answer, it was perfectly appropriate for you to say that you would not want to answer that question without explanation.

THE WITNESS: I want to follow your desires, sir. If you will stop me when I get too extensive, I would appreciate it.

MR. SILVERMAN: It is the desire of all of us that the testimony given shall be as clear and as truthful and as full as possible. I think on that there is no doubt that we all join. If you have some doubts that something you are being asked may result in a misleading answer, try to answer the question, and if you think you want to add something, tell me so.

THE WITNESS: Yes. I felt a little bad because this was the first question you asked me, and I had gone into this extent.

BY MR. SILVERMAN:

Q Are you now satisfied that Livermore is a good solution of the second laboratory problem?

A Livermore is the solution of the second laboratory problem adopted by the AEC. I have been, although not actively, a consultant to the Livermore Project, and hence I am not without bias in this field. What I have heard and what I have experienced at the Livermore Project convinces me that it is a very fine effort in that direction.

I might specifically say that one of the objections which was raised to the formation of a second laboratory was the impossibility or stated impossibility of recruiting personnel, that is, appropriately trained personnel. I think Livermore Laboratory has been spectacularly successful in this respect.

Q I take it the purport of your answer is that you think Livermore is a good solution to the second laboratory problem?

A Yes.

Q Do you know whether Dr. Oppenheimer opposed the Livermore solution?

A Of my direct knowledge, I do not.

Q There has been testimony here that he did not oppose it. Does that surprise you?

A You mean surprise me that there has been testimony to that effect?

Q Yes.

A No, but I certainly would not be surprised if there had been testimony to the effect that he had opposed it, either. I think it depends on who you ask.

Q You have no personal knowledge on that subject?

A No, not to my recollection.

Q And I take it you would agree that the testimony of the people who did have personal knowledge would perhaps be the most reliable guide?

A If all of the testimony that has been given before this Board indicates that Dr. Oppenheimer did not oppose this laboratory then I would feel that you didn't have all the expert opinion in

Q Did Dr. Oppenheimer tell you at Princeton that he favored the Livermore solution?

A I don't recall that he discussed this. I would be almost certain that he didn't tell me that he favored the Livermore solution.

Q In that discussion at Princeton at which this story about Secretary Finletter came up, I think you said that you mentioned the story first?

A That is right. In the discussion at Princeton.

Q Yes, that is what I meant.

A Yes.

Q And Dr. Oppenheimer said he had heard some such story?

A He said he had heard the story.

Q Did he say that he had heard that story with respect to Mr. Finletter, or did he say that there was a story around the AEC that somebody in the Air Force had said something like that?

A I think you will find my testimony on that is fairly explicit, and with the hope that I don't contradict that I said before --

Q Just tell what your best recollection is, sir.

A My best recollection is that he did not mention the name of Mr. Finletter in connection with this story, but the things that he did say left no doubt in my mind that it was Finletter to whom the story was supposed to have been attributed.

Q What did he say?

A You see, I was anxious to find out who was supposed to have made these remarks and hence I asked a number of leading questions. I was first interested in discovering at which one of the several briefings this remark is supposed to have been said. From what Dr. Oppenheimer said, I became satisfied that it was the briefing of Mr. Lovett in Mr.

Lovett's office at which this took place.

Q Excuse me; if you can tell us what it was he said?

A I can't tell you what he said. Do you expect me to be able to remember word for word what he said?

Q Of course not. I am asking you to try to recall the substance of what he said. You said from what he said you got the impression that he was talking about Mr. Finletter.

THE WITNESS: Mr. Chairman, since the question seems to be going beyond the ability of my memory -- it seems that way to me -- I do have notes on this subject which are in my files at the Pentagon. I was unable to bring them with me. If you wish amplification of this, the best record is what are in my files at the Pentagon.

BY MR. SILVERMAN:

Q When did you make these notes?

A They were made at a time shortly after our discussion.

Q Can you give any idea of about how long after the discussion you made these notes?

A Excuse me. The document I was referring to is the one that you have here.

MR. ROBB: That we have a photostat of.

THE WITNESS: I think so.

MR. SILVERMAN: If it will refresh the witness' recollection.

(Document handed to witness.)

MR. ROLANDER: I don't think he can read this memorandum. I will have to check with the classification officer.

MR. SILVERMAN: If the witness is going to testify from a document used to refresh his recollection, which I cannot see, I would rather skip the testimony.

MR. ROBB: As far as I am concerned you can see it, Mr. Silverman. I would like to have it read into the record.

MR. SILVERMAN: If you want to read it into the record, that is fine, but I do not wish to be in the position of examining a witness who is testifying from a document I cannot see.

MR. GRAY: What is the security problem?

MR. ROLANDER: May I check it with the classification officer?

MR. GRAY: Yes.

MR. ROLANDER: This memorandum is satisfactory from a security standpoint if one item, a number, is deleted, a numeral.

MR. SILVERMAN: This numeral will have nothing to do with this.

MR. ROLANDER: That is right.

MR. SILVERMAN: It is all right with me. The witness will read this into the record, I assume, because otherwise I will not be able to know what is in it.

MR. ROBB: If you will ask him, I am sure he will.

MR. SILVERMAN: I don't know whether they will let me.

MR. ROBB: Sure.

MR. SILVERMAN: Put your finger over the number.

MR. ROBB: Mr. Chairman, might the witness read it in to the record since it has been discussed?

MR. GRAY: It is my understand<sup>ing</sup> that is why we delayed to let the security officer check it, to be read into the record. Do you object to it being read into the record?

MR. SILVERMAN: I would as soon like to see it. I don't know what is in the document.

MR. GRAY: There has been enough discussion about this conversation. I take it this document relates to the conversation you had. Is that correct?

THE WITNESS: Yes.

MR. GRAY: Does this document relate about this conversation about which you cannot recall precisely?

THE WITNESS: Yes.

MR. GRAY: I think the Chair will ask the witness to read it.

THE WITNESS: You want me to read it verbatim including the title?

MR. GRAY: Leave out the number.

THE WITNESS: This is a memorandum to Mr. Finletter "Eyes Only" classification, June 21, 1952:

"1. In view of your possible meeting with Oppenheimer I want to record as accurately as I can my recollection of parts of my conversation with him on May 23, 1952.

"2. I said that I had heard from associates of his a story, as follows: "At one of the briefings given by Teller on the implications of the H-bomb, a high official of the Department of Defense exclaimed, "If only we could have blank of thos (H-bombs) we could rule the world.'" Oppenheimer said that he was familiar with the story, said that it had occurred at the briefing of Mr. Lovett."

Then there is an asterisk, and a list of the people as far as my recollection served who were present at that particular briefing. I was one of them.

"I told him that I was present at that briefing, and that nothing could be further from the actual reaction of those present. He then stated that he had confidence in the reliability of his information, and further, that it was 'my boss' who is supposed to have said it." The "my" of course refers to me. "On further questioning, he left no doubt in my mind that it was you to whom he was referring, although he did not use your name.

"3. I have heard this story used by him and others as an illustration of the dangerous war-mongers who rule the Pentagon, and who are going to precipitate this nation into a war unless a few scientists can save it.

"4. After he had showed me the GAC recommendation of December 1949 that the U.S. not intensify H bomb development, but publicly renounce its development, and when I was pressing the point that such a course of action could well be disastrous to this country, Oppenheimer asked if I thought he were pro-Russian or just confused. After a moment I replied frankly that I wish I knew. He then asked if I had 'impugned his loyalty'. I replied I had." In my testimony this morning I expanded that. "He then said he thought I was paranoid. After a few more pleasantries our conversation came to an end."

Signed by me. Shall I read the footnote?

MR. GRAY: Yes.

THE WITNESS: This refers to the Lovett briefing. "This briefing took place in March 19, 1952. Those present, as far as memory serves were: Lovett, Foster, Finletter, Pace, Whitehair, LeBaron, Nash, Burden, Norton, Griggs, Teller, Collbohm, Henderson, Blesset, Hitch and Brodie."

At the bottom of the page it says, "This is the only copy of this memorandum", but since I am reading a certified true copy, that obviously is not so.

Does that answer your question?

BY MR. SILVERMAN:

Q You were asked by the Chairman to read the memo.

A No, you asked the question to which I was trying to respond, and this is for the purpose of refreshing my memory.

Does that answer your question?

Q That is your best recollection?

A Yes.

Q Thank you.

MR. ROBB: Mr. Chairman, I don't know whether the witness knows it or not, but this is on the stationary of the Department of the Air Force, Washington.

THE WITNESS: Should I have read that into the record?

MR. ROBB: I don't know.

THE WITNESS: I really don't think that applies because this is not the original.

MR. ROBB: I get it.

BY MR. SILVERMAN:

Q You testified to being present at a session or some sessions in California in I think November 1951 with respect to the Vista report.

A Yes.

Q How did you happen to go there?

A Of course, since the Air Force had been instrumental in establishing the Vista project, we were very much interested in the results of their extensive studies, and we also, of course, were interested in seeing the shape of the report at this, which was the draft stage, for two reasons, of course, both obvious reasons. One, that we wanted to be able to act on any recommendations which were favorable before

waiting for the formal report. We made frequent visits to the Vista project. This was not our first. It had been after some interval and things were happening at a substantial rate there.

And second, of course, as we always are, we were interested in reviewing the document to see if it contained any things to which we violently objected so that we could discuss these with the authors at that time.

Q Had Mr. John McCone suggested to Secretary Finletter that somebody go out there to confer with the people who were working on Vista?

A I should not be surprised if he had. You can get more accurate testimony from others on this.

Q Mr. McCone was formerly the Under Secretary of the Air Force?

A I believe that is correct.

Q Was it your understanding that he had seen a draft of the Vista report, and called Mr. Finletter?

A You are asking me about a matter which I have no personal knowledge.

Q There have been a certain number of things in your testimony on which you did not have personal knowledge.

A No. What I mean is I don't think -- at least my memory is not adequate to tell me whether I had heard that Mr. McCone had been over a draft of the Vista report.

Q Let me complete my question, and then if you don't recall, you don't recall.

A I do clearly that Mr. McCone had been in touch with Mr. Finletter, and I think that he had been in touch with him in connection with the Vista report, but my memory does not suffice -- in fact, I am not sure I knew at the time the details that you are asking me.

Q Did you know or did you understand that Mr. McCone had said that the Vista report had a lot of good things in it, and that the Air Force ought to be interested in it?

A As I say, this is the same as the last question.

Q If you don't recall --

A I don't know this, but I would expect that he would if that is helpful. As I tried to say in my testimony, the Vista report had a lot of things in it, and as I also tried to say, I am reasonably sure that some of the things I regarded as favorable in the Vista report were in some measure at least the product of Mr. Oppenheimer's contribution.

Q There was a draft of Chapter 5 presented at this session in November 1951 which you testified to. I think you said that there were points which you found most controversial which I take it is your polite way of saying you disagreed with most strongly. The first point was a recommendation that the President of the United States announced that the United States would not use the Strategic Air Force in an attack on

cities or urban areas except in retaliation.

A Those are not my exact words, but certainly this is the substance, except in response to an attack by the Russians on us, not in retaliation. This is quite a difference. On our cities.

Q I thought you used the word "retaliatory" but it is all right.

A I did use the word "retaliatory", but not in this connection.

Q I just didn't want to mislead you as to what I thought you had said. How sure are you that recommendation was in a draft of Chapter 5?

A I am as sure as I can be of anything which I studied extensively two years ago, and which was of considerable concern to me.

You actually saw this in a document?

A Oh, yes.

Q Would it surprise you to learn that Dr. Oppenheimer never advocated such an announcement, and was opposed to any such announcement?

A Yes.

Q Bearing in mind my last question, and the obvious implication of it, how confident are you that Dr. Oppenheimer was responsible for such a suggestion in the Vista report?

A The basis for my belief that he was responsible for

it I have already given in my testimony, namely, that we were told by DuBridge, Bacher and Lauritsen, possibly others, that the document we were shown was a draft of an introduction prepared by Oppenheimer, and it was word for word his text.

Q Did these gentlemen say that was Dr. Oppenheimer's suggestion?

A No, they said this was his text. It follows it was his suggestion. I may have answered that last question wrong. I would rather think that they did say it was his suggestion. When I answered the question, I was thinking of what they said as they gave us this report. But we had a considerable discussion of this point with them afterwards, and it is quite possible, in fact I would certainly expect that they had said it was his suggestion in our discussion, but not in presenting the document to us.

Q Now, as to the point that our atomic stockpile was divided into three roughly equal parts, was that the suggestion or was it rather that the stockpile be thought of as divided?

A My recollection is that it was a recommendation that the stockpile be divided into three parts, one of which was to be allocated to strategic use or to use by the Strategic Air Force -- I am not sure which of those statements it was -- and so on.

Q Do you recall whether the draft made the point that

there might be circumstances in which it might be unwise to use our full strategic air power, and yet it might still be important to use atomic bombs for tactical uses?

A I believe it contained information to the effect.

Q Did it contain a recommendation that we therefore be prepared with some degree of flexibility to be able to use either strategic air power or tactical, whichever or both might be desirable in the light of the circumstances which might arise?

A Yes, I am quite sure it contained strong emphasis on the desirability for flexibility in the use of atomic weapons.

I would add one point while we are on this subject. The reason I am so sure of this is because that was in fact our policy at that time, and the proposal that we divide the stockpile -- and the proposal that we publicly announce that we are not going to use the Strategic Air Force for one use, restricted our flexibility, and therefore was in direct contradiction to the succeeding statement in my estimation.

Q Did not the draft make the suggestion that we should have on the shelf enough weapons so that we would be able to use them, either strategically or tactically or whichever way the circumstances might justify?

A Yes. This suggestion, I think, was made in the Vista report. It also happened to be Defense Department policy at the time.

Q Was that not also Dr. Oppenheimer's recommendation?

A I don't know that for a fact, but I certainly would expect that Dr. Oppenheimer would have made such a recommendation in view of what I knew of his activities at the time, and his beliefs. If it is appropriate to mention it again, I saw Dr. Oppenheimer on a number of occasions in the general time period advocating strongly the development of weapons for tactical use. On each one of these occasions when I saw him in this role, I was impressed with his forcefulness and I was also impressed with the fact that I agreed with the stand that he was taking on the use of tactical weapons.

I also should say as I said this morning I felt very strongly about this point, and I was urging within the Air Force, although my colleagues in Vista would not believe it, the development of the capability of delivering tactical weapons and there are lots of stories that go with this.

Q Mr. Griggs, the suggestion that we be prepared to use both strategic air power and tactical would hardly be consistent with the suggestion to abolish, to give up our strategic air power, would they?

A No. One of the troubles I have is lack of consistency, as I mentioned before. However, there was no statement in this Vista document that I saw which suggested that we give up strategic air power. There was this suggestion which I have said, which had it been adopted, would have

restricted the use of the strategic air force.

Q You understood later from Dr. Oppenheimer -- I don't want to put words in your mouth, sir -- in connection with the Lincoln Study I think you said that you had heard that some people were saying that it was necessary to give up strategic power of our air power.

A In order to get world peace. This was the way it was said. I should amplify that, I think. This statement was made not by Dr. Oppenheimer to my knowledge, but by Dr. Zacharias. It was made, however, after considerable discussions of this matter with Dr. Oppenheimer.

Q Do you know whether Dr. Oppenheimer was ever in favor of giving up the strategic part of our air power?

A I have seen numerous indications that Dr. Oppenheimer felt that it is necessary for the United States to give up something in order to achieve world peace. Perhaps that is a little too loose, but if it is adequate for you, I won't expand. That is the world peace thing.

Q Did you ever see --

A Just a moment. I am sorry. This was merely an introduction to your question. It is clear that this was a position taken in the recommendation for the H bomb.

Q Which was the position?

A That was must give up something. It was recommended in the case of the H bomb that we give up the H bomb, which to

me, as I have indicated, could have been national calamity if the Russians got that first, as I was sure that they would if we didn't press. I don't think I have any reason -- I can't recall any reason -- other than this indication from the talk of Dr. Zacharias that Dr. Oppenheimer had advocated giving up the strategic air force. That is one reason I was interested in the matter, because this was going a little further than he had according to my understanding of the past.

I believe it is recorded in the minutes of the meeting of the State Department panel of consultants that Dr. Oppenheimer suggested that since it was necessary for the United States to give up something in order to achieve world disarmament, that we consider giving up strategic missiles.

Q Have you seen those minutes?

A I have seen those minutes.

Q And have you seen that statement of Dr. Oppenheimer?

A According to my memory, I have seen that statement of Dr. Oppenheimer. This is subject to check by looking up the minutes of the first meeting of the panel.

Q When did you see those minutes?

A I saw them shortly after the meeting.

Q You mean in 1946?

A No. This was in the panel which was established in the spring of 1952, by the State Department, as announced by the Alsops' column.

Q Whose column?

A Joe Alsop.

Q You saw this yourself?

A I am just identifying the panel. I don't remember the exact title, but it was essentially on the subject of non-atomic disarmament, if I recall correctly. It was a panel of the State Department. It included Dr. Oppenheimer, Dr. DuBridge, Dr. Bush and others.

Q Where did you get your information as to the membership of this panel?

A As I say, I have seen the minutes.

Q Who were the members again?

A My first information as to the membership of the panel came from the Alsop column.

Q You saw the minutes?

MR. ROBB: Let him finish the answer.

THE WITNESS: I told you I saw the minutes. You asked me another question. I said my first information as to the membership of the panel I believe came from the Alsop column, which as near as my memory serves described this panel as having been brought into being as the result of activities of Drs. Oppenheimer, Rabi and Lauritsen.

BY MR. SILVERMAN:

Q You gave some of the members of the panel a minute or two ago. Would you mind telling us again?

A Yes. I said I believe this panel included Dr. Oppenheimer, Dr. DuBridge, Dr. Conant and others. I think the complete membership of the panel should be available.

Q And where did you get the information as to the membership of the panel?

A You have asked me three times.

Q Yes, and you said the minutes, and then you went to the Alsop column.

MR. ROBB: Then you cut him off.

THE WITNESS: Would you mind repeating?

MR. GRAY: What do you want repeated?

THE WITNESS: He has asked this question three times. I have answered it in two different ways. I am not communicating very well, I don't know what your difficulty is. Since it takes time to read these minutes suppose I try again.

BY MR. SILVERMAN:

Q You know what my question is, sir?

A How I knew about the membership of the panel. My first knowledge of this, as I have said, I think came from the Alsops' column. It turned out to be substantially correct when I was able to check it both by contacts in the State Department and by reading the minutes, which recorded of course the membership.

Q And the members were who?

A I have testified so far as my memory serves me Dr. Oppenheimer, Dr. DuBridge, Dr. Bush were members, and others.

Q I think you also mentioned Dr. Conant.

A Did I mention Dr. Conant? I am not perfectly clear on this. I should like to refresh my memory. I think Dr. Conant was -- no, I am sorry I just can't remember.

Q You did mention Dr. Conant, didn't you?

A Pardon?

Q You did mention Dr. Conant as a member?

A The people that I meant to mention were Oppenheimer, DuBridge and Bush. If I mentioned Conant -- as I say, right now I am not clear whether he was a member or was not a member. It would be real easy to find out.

Q It is easy to find out. I have the list here. Would you be surprised to find that Dr. DuBridge was not a member?

A It would certainly indicate that my memory is in error if Dr. DuBridge was not a member.

Q Would it surprise you to find out that there are no minutes of that panel?

A That would surprise me very much.

Q Where did you see these minutes?

A I asked for them and had them sent over to me, minutes of the first meeting.

Q Whom did you ask for these minutes?

A As near as I can recall I asked my executive officer

at the Pentagon, Colonel Walcovicz.

Q Where did he get them from?

A We have a liaison contact with the State Department.

Q Where are those minutes now?

A I haven't got any personal knowledge.

When did you see them?

A In the spring of 1952.

Q Can you obtain those minutes for this Board?

A I haven't any idea, but I can obtain them if they are in my own files.

Q Will you please do so?

MR. ROBB: Wait a minute, Mr. Chairman. I don't how this witness can be asked to obtain minutes from the State Department. I don't think that is fair.

MR. GRAY: I think the point is well taken. If the witness is referring to something in his own files, he can be asked. But the witness cannot be asked to obtain documents from the State Department.

THE WITNESS: I am sorry, when I said my own files, I meant my old files from the Pentagon, and I was told yesterday that I cannot get anything out of there except from the Liaison Division of the Air Force. I am sure if this document is in my file or if it is in the Air Force or can be tracked down, those documents can be made available to this Board. But I am not clear what the best way of doing it is.

BY MR. SILVERMAN:

Q Was the document minutes?

A That is my recollection.

Q You are not talking about a report now?

A No, I am not talking about a report.

Q I want to return now to the third of the controversial points in the Vista report.

A Yes.

Q As I have it here it is that in the state of the art as it then existed, it was impossible to assess the capabilities of thermonuclear weapons with respect to their tactical use.

A Yes.

Q Do you know whether Dr. Oppenheimer put that statement into the report?

A No, I don't know.

Q Do you think that Dr. Oppenheimer's judgment --

A May I amplify that. The whole of this Chapter 5 on atomic weapons which we have referred to as it was then presented to us was comprised of two parts. It was comprised of a part, essentially the body of the chapter, which had been written by the people of Vista, I believe, prior to Dr. Oppenheimer's visit, or at least he was not the direct author of that part. Then there was a separate document which, as near as I can recall, bore the title only of introduction,

which was composed of a few pages. That is the part that was said to have been written by Dr. Oppenheimer. Because of the similarity in the subject matter of these two reports, I can't be sure which thing I associate with Vista was in which one of these two documents. What I have just said indicates that my memory is that the third point was in the main body of the Vista report. The main body of Chapter 5 was in the Vista report, rather than in the piece written by Dr. Oppenheimer. I think there was some confusion about this when I first testified, because there were two reports, and I would like to make that clearer.

Q Do you recall what other nuclear physicists participated in the Vista project?

A There were quite a few. Do you want me to name as many as I can?

Q Name a few, yes.

A Of course, you asked nuclear physicists; there was Dr. Eacher, Dr. Lauritsen --

Q I should say I am referring specifically to those who participated with respect to Chapter 5.

A All right. Dr. Fowler.

Q Dr. Lauritsen and Dr. Bacher participated in Chapter 5?

A Yes, I think so. Dr. William Fowler. Dr. DuBridge participated. I don't think he took an active writing part. I believe he could be classed as a nuclear physicist.

Q Do you think that these people were in a pretty good position, or perhaps in a better position than you, to judge as to the technical capabilities of the thermonuclear weapon as they appeared in November of 1951?

A Yes, I think -- you mean these latter people?

Q Yes.

A With the exception of Dr. Bacher, no, and I am not sure what his state of knowledge was.

Q Dr. Lauritsen.

A It is however clear to me that Dr. Oppenheimer was better informed than I was.

Q How about Dr. Lauritsen?

A Lauritsen I would think no. As I mentioned before, Dr. Teller, who I think was better informed than any of these people, had visited the Vista project not very long before this, and had attempted to persuade the Vista people that a thermonuclear weapon was in such a state that it should be included in studies of tactical atomic warfare. As I mentioned also before, there were other agencies who at nearly the same time came to roughly the same conclusion that Teller did.

Q With respect to the Lincoln Study, do you know what part Dr. Oppenheimer played in the actual study?

A As I have said, my attendance at the Vista study was limited to, I believe, the first three days. At that time Dr. Oppenheimer was present and participated fairly

actively.

Q Who appointed the people who made the Lincoln study?

A Who appointed them?

Q Yes, did they appoint themselves, or what?

A As in the history of all these things, there is a little complicated genesis. It was pretty clear in the lines of the group who were pressing for this action which I have already mentioned as to who were most useful and likely candidates. The appointment of the group itself I do not know in detail but I would certainly presume that the appointment of these was made by the Lincoln project. I believe I have seen letters of invitation -- that is a form of a letter of invitation that was sent out to the participants in the Lincoln Summer Study. Does that answer your question?

Q And who signed those letters?

A I believe they were signed by Dr. Hill, who was then the Director of the Lincoln project.

Q I think you used the phrase about the Lincoln group being in favor of a Maginot Line type of defense.

A I believe I mentioned this in connection with the Alsop article.

Q Do you know whether Dr. Oppenheimer favored such a thing?

A I did not hear Dr. Oppenheimer use any such word.

Q Do you know what Dr. Oppenheimer's views were about

the possible effectiveness of continental air defense at that time?

A My last direct knowledge of this came from the contacts during the first three days of the sessions and this is all as far as Dr. Oppenheimer's personal views are concerned. At that time it was too early in the study to say with any definiteness what the views would be after the study. It was certainly the hope of all of us that as a result of the summer study the effectiveness of our air defense would be materially improved. I should say what I don't believe I did say this morning, that I believe that as a result of the Lincoln summer study our air defense is materially improved.

Q Was that the main object of the Lincoln summer study, to find ways to improve our air defense?

A Yes, sir.

Q And did the Lincoln Study ever recommend the giving up of any part of our strategic air power?

A No, not to my knowledge.

Q I think you have already said so far as your knowledge goes, Dr. Oppenheimer did not recommend that.

A That is right. I would like to amplify my answer on that for the benefit of the Board, since this is the first mention of the summer study in this much detail.

We were concerned by the thing I have already mentioned, that is, the fear that the summer study might get into these

things which we regarded as inappropriate for Lincoln, and as of questionable value to the Air Force -- I refer to the giving up of our strategic air arm, and the allocation of budget between the Strategic Air Command and the Air Defense Command -- but we were also very much concerned in the early days of the formation of the Lincoln summer study, because it was being done in such a way that had it been allowed to go in the direction in which it was initially going, every indication was that it would have wrecked the effectiveness of the Lincoln Laboratory. This was because of the way the thing was, the summer study was being handled administratively.

So far as I know, it was not because of any direct action on the part of Dr. Oppenheimer. On the other hand, I felt at the time that Dr. Oppenheimer should have been well enough informed and alert enough to see that this would be disastrous to the Lincoln summer study.

After having reported this to the Secretary of the Air Force, Mr. Finletter, who had been actively concerned with the summer study, and had been very much -- excuse me, I made a mistake -- I said Mr. Finletter had been actively concerned with the summer study. I meant to say he had been concerned with Project Lincoln. He had been in touch with President Killian, and Provost Stratton of MIT on the prosecution of Project Lincoln. So I reported this to Mr. Finletter, and he essentially charged me with trying to find

out if the summer study was going to be conducted in such a way as to result in a net gain to the effectiveness of Lincoln or a net loss.

If it looked to me as though it were going to be a net loss, I was asked to inform him so that steps could be taken to correct this condition, or to cancel the summer study if that were necessary.

I got in touch with Provost Stratton at MIT. I found that he hardly knew about the existence of the plan for the summer study. He undertook to look into it. I told him the things that worried me and worried Mr. Finletter about it. He did look into it. Some corrective action was taken in terms of discussions with people most involved and in terms of changing the organizational structure by which the summer study was to be introduced into the Lincoln project, and at a slightly later date Mr. Killian of MIT called me and told me that he was satisfied partly as a result of the recent activities that he and Dr. Stratton had been engaged in, which I have already mentioned, that the Lincoln summer study would operate to the benefit both of Lincoln and the interests of the Air Force.

He further said, since I had mentioned that one of the things we were afraid of was that the Lincoln summer study results might get out of hand, from our standpoint, in the sense that they might be reported directly to higher authority,

such as the National Security Council, President Killian reassured me that he had taken steps so that he was sure that the summer study would be -- I think his words were "kept in bounds."

On the basis of this assurance we had no further -- that is, Mr. Finletter, myself and General Yates and the other Air Force people -- had no further immediate worries about the summer study and we encouraged it.

Q Will you tell us what part did Dr. Oppenheimer play in this?

A Oppenheimer played the part in it that I have already mentioned, in that the summer study, as near as my information goes, was conceived at a meeting at which he was present, that he allowed his name, and I believe encouraged the use of his name, in recruiting for the Lincoln summer study. That he was closely associated with the people who were recruiting for the summer study and who were preparing its plans. I think that covers the question.

Q Was the idea of the Lincoln summer study to be a study of continental air defense?

A No, that is too narrow a definition.

Q What was it?

A There had already been a study of continental air defense by the Charles group, the Charles project, only one or two years before, so one of the things that we were

concerned with in the Air Force was whether this was to be a going over the same ground, or what new ground it was intended that this study cover.

Q Would you just tell us what was it you found that the Lincoln summer study was supposed to do?

A I believe in the literature that was sent out -- I should not say literature-- in the letters of invitation that were sent out that the Lincoln summer study should consider the problems of air defense in the 1950-1960 period, or some such thing.

Q Didn't you agree that it was a good idea to consider that?

A I am still referring to your earlier question, if I may.

Q Which one.

A Your last question.

Q Which question?

A The question you asked just before.

Q Will you tell me what it is because I have forgotten.

A You asked me as to the subject matter of the Lincoln summer study. I responded that this was the information that was contained in the letter of invitation that was sent out. However, I had other information which gave me concern about some aspects that were considered for the programming of the Lincoln summer study. Particularly I had been present at a

preliminary meeting before the existence of the summer study project in which it seemed to me that there was perhaps too much emphasis assigned to the development of an early warning line across -- is there any security problem involved here?

MR. ROLANDER: I don't think so.

MR. MARSHALL: That is all right.

THE WITNESS: -- across our northernmost approaches, and that this problem -- I should say that one reason that this problem received such particular emphasis at that time was because of the rather exciting new developments, technological developments in this field, which had been brought forward to my knowledge principally by Dr. Lloy Berkner. However, I was worried because it seemed to me and to some of the responsible people in Project Lincoln that I talked to that it was necessary to consider this in context of our whole air defense system, and this was not being done, to my mind, adequately in the early discussions which I heard on this subject.

BY MR. SILVERMAN:

Q Did you hear Dr. Oppenheimer in these early discussions?

A No, he was not in this particular early discussion to which I referred.

Q You did agree, I assume, that it was a good idea to study the feasibility of an early warning line?

A The feasibility of an early warning line had been studied before by more than one agency. It certainly seemed to me a good idea in the light of recent technological development which I mentioned.

Q Isn't that exactly what the Lincoln study did do?

A The Lincoln summer study?

Q Yes.

A It did do this. It did not restrict its activities to this, as far as I am aware. As I have testified, my detailed knowledge of the Lincoln summer study activities is very incomplete.

Q What troubles me is that you were worried that the result might be disastrous, that the direction in which it was going might be disastrous. Which direction was it going?

A I have tried to make clear, perhaps I have not adequately, that the things I was worried about were that first there would be a diversion of effort created in the Lincoln Laboratory, which could have an adverse effect of the total program of Lincoln Laboratory. This diversion of effort I have tried to illustrate by the suggested consideration of the relative role of the Strategic Air Command and the Air Defense Command, by the suggested introduction of antisubmarine warfare into the Lincoln project, which had no bearing on the Air Defense problem as I saw it, and more importantly by the possibility, at one time a probability, that if the

Lincoln summer study proceeded as it was then planned, there was substantial indication that it would wreck the laboratory in terms of its adverse effect on the people who were then contributing to the effort. I can go into more detail on this, if you wish.

Q You did not wish them to study the problem of anti-submarine defense?

A As I have said, I considered this inappropriate to Project Lincoln. I am certainly in favor of studying anti-submarine warfare. Bear in mind the Lincoln Project was supported roughly 85 per cent -- although it was a three service contract -- it was supported between 80 and 90 per cent by Air Force funds.

Q Did you ever hear that Dr. Oppenheimer was in favor of studying anti-submarine warfare in connection with the Lincoln study?

A No. As I have told you, my information on that came from suggestions by Dr. Zacharias in approaching people to work at the Lincoln summer study.

Q Do you know what Dr. Oppenheimer's views were at that time, or are now as to the effectiveness of continental air defense?

A At which time, sir?

Q I asked about both the time of the Lincoln study and now.

A What do you mean by the time of the Lincoln study?  
You mean the beginning or the end?

Q We will start with the beginning. Do you know what his views were at the beginning of the Lincoln summer study?

A I think his views were the same as mine and I believe the same as all of us that we were hopeful that there would be really substantial improvement in the air defense capability of the United States.

Q Did you ever talk to him about that?

A Yes, I think so.

Q Was it his view that you could not have a 100 per cent defense?

A I don't know. As I have said, this was at the beginning of the study. Whether he thought it was possible or not would not have had any effect on me.

Q Do you know what his views were at the end of that study?

A I do not.

Q Do you know what his views are today?

A I do not.

Q Did you ever hear Dr. Oppenheimer say that it was possible to have a 100 per cent continental air defense?

A No, I have had no contact with Oppenheimer so far as memory serves, as far as I now recollect, since that first

session at the beginning of the Lincoln summer study.

Q And you did not stay through to the end of the Lincoln summer study because you left?

A I came there as part of my duties in the Air Force and I left the Air Force on the first -- I left Washington on the first of July 1952.

Q Returning to this visit in Princeton in May of 1952, what was the purpose of that visit?

A I was asked that question I believe by Mr. Robb, and I tried to answer it as clearly as I could. Did you not understand it, or do you wish me to amplify it, or do you wish me to answer it again?

Q I would like you to answer my question, sir.

A In my answer to this question, which as near as I can recall was almost an identical question this morning, I said as a part of the discussion that we had had at lunch at Mr. Burden's house between Dr. DuBridge and Dr. Rabi, Mr. Burden, Mr. Norton and myself, it had been mentioned by Dr. Rabi that in order to correct impressions that I had I should read the minutes of the General Advisory Committee. He told me that these minutes were the personal property of the Chairman, that I could see them only by Dr. Oppenheimer's permission. He undertook to see if a meeting could not be arranged at Princeton to provide me the opportunity to study these minutes for this purpose. As I testified this morning,

this tentative plan was not possible because of the illness that Dr. Rabi contracted.

When I was in Princeton for other purpose, therefore, in May of 1952, I called Dr. Oppenheimer and reminded him of this with the object of seeing whether it would be possible for me to see the minutes in his office or -- this was in my mind -- if that was not possible, to discuss these matters on which there seemed to be very considerable divergence of opinion between himself and me.

Does that answer your question?

MR. GRAY: Does that answer your question, Mr. Silverman, or did you hear his answer?

MR. SILVERMAN: I heard his answer.

BY MR. SILVERMAN:

Q Did Dr. Oppenheimer tell you that the minutes were his personal property rather than the property of the Commission?

A No, I didn't say Mr. Oppenheimer. As I testified this morning, Dr. Rabi told me that.

Q Aren't you certain that Dr. Rabi didn't tell you that the minutes were the property of the Committee, as distinct from the property of the Chairman?

A No, sir, as far as recollection serves.

Q You said Dr. Oppenheimer did show you the majority and minority annexes to the October 1949 report?

A That is correct.

Q Did Dr. Oppenheimer say to you that it was the practice of the Committee not to show minutes of the Committee to any person without the consent of the members of the Committee in order that the discussion might be quite free at Committee meetings?

A I don't recall whether or not he said that to me. Since I didn't expect him to show the minutes to me anyway, it would not make much impression.

Q Did you expect him to show the report to you?

A No, frankly I didn't.

Q Had you tried to see the report before?

A No, not to my recollection.

Q Did you know that there was a copy of the report in the Defense Department?

A I don't think I did know that.

Q I think that Mr. Robb asked you a question about whether in that conversation in May of 1952 with Dr. Oppenheimer there was any mention of a public announcement as to whether we would go ahead with the thermonuclear developments and my notes don't show the answer to that question.

A My answer, as I recall it, was that this subject was mentioned in one of the two annexes, and that we might have discussed this in connection with that, but I don't recall with any degree of reliability that we did discuss this

particular subject.

Q There had in fact been a public announcement as to our going ahead with thermonuclear developments two years before?

A What is your question?

MR. SILVERMAN: Mr. Reporter, would you mind reading it?

(Question read by the reporter.)

MR. ROBB: Mr. Chairman, I think in fairness to the witness I should say that my recollection is that my question had to do with whether there was any discussion of an announcement that we would renounce the H bomb.

MR. SILVERMAN: I don't want to get into a dispute with Mr. Robb about our respective recollections. We are all trying to get the record clear on it. My own notes are the other way.

THE WITNESS: My recollection jibes with what has just been said.

MR. SILVERMAN: Then perhaps in the interest of clarity would it not be desirable to read my last question and the answer, and if the witness misunderstood my question and gave an answer --

MR. GRAY: I suggest that you ask the witness the question you want to put to the witness, Mr. Silverman, and I would suggest that you listen to his reply. You have

been so busy taking notes that is one reason you have missed some of these questions. I don't mind your asking the witness any question if you are trying to develop any point, including anything concerned with the veracity of the witness, but I think it is wasting the time of the Board to ask an identical question of the witness, and go through these long answers when the transcript already reflects the question and answer.

MR. SILVERMAN: Mr. Gray, I do not wish to be in a position of differing with you sharply on a matter as perhaps as relatively unimportant as this. My own recollection is that the answer was not precisely given before and if I am mistaken and taking up the time of the Board, I am sorry.

THE WITNESS: May I ask, Mr. Silverman, if you were going to ask for my reply to Mr. Robb's question that we go back to his original question, since I think there is a difference of opinion as to what his original question was. Is that what you want to do?

MR. SILVERMAN: It is fine by me.

MR. GRAY: You ask any question you want, Mr. Silverman.

MR. SILVERMAN: I have asked the question. I have been told in effect that I have misstated Mr. Robb's question. I am sorry that Mr. Robb should feel that. My note is rather clear as to what Mr. Robb's question was.

MR. ROBB: Mr. Question, may I just say this. I don't

want to take up too much time. It is perfectly obvious that my question was directed to the first sentence of the fourth paragraph of a memorandum which the witness has read into evidence, which reads as follows: "After he showed me the GAC recommendation of December 1949 that the U.S. not intensify H-bomb development, but publicly renounce its development, and when I was pressing the point that such a course of action could well be disastrous to this country, Oppenheimer asked if I thought he were Pro-Russian or just confused."

It is perfectly obvious that my question was bringing out from the witness that portion of his discussion with Dr. Oppenheimer.

MR. SILVERMAN: It is perfectly obvious, and it seems to me that portion you have just read is exactly what I was asking about, and not at all the question you had thought you had asked, Mr. Robb.

THE WITNESS: Just a moment. You said in following this up that there was a public announcement, did you mean that there was any such public announcement as the one mentioned there.

MR. SILVERMAN: Yes. There was a public announcement by the President that we would go ahead with thermonuclear development.

THE WITNESS: That is not what it says there.

I think you said in your direct testimony, did you not, that such question as you have as to Dr. Oppenheimer's loyalty was not based on any individual contact or detailed knowledge by you of his acts?

A That is correct.

I think you went further and said you did not feel that you really had an adequate basis for judging his loyalty or disloyalty.

A That is certainly correct, and I think it is correct that I said it and it is certainly correct that I feel it.

Q I think you also said that based on hearsay you have been suspicious or troubled about it for some time.

A Troubled, yes.

Q Would it be fair to say you have been suspicious of it for some time?

A The circumstances which I pieced together by hearsay evidence, as I think I testified, were substantially similar to those that were listed among the allegations in General Nichols' letter were sufficient to cause me grave concern.

Q Weren't you suspicious back at the time when you were first warned about Dr. Oppenheimer's loyalty when you joined the Rand project?

A This, as I testified this morning, it was said to me that Dr. Oppenheimer during Los Alamos days had been considered a calculated risk. This statement was made to me

by a person that I respect and it was not made as an idle statement. I took it seriously.

Q And thereafter in your contacts with Dr. Oppenheimer you could not help being a little bit on your guard?

A That is correct.

Q And perhaps trying a little bit to see what might be beneath the surface of what Dr. Oppenheimer was saying?

A That is correct. May I amplify this point?

Q Certainly.

A As I testified, particularly during my term with the Air Force as chief scientist for the Air Force -- I don't want to emphasize this chief scientist business, because it doesn't mean anything, but this is just to identify the time that I am referring to -- as I testified, I was on the opposite side of a pretty violent controversy from Dr. Oppenheimer in at least two cases. I was also on the opposite side -- I mean on his side about people as to whom I had no question as to loyalty or motives. I have been involved in a great many -- not a great many, but a number of pretty strong controversies in the military, and I think it is a fair general observation that when you get involved in a hot enough controversy, it is awfully hard not to question the motives of people who oppose you. This, I am sure, could not but have colored my views on the subject.

The nagging uncertainty in this particular case was

the fact that I had heard the loyalty question raised by responsible people in a serious way.

If it ever comes to the day when we can't disagree and disagree violently in public and on national policy, then of course I feel that it will be a calamity for our democracy. I think perhaps I have said enough.

Q I think since you candidly told us much of the information you have given is based not on your personal knowledge, I would like to review with you the items relating to Dr. Oppenheimer that you have of your own knowledge and see if those are correct. I will just run through them and see if they are correct as to your personal knowledge.

That you visited Vista and you heard a draft report.

A Read.

Q Read. With which you disagreed as to three points.

A Which was said to have been written by Oppenheimer.

Q That it was said to have been written by Oppenheimer.

You realize that of course would be hearsay.

A Yes.

Q Your personal knowledge is --

A My personal knowledge includes the fact that the three people in whom I have the utmost confidence said it was written by Dr. Oppenheimer, as my personal knowledge.

Q Was Dr. Oppenheimer there?

A No, he was not there.

Q Dr. Oppenheimer contributed or made valuable contributions in the Vista report which were helpful to the Air Force. I think you said you personally know that.

A I can't say I know this in detail, but I am reasonably sure that this is so. I extended that of course to include the other fields of activity, fields of activity other than Vista as well.

Q Dr. Oppenheimer's views with respect to the Lincoln summer study, you know only by hearsay?

A Except as they were expressed during the first three days of the study, yes.

Q In those first three days, he didn't say anything about giving up strategic air power?

A No.

Q And you know that Dr. Zacharias --

A I might point out that after the first session -- I think it was the first session -- in which Dr. Oppenheimer had taken a fairly active part and he came up to me afterward and said "Did I do all right."

Q And what did you say?

A I said yes, or words to that effect.

Q Were you just being polite?

A No.

Q And you were present when Dr. Zacharias wrote the initials ZORC on the blackboard?

A Yes.

Q And you went to see Dr. Oppenheimer and you have told us of the conversation with him in May of 1952?

A Yes.

Q And of course you were there and you heard that conversation and participated in it.

MR. SILVERMAN: That is all. Thank you.

MR. GRAY: Mr. Griggs, if I thought you could make the 3:30 plane, I would not ask you a couple of questions, but you have missed that plane.

THE WITNESS: I am at your service, sir.

MR. GRAY: I don't have very much actually. On the ZORC thing, you saw Dr. Zacharias write the things on the board. Had you before heard these letters used together?

THE WITNESS: Yes.

MR. GRAY: You may have testified about this, but do you remember when you first heard them?

THE WITNESS: I did not testify about it. As near as I can recall, I learned about this abbreviation first in a telephone conversation with George Valley, and I would guess that this was roughly half way through the summer study. But I can't be sure about that.

MR. GRAY: The summer study was in 1950?

THE WITNESS: 1952.

MR. GRAY: When did this meeting take place at

which Dr. Zacharias wrote the letters on the Board, if you remember?

THE WITNESS: That was at the Scientific Advisory Board meeting in Cambridge in, I believe, September of 1952. It was after the completion of at least the formal phases of the summer study, and it was on the occasion at which Dr. Zacharias was presenting some of the conclusions of the Lincoln summer study to the Scientific Advisory Board of the Air Force.

MR. GRAY: The magazine article you mentioned came out later than either of these events?

THE WITNESS: I don't know, sir. I would have to look it up.

MR. GRAY: Was this name in 1952 well known among physicists, that is, the summer and fall of 1952?

THE WITNESS: Well known among the physicists, speaking of the physical profession?

MR. GRAY: That is right.

THE WITNESS: No, I don't think it was well known.

MR. GRAY: Do you know that it had appeared publicly in print at the time that you saw Dr. Zacharias use it? My question should be, do you know whether it had. I don't know myself.

THE WITNESS: I am afraid, sir, I would have to check dates on that. As near as I can recall, it did appear in print

in the Fortune article and whether that was before or after the Scientific Advisory Board meeting, I would really have to check.

MR. GRAY: Do you know the origin of the putting of those letters together?

THE WITNESS: No more than I have told you and Zacharias on explaining of what the letters stood for, which coincided with what George Valley had told me over the telephone.

MR. GRAY: A question now about the Vista report. You have been questioned a good deal about the meeting you attended in November 1951, I suppose it was.

THE WITNESS; Yes, sir.

MR. GRAY: And the first draft or the draft of the introduction to Chapter 5, were there substantial changes in that introduction between the time you heard it read at this meeting and when the report finally appeared and was published?

THE WITNESS: Yes, there were. There were some very substantial changes. The first item I referred to was deleted. If you are going to get into this question, however, I should point out that there were two versions of the printed Vista report, one of which was called back, I believe, for security reasons. The first edition was called back for security reasons, I believe, and later reissued. The changes to which I

refer, as near as I can recall, and I am reasonably sure with regard to this first point, that was deleted in both of these published versions.

MR. GRAY: So that the two versions really are not important in trying to get at the question as to whether there were substantial changes.

THE WITNESS: No.

MR. GRAY: Could you agree with the description that the changes were only an emphasis and not in substance?

THE WITNESS: One of the changes which I was most concerned was the deletion of this particular statement with respect to withholding the use of our Strategic Air Force until -- the Strategic Air Force for attack on their cities until our cities were attacked. That was deleted. I would say this is a change in substance, if I understand your question.

MR. GRAY: Do you have any questions?

DR. EVANS: No.

MR. MORGAN: No.

MR. ROBB: No.

MR. SILVERMAN: I am just wondering on this business of Dr. Zacharias writing on the blackboard the initials ZORC.

BY MR. SILVERMAN:

Q Is it possible that the occasion of his doing that might have been after the magazine article?

A As I say, I would have to check dates to find out.

MR. SILVERMAN: Thank you.

THE WITNESS: I am reasonably sure that -- in fact, I am as sure as I can be of anything in my memory -- that my first hearing of these initials, which as I said came in a telephone conversation to the best of my memory, that was prior to any publication of these initials in this connection that I saw.

MR. SILVERMAN: I have no further questions.

MR. GRAY: Thank you very much.

(Witness excused.)

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MR. GRAY: Dr. Alvarez, do you wish to testify under oath? You are not required to do so.

DR. ALVAREZ: I would like to testify under oath, sir.

MR. GRAY: Would you give me your full name.

DR. ALVAREZ: Luis Walter Alvarez.

MR. GRAY: Would you raise your right hand? Luis Walter Alvarez, do you swear that the testimony you are to give the Board shall be the truth, the whole truth, and nothing but the truth, so help you God?

DR. ALVAREZ: I do.

MR. GRAY: Would you be seated, please.

Whereupon,

LUIS WALTER ALVAREZ

was called as a witness and, having been first duly sworn, was examined and testified as follows:

MR. GRAY: It is my duty to remind you of the so-called perjury statutes. Are you familiar with them?

THE WITNESS: In a broad way I am, yes.

DR. GRAY: May I ask that if in the course of your testimony here it becomes necessary for you to disclose or refer to restricted data you notify me in advance so that we may take the necessary steps in the interest of security.

Finally, I should say to you that we treat these proceedings as a confidential matter between the Atomic

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Energy Commission and its officials and witnesses, on the one hand, and Dr. Oppenheimer and his representatives on the other. The Commission will make no releases about these proceedings. On behalf of the Board, I express the hope that the witnesses will follow the same course.

THE WITNESS: Yes.

MR. GRAY: Mr. Robb, will you proceed.

MR. ROBB: Thank you.

#### DIRECT EXAMINATION

BY MR. ROBB:

Q Where do you live at present, Dr. Alvarez?

A I live at Berkeley, California.

Q What is your present occupation or position?

A I am Professor of Physics at the University of California.

Q How long have you been there?

A I have been at the University for the past 18 years with time off for war work.

Q Would you tell us something about your academic training and background, please, sir.

A I went to the University of Chicago both for my undergraduate training and also my graduate work in physics. In my graduate career, I was very fortunate in having as my research professor Dr. Arthur Compton who is perhaps best known to this Board as the Director of the war-time

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Metallurgical Laboratory. I worked with him in the field of cosmic rays. I took my doctor's degree in the field of optics.

Q In the field of what?

A Optics. After I left the University of Chicago with my Ph.D.

Q Did you publish any papers?

A I published two or three papers during that period, one of them as co-author with Dr. Compton.

Q Very well, go ahead.

A After I received my Ph.D. degree, I had the opportunity to go to the Radiation Laboratory at the University of California at Berkeley. This was probably the most important thing that happened to me in my scientific career. I became associated with Professor Lawrence and got into the field of nuclear physics, which I had not been in before.

For the first two years there in Berkeley, I was a research assistant in the laboratory and then I was asked to join the faculty of the University, first as an instructor and then working up through the ranks to the position of Professor of Physics, which I was given in 1946 just after the war. I have been Professor of Physics ever since.

Q You mentioned an interim period during the war.

Did that begin in about 1940?

A Yes, in November, 1940. The National Research

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Defense Council set up a laboratory at MIT to work on micro-wave radar. This was a field which had been developed by the British. We in this country had nothing in that field and so this laboratory was set up. I was one of the charter members.

Q With whom did you work there?

A The Director of the Laboratory was Dr. Lee DuBridge and there were many other nuclear physicists, roughly of my age, who worked in the laboratory.

Q How long did you stay there?

A I stayed there until the summer of 1943 at which time the main radar projects in which I was concerned were well along towards production or in production, and since my primary usefulness is not in the field of production but rather in research and development, I felt this was a natural time to leave and join the Manhattan District.

Q How did you happen to join the Manhattan District?

A I had had several offers from men in the District. I had at least one from Dr. Oppenheimer, I had one from Arthur Compton, and I had conversations with Professor Lawrence about joining his staff.

Q Do you recall any particular conversation you had with Dr. Oppenheimer at about that time with respect to whether or not you would join the Manhattan District?

A Sometime, I believe, in 1942 Dr. Oppenheimer asked

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me to come down to New York from Boston to talk with him about problems in the field of the Manhattan District. He was anxious that I join him in his work, and I remember a most interesting afternoon we spent together, during which time he told me for the first time the possibility of building a thermonuclear weapon.

Q What did he tell you about it?

A He told me in some detail of the scientific design, as he then envisaged it, and pointed out how it would be triggered with the explosion of an ordinary atomic bomb.

Q When you used the term thermonuclear weapon in that connection, to what sort of a weapon do you refer as to its power?

A As I remember the discussion, the weapon consisted solely of a deuterium reactor. Perhaps reactor is the wrong word there. I mean a mass of deuterium in which the reaction would take place under the heat of the reaction from the atomic bomb.

MR. ROLANDER: Do you have any problem on classification?

THE WITNESS: I do not think so. Pardon me for suggesting but I do not think it is classified.

BY MR. ROBB:

Q Would that have been a weapon of great power, in the megaton range?

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Q Yes. As Dr. Oppenheimer pointed out to me, there was no apparent limit to the magnitude of the explosion, whereas there appeared to be a limit to the magnitude of the explosion from what we now call an atomic bomb.

Q Did Dr. Oppenheimer in that discussion raise any question with you either about the feasibility or the morality of constructing such a weapon?

A He certainly raised no question about the morality of the thing. We had a technical discussion to which I contributed essentially nothing about the feasibility of it from the scientific point of view.

Q By the way, how long have you known Dr. Oppenheimer?

A I have known him for 13 years.

Q Are you here as a witness today because you want to be here or because you were asked to come?

A I certainly find it an unpleasant duty but I consider it to be a duty to be here. I was asked by General Nichols to come.

Q Following that discussion, did you go to Los Alamos?

A Not following that discussion, no.

Q I mean subsequently to it.

A Subsequently to it, I did go to Los Alamos, yes, but not as a result of that conversation, no.

Q How long afterwards was it?

A In the spring of 1943 I went to California in

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connection with the radar work and stopped at Berkeley, which was the first time I had been in Berkeley since 1940, and I spent a week with Professor Lawrence looking at the work that was going on at Berkeley in the isotope separation and asked Professor Lawrence whether it would not be a good idea to join. I was homesick for the kind of work in physics which was going on there and it had great appeal to me. I told Professor Lawrence that my usefulness at the Radiation Laboratory at MIT was almost coming to an end, and I could make a break at this point. He said he would be very happy to have me come and we made a tentative arrangement that I would come as soon as I got back from a trip to England which I had to make in the summer. Shortly after that, Dr. Bacher and Dr. Bainbridge, who were both at the Radiation Laboratory at that time, talked with me and told me that they thought it would be better for me to go to Los Alamos where they were going. They were both leaving the Radiation Laboratory at about this time and said if I were shifting to the atomic program, it would be better to go to Los Alamos where the problems were more difficult rather than to Berkeley where the problems were essentially solved. So, I agreed with them and made arrangements with Dr. Oppenheimer to go to Los Alamos. When I was in England, I received a wire from Dr. Oppenheimer asking me if I would for awhile work with Fermi at Chicago. Apparently Fermi had been trying to get

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his former student, Segre, who was then at Los Alamos to come to Chicago to help him, and the professor suggested I go instead of Segre because Segre was deep in business.

Q So you paused at Chicago?

A So I went to Chicago for six months and then proceeded to Los Alamos.

Q You arrived at Los Alamos approximately when?

A In the spring of 1944.

Q When you got to Los Alamos, will you tell us whether or not you found there constructed a liquid hydrogen plant.

A Yes, there was what I was told by its builder was the largest liquid hydrogen plant in the world. I was not at all surprised to find it there because I remembered Dr. Oppenheimer's great interest in the super weapon and knew that in order to make such a weapon work one would need large quantities of liquid deuterium, and this was a plant designed to liquify deuterium.

Q Was the liquid hydrogen plant a facility for making a fission weapon?

A I can think of no importance that it had in that connection.

Q How long did you stay at Los Alamos?

A I stayed there until approximately November of 1945.

Q What was your duty there?

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A When I first arrived, I was assigned as a sort of assistant to Dr. George Kistiakowsky who was in charge of the explosives work in connection with the implosion weapon.

My first technical job was to set up an experiment designed to test some important features of the implosion method. Then, shortly after that, some young men working with me and I got into the field of the detonating mechanism for the high explosive, and I think that this was my most important contribution at Los Alamos in the system of setting off the bomb. I do not believe it could have been done without this contribution.

Q Did there come a time when you made a rather long airplane flight?

A Yes, in the spring of 1945 when our detonator system was through its development and was to proceed to production it was turned over to Dr. Bainbridge to put into final form, and I was essentially out of a job at that point. I went to Dr. Oppenheimer and asked him what I should do now that this first job of mine was complete, and he said that I hoped he could get me a job which would get me overseas. He said that the laboratory wanted to have some method of testing the effectiveness of the bomb over enemy territory.

You see, normally a military weapon is tested on a proving ground. Many rounds are shot and one knows all its characteristics. But, in this particular case, the weapon was

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so expensive and there were so few of them that it seemed more reasonable to take the proving ground over the enemy territory to measure the blast wave, the pressure shock waves and thereby to measure the efficiency of the bomb.

So, I took that job on in the spring of 1945.

Q What did you do?

A A small group working with me designed equipment which could be fitted into a parachute-borne pressure gauge which could be dropped over the point where the bomb was released, and then these pressure gauges had radio transmitters which would send signals back to an airplane where they could be recorded on cathode ray oscilloscopes by photography, and when the films were analyzed later, one could measure the peak pressure in the shock-wave and by scaling laws in aerodynamics one could then compute the blast of the bomb.

Q Did you go to Japan?

A I spent about two-and-a-half months on Tinian Island and I rode in the observation plane during the raid on Hiroshima.

Q How far behind the plane that dropped the bomb were you?

A As I remember, we flew formation approximately a quarter-of-a-mile behind from the time we left Iwo Jima until we got back from the Japanese Coast on the way out.

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Q And you measured the effect of this explosion?

A Yes. I had to be adjusting the receiving apparatus for this instrumentation during our sharp turn after our bomb was dropped and our getaway run. We were essentially running away from the shock-wave with our airplane. So I was quite preoccupied during this time.

Q And thereafter you returned to Los Alamos?

A As soon as I got back from Tinian, I packed up my household goods as quickly as possible and moved my family back to Berkeley, yes. There was nothing essentially for me to do at Los Alamos. Both of my jobs were complete.

Q And you resumed your academic career?

A Yes, I did.

Q Did you continue any work as a consultant for the Atomic Energy Commission or the Radiation Laboratory?

A For the first two years after the war, I believe that most if not all of my salary was paid by the Atomic Energy Commission. Since then, one-third of it has been paid by the University of California for one-third teaching duties that I now exercise and the other two-thirds is paid by the Atomic Energy Commission through the University of California as a contractor.

Q Doctor, directing your attention to September 1949 when the Russians exploded their first atomic bomb, did that cause some concern on your part?

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A Yes; it caused a great deal of concern on my part. I tried to make up my mind what was the right thing to do. I had been spending four years doing basic research again. I think of it as sort of being recharged after five years of military development work. I had to take awhile to get back into the frame of mind of a practicing physicist. I had been concentrating my attention on that phase of my career and now, suddenly, it appeared that a crisis had arrived and perhaps I should get back into the field of atomic energy.

Q Why did you think a crisis had arrived?

A The Russians had exploded an atomic bomb, and I thought that your own program had not been going terribly fast. It certainly had not been going at nearly the rate it had during the war, but this is quite natural.

Q Did you discuss with any of your colleagues what ought to be done?

A Yes, I did. I saw Professor Lawrence the next day, and I told him that I thought we should look seriously into the business of constructing the super weapon which had, as far as I knew, been neglected in this four-year period. I had not followed the situation closely enough to be sure that it had been neglected but that was my impression.

Q Did you make any inquiry to see whether or not your feeling was correct as to whether it had been neglected?

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A Yes. Professor Lawrence and I got on the phone that afternoon and called Edward Teller at Los Alamos and asked him if we could come down and talk to him in the near future, and, as I remember, within a day or two, we took a plane to Los Alamos where we did talk to Dr. Teller and found out the present rather inadequate status of the super program.

Q Beginning at about that time and the next few weeks, Doctor, did you keep any notes in the form of a diary as to what your activities were in respect of a program for the development of the super bomb?

A Yes, I did. I would like to explain how I came to do that. I am not by nature a particularly methodical person, and I have never kept a diary except for a few months when I was in high school and one other rather important occasion, and that was when I was in charge of coordinating the activities during the first few months of the Radiation Laboratory at MIT. Dr. DuBridge put me in charge of meeting schedules and during that period I kept a detailed diary of everything that was going on in the laboratory, the state of development, so that I knew where things were.

At the end of the war, Dr. DuBridge told me that this turned out to be one of the most valuable documents they had because there was no other record of the early days of the laboratory. Later on, there were lots of notes, memoranda

g15

and reports, but in the first three months, the only record that was there was my diary of the laboratory. It turned out to be of great use in the patent field and it had a lot to do with clarifying the ideas of the person who wrote up the history. So, I was aware of the fact that I had done this once to good avail and it seemed now that a new program was about to be started and I might as well keep a diary again. That is my reason for doing it.

Q Do you have with you, Doctor, the original of that diary?

A Yes, I have my typewritten sheets here. They cover the period of about three weeks from the time the Russian bomb was dropped.

Q Typewritten or longhand?

A They are in longhand.

Q Doctor, the security officer using my jack-knife has removed two or three words from the typewritten copy.

MR. ROEB: Mr. Rolander, I wonder if you would hand that copy with those excisions which have to do with technical matters to our friends across the table.

MR. SILVERMAN: Can we take a minute to look at this? Are you going to question him about it?

MR. ROEB: Yes, right now.

MR. SILVERMAN: Let us take a minute or two to glance over it.

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MR. GRAY: All right.

MR. SILVERMAN: Unless you are going to read it into the record --

MR. ROBB: I am going to read it item by item and ask the witness to explain it.

BY MR. ROBB:

Q I would like to run this through with you and ask you to amplify.

"October 5, 1949. Latimer and I independently thought that the Russians could be working hard on the super and might get there ahead of us. The only thing to do seems to get there first - but hope that it will turn out to be impossible."

Would you explain to us what you meant by that "hope that it will turn out to be impossible."

A By that I meant that there might be some fundamental reason in the physics of the bomb that would prevent anyone from making it work just in the same sense that people have often said that you cannot make a thermonuclear weapon that will burn up the atmosphere and the ocean. I hoped that some such law would prevail and keep anyone from building it because then our stockpile of atomic weapons gave us the lead on the Russians.

Q You mean if it turned out that it would violate some law of nature the Russians could not make it either?

g17

A That is right, because if they did make it, that would give them a great jump ahead of us and essentially nullify our stockpile of atomic weapons.

DR. EVANS: The laws of thermodynamics might tell you it could not be done?

THE WITNESS: Yes, something of that sort.

BY MR. ROBB:

Q You thought you ought to find out.

A I said we can't trust this hope but let us find out.

Q Who is Latimer?

A He is Dean of Chemistry at the University of California.

Q Is there anything you have to add to that first item?

A No, I can't think of anything.

Q "October 6, 1954: Talked with E.O.L. about the project and he took it very seriously - in fact he had just come from a session with Latimer. We called up Teller at Los Alamos to find out how the theory had progressed in the last four years. Since E.O.L. and I were to leave tomorrow for Washington, we decided to go a day earlier and stop in for a day at Los Alamos to talk with Teller. Left San Francisco at 7:30 p.m."

Who was E.O.L.?

A E.O.L. is the director of the Radiation Laboratory

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at the University of California, Professor Ernest O. Lawrence.

Q Have you any recollection of what Dr. Teller told you in the call that you mentioned about how the theory had progressed in the last four years?

A You mean during the visit, not during the telephone call? He obviously could not tell us on the telephone.

Q I will get to October 7. Is there anything further to add to that item, October 6?

A No.

Q "October 7, 1949: Arrived Albuquerque 3:00 A.M. and spent rest of night in Hilton Hotel. Left by Carco plane for Los Alamos at 10:00 A.M. and spent rest of day talking to Teller, Gamov, Manley and Ulam. They give project good chance if there is plenty of tritium available. There must be a lot of machine calculations done to check the hydrodynamics, and Princeton and L.A. are getting their machines ready. We went back to Albuquerque with Teller & talked until bed time. We agreed that a conference should be called at L.A. next month to see what should be done. L.A. had been talking about one for early next year. - We can't wait too long. Teller brought up D<sub>2</sub>O pile as easy way to get excess neutrons. E.O.L. & I said we would get going on that at once. Left Albq. at 3:30 A.M."

In your talk with Teller, Dr. Manley, Gamov and Ulam, did you ascertain from them how much work had been done

g19

on thermonuclear?

A Yes. As far as I can recall, Dr. Teller told us that he had been working on the program essentially since the end of the war. Dr. Gamov had been there for approximately a year on leave from George Washington University. Dr. Ulam had done some work on it and there had been a modest program of machine calculations to check hydrodynamics. But that is essentially all. The program had essentially not be of any magnitude worthy of the name.

Q Beg pardon?

A The program essentially did not exist except for Teller.

Q You mention "must be a lot of machine calculations done to check the hydrodynamics, and Princeton and L.A. are getting their machines ready."

What did you mean by that?

A I referred there to the so-called Maniac, an electronic calculating machine invented by Dr. Von Neumann of the Institute of Advanced Study which was being built at Princeton and a copy being built at Los Alamos to do these terribly involved calculations.

Q Was that the machine at Princeton under Dr. Oppenheimer's auspices?

A I do not know. I know Dr. VonNeumann is a member of the Institute and, therefore, is under Dr. Oppenheimer, but I

g20

do not know whether the machine was the property of the Institute or the property of the University of Princeton.

Q Did you have any reason to believe at that time that Dr. Oppenheimer would not be ready to go ahead with this program?

A Of course, not. The most enthusiastic person I had ever met on the program of the super weapon was Dr. Oppenheimer.

Q Is there anything further to add in connection with this October 7 entry? L.A., I assume, means Los Alamos.

A That is right.

Q Los Alamos?

A It means Los Alamos. I would like to say something about this program, about the  $D_2O$  pile. This is a heavy water reactor and it has virtue because in a heavy water reactor there are lots of free neutrons available that are not available in the <sup>gravity</sup> gravity moderated reactors which the Commission then owned almost entirely. As Teller pointed out, tritium was the critical material for the production of hydrogen bombs. To produce tritium, one needs excess neutrons and, therefore, Professor Lawrence and I, who were looking for something to do to help the program along, said we would start a program to build such piles for the Commission.

Q "October 8, 1949: Arrived Washington after lunch. Went to AEC & talked with Pitzer, Gen. McCormack, Latimer &

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Paul Fine. Told them what we planned to do & got good response.

"Had dinner with Alfred & Marnette Loomis at Carleton Hotel."

Pitzer, who is he?

A He is Dean Kenneth Pitzer who was then Director of Research of the Atomic Energy Commission.

Q General McCormack, who was he?

A I believe he was head of the Military Liaison Committee.

Q Latimer is the same Latimer?

A Yes.

Q And Paul Fine, who was he?

A Paul Fine was, I would guess, a sort of administrative assistant to Dr. Pitzer. I might say that I was somewhat surprised at Dr. Fine's reaction, because he was the first person that I had met since the Russian bomb went off who was not enthusiastic about the problem of building the super weapon. I attributed this to the fact that he had all during the war and was still then sort of an administrative assistant and I put him down as a person with essentially no imagination and discounted this.

DR. EVANS: He was not enthusiastic?

THE WITNESS: No. He was not, but knowing his nature, I was not upset by this.

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BY MR. ROBB:

Q "Told them what we planned to do." What was that?

A That we planned to go into a vigorous program of building heavy water moderated supplies to supply free neutrons to make tritium.

Q The item about dinner does not refer to the thermo-nuclear program, I assume.

A No.

Q "October 9, 1949 -- Sunday: Had breakfast with Mr. LeBaron - Dep. Sec. of Defense for Atomic Affairs. Told him of our plans. Went to R. W. panel meeting for most of the day. Program approved but probably nothing will happen. 'Gram of neutrons' recommended - that ties in well with our program. (At Noon, E.O.L. heard he was a father for the 6th time). Spent afternoon & evening with Mr. & Mrs. LeBaron & talked with Mr. about several phases of the situation."

"Told him of our plans"; are those the same plans you referred to?

A The plans to build a heavy water reactor.

Q "Went to RW panel meeting." What does that mean?

A That was an ad hoc panel on radiological warfare. This was a subject which was very close to Professor Lawrence's heart. He had made serious proposals in the Defense Department that warfare could be waged effectively by the use of radioactive products. I was not a member of the RW Panel but

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Professor Lawrence asked me to come along since I was part-way there after my trip to Los Alamos.

Q "Program approved but probably nothing will happen."  
What did you mean by that?

A People agreed that the idea of radiological warfare was attractive in many ways but again the country had no supply of free neutrons and in order to make these radioactive agents at least a gram of free neutrons per day would be needed. The military could hardly become enthusiastic about a program that could not be initiated unless piles of this type had been built. We felt they appreciated the usefulness of this method of warfare but thought it was so far in the future as not to cause them any immediate concern.

Q "Gram of neutrons recommended." Is there any comment to make about that?

A No. The panel said that it believed the Atomic Energy Commission should initiate a program to provide this gram of neutrons and when I say this fits in well with our program, our program to build heavy water piles would provide we hoped considerably more than a gram of neutrons. Therefore, we would have available either tritium or radioactive warfare agents.

Q What was the attitude of Mr. LeBaron with respect to your proposals?

A He was, of course, quite enthusiastic about it.

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Q I guess there is nothing further to add about that item, is there?

A No.

Q "October 10, 1949: Saw Ralph Johnson at AEC & made arrangements to go to Chalk River to see their pile. Talked with General McCormack about plans. Went to Capitol & had lunch with Sen. McMahon & Rep. Carl Hinshaw. Told them of our plans and got good reactions. Stressed heed for cooperation between British, Canadians and ourselves. They said they would be in Berkeley within 10 days. Also said to call them if anything held up our plans. Back to AEC - saw Lilienthal. He was only lukewarm to proposition. Saw all four other Commissioners, who seemed to like what we were setting out to do. They weren't too happy about our going to Chalk River but finally agreed to give us their blessing, & make it official. We had planned only a personal visit to Bernard Kinsey. On way to plane stopped in to see RCA color television demonstration."

Who was Ralph Johnson?

A He was one of the administrative people at the AEC. I do not remember him in detail.

Q What was the pile at Chalk River?

A Chalk River is the Canadian atomic energy establishment where they had built the outstanding heavy water pile. There was only one in this country; it was a very low power

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pile at the Argonne Laboratory. The Canadian one was the one which we planned to use as a prototype of the ones which we were contemplating building, and we thought as long as we were in the East we should have a look at this thing. We had only seen pictures and heard descriptions of it.

Q "Talked with General McCormack about plans." He is the same one you mentioned before?

A Yes.

Q "Went to Capitol and had lunch with Sen. McMahon and Rep. Carl Hinsaw." Would you tell us about that.

A Yes, I would like to do that because various members of the scientific fraternity at various times told me that Professor Lawrence and I used undue influence by going to see Senator McMahon and various congressmen to try to influence them to get the hydrogen bomb program started. What actually happened was that about a month before this, and before the Russian explosion, Carl Hinshaw who is the leading member of congress in the field of aviation and air navigation and things of that sort, called at the laboratory and he and I had a very long discussion on the present state of the air navigational art in this country. This is a field in which I got some competence during the war. Mr. Hinshaw found that my views on the subject were somewhat different than the official CAA views and asked me if I would write him a detailed letter explaining my views. I prepared a 35-page typewritten

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document with lots of diagrams expressly for his personal use, and I had this with me when I arrived in Washington. So, I called up Congressman Hinshaw and told him that I had the document and I would like to bring it to him at the Capitol. I mentioned that Professor Lawrence and I were there together. As soon as he heard that, he said, "Please hold down and I will call you back in about five minutes." He called back and said, "I have just spoken with Senator McMahon, who would like you and Professor Lawrence to have lunch with him at his chambers in the Capitol today if you can do so." And that is why we had our conference with Senator McMahon and Congressman Hinshaw.

Q The next sentence, "Told them of our plans and got good reactions." What can you tell us about that?

A Both of these gentlemen told us that they thought we were doing the right thing. They were very happy to see some action in the field of thermonuclear weapons. They both expressed concern about the fact that so little was going on in the AEC in this field. They said, "We hope you can get something going."

Q I guess the next sentence or two needs no explanation unless you think they do, "Stressed need for cooperation between British, Canadians and ourselves."

A By that I meant that the Canadians were far ahead of us in the heavy water pile technology and that if we were

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to be able to move rapidly, we would need cooperation of the Canadians.

Q "They said they would be in Berkeley within 10 days. Also said to call them if anything held up our plans."

Was there any discussion about what might hold up your plans?

A I can't remember anything of that nature.

Q "Back to AEC - saw Lilienthal. He was only lukewarm to proposition."

Have you any added comment to make about that?

A I must confess that I was somewhat shocked about his behavior. He did not even seem to want to talk about the program. He turned his chair around and looked out the window and indicated that he did not want to even discuss the matter. He did not like the idea of thermonuclear weapons and we could hardly get into conversation with him on the subject.

Q "Saw all four other Commissioners, who seemed to like what we were setting out to do. They weren't too happy about our going to Chalk River but finally agreed to give us their blessing, & make it official."

Is there any comment on that?

A I do not know the reasons for them not wanting us to go, but I assume it had something to do with the political situation, and I have nothing to add there.

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Q "We had planned only a personal visit to Bernard Kinsey." Who is he?

A Dr. Bernard Kinsey is one of the chief physicists at the Chalk River Laboratory, and he was a member of the Radiation Laboratory in 1953 and 1936 and, therefore, a personal friend of both Professor Lawrence and me.

Q I guess the RCA color television demonstration is immaterial to this.

A To this, yes, sir.

Q "October 11, 1949: In New York, found we were unable to get seats to Ottawa. Went to see Rabi and found him very happy at our plans. He is worried, too. I took plane home and arrived in Berkeley at 11:00 P.M."

What can you tell us about your conversation with Dr. Rabi?

A I think I can sum it up best by trying to paraphrase what Dr. Rabi said. It was somewhat complimentary and I hope you excuse it if I say it. What he said was essentially that, "It is certainly good to see the first team back in." He said, "You fellows have been playing with your cyclotron and nuclei for four years and it is certainly time you got back to work, and I am awfully happy to see you back in the business."

Q What was he worried about?

A I can't remember that he was worried about anything.

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Q You said that he was worried, too.

A He was worried about the Russian explosion and the fact that our lead in the field of atomic energy had apparently been cut. He agreed with us that the hydrogen bomb program was a very good program and he was happy we were doing something to get it reactivated.

Q "October 12, 1949: Told some of the men at the lab of our trip. Don Cooksey, Brobeck, McMillan, Serber, Seaborg, Thornton, Gordon, Fidler. All said they would join new project."

By the laboratory, you meant what laboratory?

A I mean the top man at the Radiation Laboratory at the University of California.

Q Who is Don Cooksey?

A Associate Director of the Laboratory.

Q Brobeck?

A Assistant Director and Chief Engineer.

Q McMillan?

A Professor of Physics and Nobel prize winner in physics.

Q Serber?

A Professor of Theoretical Physics at the University.

Q Seaborg?

A Professor of Chemistry, also a Nobel prize winner.

Q Was he a member at that time of the GAC?

g30

A Yes, he was.

Q Thornton?

A Robert Thornton, Professor of Physics and in charge of the 184-inch cyclotron.

Q Gordon?

A He was Brodeck's first assistant in the Engineering Department.

Q Fidler?

A He was, I believe, at that time AEC representative in the Bay Area.

Q "All said they would join new project."

A That means the project of building heavy water piles. I might point out that this meant quite a change for all of them. Mr. Brobeck was at that time busily engaged in designing the bevatron which recently ran for the first time and everyone else was busily engaged on a program that he would much rather do than build heavy water piles but all agreed that it was the right thing to do at that time.

Q Project for building heavy water piles was for the purpose of developing the thermonuclear; is that right?

A It was for the purpose of supplying tritium for tests of the thermonuclear weapon, yes, sir.

END AJG  
Bowls

bowflsg

Q Is there anything else to add about that entry?

A I can't think of any.

Q "October 13: E.O.L. returned and we had long conference about plans. Discussed site and technical plans."

E.O.L. I assume is Dr. Lawrence?

A That is right.

Q Site for what?

A That was the site for the heavy water piles. The main requirement there is lots of cooling water.

Q "October 14: Larry Hafstad, Head of Reactor Division of AEC was present - we had called him from Washington. Dave Griggs and Bob Christie were present also. Decided sea water cooling O.K. and decided put pile on ocean, north of S.F. and south of Tomales Bay. Hafstad will be in Chicago on Monday and will send out some pile experts as soon as possible next week. Decided to build pile in units, to give chance for rapid change. Probably H<sub>2</sub>O cooling O.K. as at Chalk River. Took Hafstad to airport and went to Woodside to see Mr. Neylon. Home at Midnight."

How did you happen to call Mr. Hafstad, or Dr. Hafstad?

A Dr. Hafstad was the Director of the Reactor Division of the AEC, and we were people who wanted to build piles but who had no technical qualification in that field. We had never been in the reactor business. We thought the one thing we could supply was the ability to build large scale

apparatus and build it fast. This is what Professor Lawrence's laboratory did during the war, and the instance of the Oak Ridge isotope separation plant.

Q What was the status at that time of the reactor program so far as you knew?

A I thought that it was in the doldrums. I don't know precisely how many piles had been built since the war. These records are available, but essentially no new additional piles had been built for several years after the war as contrasted with the fact that during the war there was the original Chicago pile, the Oak Ridge pile of a different design, the Hanford piles, water-cooled ~~gravity~~ moderated piles, and the heavy water pile at Chicago, four different kinds of piles had been built in a very short space of time, and in several years after the war no pile had been built.

Q "Dave Griggs and Bob Christie were present also." Who was Dave Griggs?

A Dave Griggs was the gentleman who just came out of this room. He was professor of geophysics of the University of California at Los Angeles.

Q Christie?

A Bob Christie is professor of physics at California Institute of Technology, and is the man who did the theoretical design on the Nagasaki bomb.

Q What was their function at this meeting?

A Dave Griggs was there because we hoped that he would want to join us. He is an enthusiastic person who likes to get things done in a hurry. He was sympathetic to our point of view that such piles should be built. Bob Christie was there because he was an expert in the field of neutron diffusion and pile technology. He designed the so-called water boiler at Los Alamos.

Q "Decided sea water cooling O.K. and decided to put pile on ocean, north of S.F." I guess that means San Francisco?

A Yes.

Q "And south of Tomales Bay." That is near San Francisco?

A No.

Q Have you anything to add to that?

A No, it was not a good decision and we changed it in a couple of days.

Q "Hafstad will be in Chicago on Monday and will send out some pile experts as soon as possible next week." Am I to gather with that that Dr. Hafstad was with you?

A It certainly seemed that way to us. He came out himself and he said he would send people who were competent in the field of pile design to help us. One of his great difficulties, as I see it, was that piles were not getting built because apparently people wanted to design the perfect

pile and build the perfect pile and not take it in easy steps. We on the other hand were a group who said we don't care about the niceties of the thing; we are not experts. We want to get some piles built, and we will build them fast. It was a different approach than had been used before.

Q You mean you wanted to find out and didn't think you had the chronometer to do it.

A That is precisely it.

Q "Decided to build pile in units, to give chance for rapid change." What do you mean by that "give chance for rapid change"?

A I believe Professor Lawrence thought we should build a very large concrete shield with a number of tanks in it to hold heavy water, and to provide facility for changing the geometrical arrangement. This philosophy is now incorporated in the so-called swimming pool reactors where one can make changes easily whereas the first piles were built so that no fundamental changes could be made. The geometry was set in the design.

Q "Probably H<sub>2</sub>O cooling O.K. as at Chalk River." I assume that speaks for itself.

A Yes, that means you can cool the pile with ordinary water rather than with heavy water. The Chicago pile was cooled with heavy water. The Chalk River was moderated with heavy water and cooled with light water.

Q "Took Hafstad to airport and went to Woodside to see Mr. Neylon."

A Mr. Neylon is a member of the Board of Regents of the University of California, and at that time was the Chairman of the Radiation Laboratory Committee of the Regents.

Q What was your purpose in seeing him?

A Professor Lawrence wanted to tell him that the Radiation Laboratory was thinking of embarking on a large scale construction program, and he thought it right that Mr. Neylon should know that such a thing was in the wind.

Q Did he approve?

A Yes, he approved. We didn't tell him anything about tritium. I don't know whether he was cleared.

Professor Lawrence said this was an important thing from the national standpoint, and Mr. Neylon agreed it was the right thing to do.

Q "October 15: Cal beat USC! Parties at Jenkins and Serber. Long talk with Dave Griggs at latter. He thinks we are doing the right thing, but isn't ready to join yet."

Who is Jenkins that you mention?

A He was professor of physics at the University of California.

Q And Serber?

A I have already mentioned him.

Q And Dave Griggs is the same Dave Griggs you mentioned?

A That is right. I would like to point out here that the reason that we didn't try to get Dave Griggs to work with us is that he alone of all the people in the field of radar had stayed on in war work for two years after the war. He was through all in setting up the Rand project at Santa Monica which is doing such a fine job for the Air Force. I had once told Griggs privately that if there was another war he had two years of credit in my book, that he didn't have to come in for two years, because he had stuck out the last war for two years overtime. So we didn't try to ask him to join.

Q "October 16: Sunday - Rest. Drew Pearson's first mention of 'H-bomb'!" I guess there is no need for explanation of that.

"October 17. Monday: Talked with Hafstad, Zinn and Pitzer this afternoon on phone. Things are going as well as possible. Zinn will send out someone toward the end of this week. He hopes to be here after the Oak Ridge info. meeting, which starts in about a week. He says he has ideas about how to do the job, and is not sure we should just start off copying Chalk River. Talked to Teller at Los Alamos. Notes on all conversations in file."

Start with that last item "Notes on all conversations in file." Are those notes still available, or have you destroyed them?

A I think I have destroyed them. I could not find them the last time I looked.

Q Coming back to the beginning you have already stated who Hafstad is. Who is Zinn?

A Walter Zinn, Director of the Argonne Laboratory and probably the country's leading technical man in the design of reactors of all sorts.

Q Pitzer?

A Director of Research at AEC.

Q What was the subject of that conversation?

A I can only tell by refreshing my memory in looking at the notes.

C Yes, sir.

A I gather that Zinn thought that we should build one of the more exotic types of piles which he had under construction. This is a natural reaction from a man in his position who is concerned with the proper design of piles. We on the other hand were not concerned with that at all. We wanted to build some piles, and we knew that the Chalk River design was sound, and we thought we would go ahead and build those.

Was there any question that Dr. Hafstad and Dr. Zinn and Dr. Pitzer were behind you?

A I didn't think there was, no.

Q "Talked to Teller at Los Alamos." Do you recall

anything about that?

A No, I don't.

Q The next item, "October 18: E.O.L. said I had been elected to carry out our program. He looked at sites on Sunday and Monday, and favors some land east of Benicia fronting on Suisun Bay. He says I will be director of the Suisun Laboratory. I am therefore going on almost full time as director of a non-existent laboratory on an unauthorized program. Cleared out my desk in the linac building and had my file moved down to the Director's Office in the new building. Decided to talk with L. A. DuBridge and R.F. Bacher tomorrow in Pasadena."

Is there any comment to make on that item, Doctor?

A This day was the day that I felt I stopped being a physicist after four years, and went back to war work. I moved my office out of my research building and became an office worker.

Q Linac.

A Linear accelerator. That is the abbreviation.

Q October 19 --

MR. GRAY: Are you moving to another date? I just want to ask for clarification, you referred to moving into the Director's Office in the new building.

THE WITNESS: Yes.

MR. GRAY: Was there an existent place known as

the Suisan Laboratory then?

THE WITNESS: No. Suisan Bay is the north stem of San Francisco Bay, and we had picked out a tentative site on the north shore of that bay where it was far enough from inhabited buildings that we thought it would be safe to put our piles. We wanted to have them close enough to the lab so we could go there very often.

BY MR. ROBB:

Q What was the new building?

A The new building was the building which had been erected by the Atomic Energy Commission on the Radiation Laboratory land in the past few months and was just being occupied as a laboratory, and administrative building at that time.

Q You mean it was new as compared to other buildings which had been built previously.

A Yes, people were just moving in, and I moved into the Director's Office.

Q "October 19: Spent all day in Pasadena discussing project with LAD and RFB. They had no objections and I felt they were impressed with the seriousness of the situation, and thought we were doing the right thing."

Who were LAD and RFB?

A LAD is Dr. E. A. DuBridge, who was then and is now president of the California Institute of Technology. He was

also a member of the General Advisory Commission, and had been my boss at the Radiation Laboratory at MIT for three years. I had talked with Professor Lawrence a great deal, and I wanted to check up with my other wartime boss to get his ideas and also to see whether he thought that this program we had in mind was something that would be attractive to the General Advisory Commission.

Q How well did you know Dr. DuBridge?

A I would say that there are very few people that I know better. One of the reasons for this is that Dr. DuBridge and I for three years during the war were members of a three man driving club to conserve gasoline. We drove to work every morning and drove back home again every night for three years, and I think one gets to know a person very well under those circumstances.

Besides this, of course, we had our association as Director and member of the laboratory staff.

Q RFB, who was he?

A He is Professor Robert Bacher, who at that time was professor of physics at Cal Tech, and who had previously been a member of the Atomic Energy Commission, one of the original Commissioners.

Q How well did you know him?

A I knew him exceedingly well. We had worked together for three years at the Radiation Laboratory at MIT. We had worked

together at Los Alamos. We were close personal friends. Our wives were good friends. Whenever I went to Cal Tech I always stayed at the Bacher home, and whenever he came to Berkeley he stayed in our guest room. We were very close friends.

Q Without going into great detail, did you explain to these gentlemen what your plans were?

A Yes, I explained in considerable detail.

Q Was there any doubt in your mind that they approved?

A No, there was absolutely no doubt in my mind that they approved. I know them so well that we had a real meeting of the minds. They expressed their interest and approval in many ways and I am sure that they thought it was a fine idea.

Q "October 20. George Weil and Henry Ott, from the AEC Reactor Division arrived. Spent most of the day with them. Inspected the Suisun sight for the first time -- it looks very attractive. George had to leave tonight as he is due in London on Monday. Ott is staying for a few days to help out on pile design."

These two men came from where, Washington?

A Washington.

Q And were sent by whom?

A Mr. Hafstad, I assume.

Q In other words, at that time, October 20, you were really getting moving?

A We were getting all the cooperation we could ask for.

Q Is there anything further to add to that entry?

A I don't think so.

Q "October 21 - Friday: Spent most of the day reading reports on piles, and relearning elementary pile theory."

"October 22:-Saturday: More report reading."

Is there anything to add to those two items?

A Just the fact that for four years or five years I had not thought anything about piles or reactors. I had worked with Fermi at Chicago in 1943, and had some acquaintance with piles, and their theory, but I had forgotten the essential points.

C "October 24 - Monday: Made several telephone calls. Hafstad (at Oak Ridge Conference) says nothing has happened in the last week about our program. This is very disappointing in view of Hafstad's enthusiasm last week when he left. Talked to Pitzer -- also at Oak Ridge -- for the first time in a week. He had just come from afternoon meeting with Zinn - Weinberg, etc. to discuss our program. Apparently Zinn has thrown a lot of doubts into peoples' minds about the wisdom of our program. Have sensed this from conversations last week with Zinn and Hafstad. Pitzer wants us to present our plans at GAC meeting this weekend in Washington. Agrees with me that had better be done in person than by letter.

"Had lunch with E.O.L. and Mr. Neylon in S.F. Mr. N. said things were moving well, as witness unfreezing of AEC

funds by Congress. Advised us essentially to keep our shirts on.

"Talked with Teller, who had just met Fermi at airport in Chicago. No reaction from Fermi, as he was tired from his long trip from Italy. Said he felt he could count on Bethe. Felt Oppie was luke warm to our project and Conant was definitely opposed. Said Los Alamos was trying to set up conference for Nov. 7.

"E.O.L. talked to Senator Knowland - has date for Senator to come up the hill on Friday at 11 AM."

Coming back to the first of that entry for October 24, would you explain to us a little bit the entry about Mr. Hafstad's apparent change in attitude? What did you mean by that?

A I think it is clear that I concluded from what he said that he was no longer as enthusiastic as he had been. The fact that Zinn was thinking that perhaps we were doing the wrong thing, I think is a very natural reaction on his part. After all, he had been designing piles for four years since the end of the war, and he had seen none of these being reproduced in hardware. Now if a lot of money was to be made available to build piles, I can appreciate his point of view that he would like to see some of his ideas get into the piles, and not have his merely copy what he probably considered to be an outmoded design of the Canadians.

Q You mentioned Weinberg here. Which Weinberg is this?

A This is Alvin Weinberg, Director of the Oak Ridge Laboratory.

Q It is not Joe?

A Definitely not Joe.

Q Pitzer wants us to present our plans at GAC meeting this weekend in Washington." Agrees with me that had better be done in person than by letter."

Who was the "us" that he spoke of?

A I assume he meant Professor Lawrence, Mr. Brobeck and myself.

Q Did you at or about that time start to get ready to go to Washington to present your plans?

A Yes. Mr. Reynolds, who is our business manager, worked day and night preparing cost estimates for the project and Mr. Brobeck was busy on the design features of it, and we had a presentation to make, and we were getting prepared for it.

Q "Had lunch with E.O.L. and Mr. Neylon in S.F. Mr. N. said things were moving well, as witness unfreezing of AEC funds by Congress."

Does that require any amplification?

A Perhaps it does. As I recall, Professor Lawrence and I were both getting worried about the fact that there seemed to be a lack of enthusiasm suddenly pervading the scene and we were worried about this, whether it was a change in climate

in Washington or what was happening, so we went to a man with some experience in the political field, and asked him whether he thought that this was bad enough that we should be worried about it, and he reassured us and said no, things are moving well. Congress is showing its enthusiasm for an expanded AEC program by unfreezing some funds. He said "Keep your shirts on, boys, it is going to be all right."

Q You talked with Teller and so forth. Where did you talk with him?

A I can't recall.

Q Was it by phone or in person?

A I suppose it was by phone, but I really could not be sure. I gather from the entries on this Monday that I was in Berkeley, and I don't recall that Teller came to Berkeley in that period, so I assume it was by phone.

Q Do you recall whether you knew why he thought he could count on Bethe?

A I assume that he had had conversations with Bethe and Bethe agreed that the Super program should be reactivated. I can't give any definite testimony because he just told me that.

Q The next item: "Felt Oppie was luke warm to our project and Conant was definitely opposed."

Does that require any amplification?

A This is quoting Dr. Teller if I read my notes correctly. I had no conversations with Dr. Oppenheimer on

this subject, and I had no reason to feel that he would not be enthusiastic about it. In fact, I assumed he was enthusiastic as were all the other people with whom I talked.

Q "Said Los Alamos was trying to set up conferences for Nov. 7." Conferences for what?

A This was the conference that I believe was referred to in one of the first day's notes. Dr. Teller said he thought it would be an excellent idea to bring together all of the men who had thought about problems of the Super during the war, together with new theoretical physicists, young ones who had appeared on the scene since the war, and to discuss the present state of the art, to see what new things had come in, just a sort of reorientation conference, I think.

Q Did that conference come off?

A That conference as far as I know never did come off.

Q "E.O.L. talked to Senator Knowland - has date for Senator to come up the hill on Friday at 11 AM."

A This is up the Berkeley hill to the Radiation Laboratory. Senator Knowland is an alumnus of the University of California and Professor Lawrence met him at the Faculty Club one day and invited him to come up the hill. He was there on other business.

Q "October 25, 1949 - Tuesday: Decided to go to Chicago - Argonne - with Brobeck and Gordon, leaving tomorrow. Should get to Argonne Thursday morning when Zinn returns from

Oak Ridge. After two days there should go to Washington for GAC meeting. Talked to Serber about GAC meeting. He volunteered to see Oppie before the meeting. Called Oppie who said he had hoped to be able to talk to him. Therefore Serber is going with us tomorrow and will continue to Princeton and have a day with Oppie, before he leaves for meeting in Washington.

"Reynolds working on cost figures for presentation to GAC. My thinking about pile is along direction of fewer larger fuel rods. Called Gale Young at Nuclear Development Associates in New York City. He was out of town. We would like to get him as a consultant on our project."

MR. SILVERMAN: I think you read "we".

MR. ROBB: I think that is what it is. Will you look at the original and see whether it would be "we" or "he"?

THE WITNESS: In the case of "we would like to get him", it is "we".

MR. SILVERMAN: It is evidently a typographical error.

MR. ROBB: Yes.

BY MR. ROBB:

Q "Chicago meeting --- then on to Washington -- Talked with all GAC and most of AEC Commissioners. Particularly interesting talk with Oppie just after he briefed Bradbury and Norstad at GAC meeting. Pretty foggy thinking."

That is the last entry in your diary?

A That is right, because after that the project was dead.

Q Going back to the beginning of that entry, which apparently covered several days --

A Yes. This I wrote up after I got back from the trip to Washington.

Q What was your purpose in going to Chicago to the Argonne Laboratory?

A As I said earlier, Dr. Zinn is the leading designer of piles in the country and they were most cooperative and said they would supply us with any information they had available that would help us in modernizing slightly the Chalk River pile.

Q Brobeck, I believe you identified.

A Brobeck is the chief engineer of the laboratory and Gordon his assistant went along with me to communicate and talk with the pile designers at the Argonne.

Q In other words, you did go to Chicago.

A Yes, sir.

Q As you planned.

A Yes, sir.

Q Talked to Serber about GAC meeting. Where did that conversation take place?

A That took place in Berkeley. Could I expand a bit on that?

Q Would you do that, please, sir?

A Yes. As I said earlier, Dr. Serber was one of the

group that had expressed a willingness to work hard on the program of building heavy water piles. He was to be our chief theoretical advisor, and we were counting on his help. There is one thing in here which is not written down, and I think I am correct in remembering it this way. I believe I called Dr. Oppenheimer from Berkeley and asked him if I could see him before the General Advisory Commission meeting to talk over our plans. You will note that in this whole diary there is no mention of any talks between me and Dr. Oppenheimer. I was anxious in view of the fact that I had heard that he was luke warm to the program to have a chance to brief him on the program and if possible to get a little enthusiasm on his part.

As I remember it, Dr. Oppenheimer said he would be very glad to see me in Princeton, and in fact invited me to stay overnight in their guest room.

Then it turned out that our time in Chicago was limited and I thought I had better stay and talk pile design because I had spoken with Dr. Serber about this meeting with Oppenheimer and Serber said he would be glad to present our case to Dr. Oppenheimer and try to convince him of its worthwhileness. So essentially I deputized Dr. Serber to transmit my point of view to Dr. Oppenheimer. In fact, I was glad to do so, because Dr. Serber and Dr. Oppenheimer are somewhat closer friends than Dr. Oppenheimer and I. They have been

closer personally. Dr. Oppenheimer and I were certainly excellent friends at the time and Dr. Serber I thought could perhaps do a little better job than I could. I thought and felt strongly that he would present the point of view which was the laboratory point of view at that time, namely, that this was a very worthwhile program and we should get it going.

Q You had no doubt at all about Dr. Serber's enthusiasm for your program?

A Absolutely none.

Q Do you know whether Dr. Serber did go to Princeton to see Dr. Oppenheimer?

A Yes, he did.

Q We will come to that a little later.

"Reynolds working on cost figures for presentation to GAC." You have already told us of that.

A Yes.

Q "Called Gale Young at Nuclear Development Associates." Who was he?

A Gale Young was a very competent theoretical physicist in the field of pile design. He and I had been classmates and he was one of the leading men at the Metallurgical Laboratory in Chicago during the war, on the design of the Hanford reactors. He had for a while after the war worked for the Atomic Energy Commission, and then he and a group of his friends set up a company to do consulting work

on pile design. Dr. Lawrence and I felt that if we were to make too much use of the Argonne Laboratory and the Oak Ridge Laboratory in the design of our piles that people could criticize us for taking effort away from those laboratories which were designing piles, and we thought it would be much better if we could get a company which was set up to advise people, and was interested in making money by doing this, and if we could get them as essentially auxiliary to our design department.

Q The next item: The Chicago meeting you have already told us about that.

A Yes. This was purely a technical meeting in which I was pretty much in the background. It was an engineering meeting to a large extent.

Q And then on to Washington. "Talked with all of GAC and most of AEC Commissioners." What can you tell us about that?

MR. GARRISON: Could we ask the date of that?

THE WITNESS: The date of that meeting is in the record some place. I don't happen to have it down. I believe we spent two days in Chicago; if I were to hazard a guess it would be the 27th plus or minus a day.

BY MR. ROBB:

Q Of October 1949?

A Yes.

Q Will you tell us about your talking with GAC and most AEC Commissioners?

A Since I have no notes, I can't remember any details of those conversations.

Q You did see them all and did present your program?

A Yes, before the meeting. This is normal procedure before you go into a meeting with a formal plan to talk it over formally to get peoples' views and to clarify any misunderstandings they might have about it.

Q You mention here "Particularly interesting talk with Oppie just after he briefed Bradbury and Norstad at GAC meeting." Were you at that GAC meeting?

A No, I had no reason to be at that GAC meeting. That was a closed meeting if I remember correctly, at which time the Commissioners met with the GAC, and the top military men in the country.

Q Where were you?

A I was standing inside the main entrance to the Atomic Energy Commission building and I watched my friends go upstairs, and I saw the famous military men whom I recognized from their pictures follow along. The meeting lasted for some while. I watched the people come back out again and in a few minutes Dr. Oppenheimer came along and invited Dr. Serber and I, who were standing together outside the building, to have lunch with him.

Q Did you have lunch with him?

A Yes. We went to a small restaurant in the immediate neighborhood of the Commission Building, and that was the first occasion that Dr. Oppenheimer told me of his views on the building of the hydrogen bomb.

Q What did he tell you?

A He said that he did not think the United States should build the hydrogen bomb, and the main reason that he gave for this if my memory serves me correctly, and I think it does, was that if we built a hydrogen bomb, then the Russians would build a hydrogen bomb, whereas if we did not build a hydrogen bomb, then the Russians would not build a hydrogen bomb.

I found this such an odd point of view that I don't understand it to this day. I told Dr. Oppenheimer that he might find that a reassuring point of view, but I didn't think that very many people in the country would accept that point of view.

Q Was Dr. Serber present?

A Dr. Serber was present and agreed with Dr. Oppenheimer and this surprised me greatly in view of the fact that two or three days before he had gone to see Dr. Oppenheimer telling me that he would try to convert Dr. Oppenheimer's luke warmness into some enthusiasm for our project.

Q What was the impact of all this on you?

A Well, for the first time I realized that the

program that we were planning to start was not one that the top man in the scientific department of the AEC wanted to have done. We thought that we were doing this as a public service. We were interrupting our own work to do this job. We certainly were not going to try to force anybody to take these piles. We had thought all along that everyone would be enthusiastic about having a big source of free neutrons.

Q Did you stay in Washington until the end of the GAC meeting?

A I believe I left right after my conversation with Dr. Oppenheimer. I have no way of refreshing my memory on that. I felt that the program was dead, and that is the reason the diary ends at this point.

Q Until revived by the Presidential pronouncement in January 1950, was the program dead?

A Dr. Teller was still working at Los Alamos and as far as I know that was all that was going on in the program.

Q What did you do?

A As I remember I went back to doing physics.

Q Did you reflect on this development which you observed in your conversation with Dr. Oppenheimer?

A Yes, I did. Of course, I later became aware of the contents of the GAC policy memorandum to the Atomic Energy Commission. I was not allowed to read it because there was no particular reason for me to do so, but I was told that the GAC

had said that the United States should not build the hydrogen weapon. I have since heard a great deal of talk about the fact that the GAC was opposing a crash program, but after re-reading some of the document last night that is not my impression of what it said.

Q Which document do you refer to?

A The GAC policy report.

Q I will ask your opinion, Doctor. Suppose the thermonuclear program had gone ahead full steam beginning in 1946, how soon do you think we would have gotten the weapon?

A That is a very difficult question to answer, but I would add to the date 1946 the number of years that it took after the Presidential directive was given and arrive at an answer which would probably not be off by more than a year.

Q Which would be what?

A Would you do the arithmetic?

Q It has been suggested here that the achievement of the thermonuclear weapon was the result of a brilliant invention or discovery which might have taken many years or might have taken a very brief time, and therefore it is impossible to project the length of time that it might have taken had the program begun two or three or four years earlier than it did. What could you tell us about that suggestion?

A I think brilliant inventions come from a concentrated effort on a program. The reason there were not any brilliant

inventions in the thermonuclear program for four years after the war is that there was no climate to develop in. Lots of people were not thinking about the program. Essentially one man was, and it is very hard to generate ideas in a vacuum.

Q Were there further inventions which speeded up and furthered development of the atomic weapon?

A Yes. I would like to give one instance of that. When I arrived at Los Alamos, as I say, my job was to help Dr. Kistiakowsky in the development of the implosion weapon. Dr. Kistiakowsky was the country's leading expert in the field of high explosives. He had been Director of the Bruceton Laboratory of Army Ordnance, and Dr. Oppenheimer exerted great effort to get him to Los Alamos, and fortunately was successful. I had a number of conversations with Dr. Kistiakowsky on the feasibility of the implosion weapon and on every occasion for quite some time Dr. Kistiakowsky said that he felt Dr. Oppenheimer was mad, almost, to think that such an absurd object could ever be made to work. Here was the leading explosive expert saying that Dr. Oppenheimer was just wrong, this thing could not be built, and yet it was built.

Dr. Oppenheimer was absolutely right, and he was right because he set up a group of people that put a concentrated effort on the program and two or three brilliant inventions did come out which made this thing possible. Dr. Oppenheimer always said that the implosion program

would work and he was right and he had good reasons for saying it would work, even though at that time the technology did not permit it.

The technology was developed because of the climate at Los Alamos, enthusiastic people who said we don't care what the experts say, we will make it work. This was the thing that was missing in the hydrogen bomb program after the war, and the thing which came into it some while after the Presidential directive.

Q Now, directing your attention to a time perhaps a couple of months after your return from Washington in 1949, I will ask you if you will recall a conversation with Dr. Vannevar Bush about Dr. Oppenheimer?

A Yes.

Q Could you tell us what that was and the circumstances?

MR. GARRISON: When was this?

MR. ROBB: Perhaps a couple of months after his return from Washington in October 1949.

THE WITNESS: I can give you some information that will place this conversation to within a day, because Dr. Bush was in California to inspect one of the Carnegie Institution facilities at Stanford University. As you know, Dr. Bush is Director of the Institution. I remember that when I arrived home after our conversation with Dr. Bush, I found in the mailbox a copy of Life Magazine which had a condensation of

the book "Modern Arms and Free Men". So that places the date within a day.

What Dr. Bush said to Professor Lawrence and me was that he had been appointed by the President to head an ad hoc committee to assess the evidence for the Russian explosion. The Atomic Energy Commission and the armed forces, particularly the Air Force, had collected a good deal of information, all of which tended to indicate that the Russians had exploded a bomb, but before announcing that to the public the President wanted to make sure that the evidence was conclusive. If I remember Dr. Bush correctly, he said that he was made chairman of that. If I can paraphrase Dr. Bush's statements and give them in the first person, they went something like this. He said, "You know, it is a funny thing that I should be made head of such a committee, because I really don't know the technical facts in this field. I am not an atomic physicist, and I am not the one to assess these matters." But, he said, "I think the reason the President chose me is that he does not trust Dr. Oppenheimer and he wants to have someone in whom he has trust as head of this committee."

Dr. Bush then said that the meetings of the committee were very interesting. In fact, he found them humorous in one respect, because he said, "I was ostensibly the chairman of the committee. I called it to order, and as soon as it was called

to order, Dr. Oppenheimer took charge as chairman and did most of the questioning," and I believe Dr. Bush said that Dr. Oppenheimer wrote the report. This was the first time that I had ever heard anyone in my life say that Dr. Oppenheimer was not to be trusted.

DR. EVANS: Would you make that statement again?

THE WITNESS: This was the first time that anyone had ever said in my presence that Dr. Oppenheimer was not to be trusted.

BY MR. ROBB:

Q You and Dr. Lawrence and Dr. Bush, you say, were driving some place?

A This was driving back from Stanford to Dr. Bush's hotel in San Francisco.

MR. GRAY: We will have a recess for two minutes.

(Short recess.)

BY MR. ROBB:

Q Dr. Alvarez, coming now to the winter of 1950, did you serve on a committee called the Long Range Planning Committee?

A Yes, I did. I did that at the request of Dr. Oppenheimer who called me and said, "We are having a meeting of a committee to try to find out the future of the military applications of atomic energy." He said, "I would like to have you on this committee because I know you represent a point different from mine, and I think it would be healthy to

have you on this committee." I felt very happy about this. I thought Dr. Oppenheimer was being very fair in inviting me to join this committee, and I accepted the appointment.

Q Who else was on the committee?

A The scientific members were Dr. C. C. Lauritsen of Cal Tech, Dr. Bacher of Cal Tech, I believe Dr. Whitman was on the committee, General Nichols attended one meeting of the committee, but he did not sign the report, Dr. M. J. Kelly was on the committee. I should say I have refreshed my memory on this by reading the report, and I would not have remembered all of these gentlemen without doing so.

Q What was the purpose of that committee again?

A This committee was a committee of the RDB, the future of the atomic weapons program for periods ranging from two to five or ten years.

Q Where did you meet?

A We met in Washington in the Pentagon.

Q How long a period did you meet?

A I believe it was two days.

Q What can you tell us about the discussion that went on with respect to atomic weapons and the thermonuclear?

A As I had expected from the makeup of the committee there was great enthusiasm for small scale weapons for tactical use.

Q Great enthusiasm on the part of whom?

A Dr. Lauritsen particularly. I had been on a committee the summer before with Dr. Lauritsen which investigated antisubmarine warfare and I had talked at some length with him on the subject, and I knew that he had a great enthusiasm for this program which was not then a part of the atomic energy program which I had not thought very much about, and I had no strong views one way or another. I went on the theory that if Charlie Lauritsen thought it was a good idea, it was a good idea, because I had such great respect for his judgment in the field of scientific weapons.

Q Now, would you go ahead and tell us what happened?  
I interrupted your recitation.

MR. SILVERMAN: Could we have the date of that meeting? I think we had winter of 1950.

THE WITNESS: Yes, I think it was December 1950.

MR. ROBB: We have had a lot of testimony about it.

BY MR. ROBB:

Q Go ahead, Doctor.

A There was a good deal of discussion about tactical weapons, small weapons, using small amounts of fissionable materials. There was discussion of the tactical use of these weapons. General Nichols briefed us on the present status of the guided missiles program, of which he was then Deputy Director, since there was much interest in the use of atomic warheads on guided missiles. This part of the program I

thought was in competent hands so I didn't have much to say one way or the other. I thought Dr. Lauritsen and Oppenheimer handled this part of the program very well, and I had no disagreement with this.

I found, however, that I was in serious disagreement with them on one point and that was that they thought that the hydrogen program was going to interfere seriously with the small weapons program by taking away manpower at Los Alamos which could otherwise be put on the hydrogen bomb. My view was that the things were not mutually exclusive, if I can use the scientific phraseology. That is, there was no reason to say we have to have hydrogen bombs and not small weapons and vice versa. It seemed to me that there were great resources of scientific manpower in the country and that one could have both of these programs simultaneously. I did not object to the small weapon program because it would interfere with the hydrogen bomb and I was surprised that they objected to the hydrogen bomb program because it would interfere with the small weapons program.

Q Did Dr. Oppenheimer have anything to say specifically about the hydrogen bomb program being carried on?

A I remember one statement that Dr. Oppenheimer made because it shocked me so greatly and I repeated it to several people when I got home. I remember telling Professor Lawrence about it, and I believe I told Dr. Cooksey. Again if I can

be excused for paraphrasing and using first person, Dr. Oppenheimer said essentially this: "We all agree that the hydrogen bomb program should be stopped, but if we were to stop it or to suggest that it be stopped, this would cause so much disruption at Los Alamos and in other laboratories where they are doing instrumentation work that I feel that we should let it go on, and it will die a natural death with the coming tests' which were the Greenhouse tests, "when those tests fail. At that time will be the natural time to chop the hydrogen bomb program off."

I assumed I had been put on this committee to present views in favor of the hydrogen bomb because I had been always of that point of view. I didn't object to Dr. Oppenheimer's statement, because he said that he was not planning to stop the program. My feeling at the time was that if the Greenhouse test failed, and then Dr. Oppenheimer or the GAC did something to stop the Hydrogen bomb program, then would be a good time to fight. It seemed to me to be quite useless to express disapproval of this because nothing was being done to stop the program.

However, I found later much to my dismay that my own political naivety in matter of this kind led me astray and I found that the report which I signed, and I am sorry to say I signed, did do the program great harm.

Q Why?

A Dr. Teller saw me several months later, and he said, "Lois, how could you have ever signed that report, feeling the way you do about hydrogen bombs?" I said, "Well, I didn't see anything wrong with it. It said the hydrogen bomb program was an important long range program. Our particular emphasis was on small weapons, but that is a program which has no standing in the Commission's program now, and I think we should go ahead with it." He said, "You go back and read that report and you will find that that essentially says that the hydrogen bomb program is interfering with the small weapons program, and it has caused me no end of trouble at Los Alamos. It is being used against our program. It is slowing it down and it could easily kill it." I have recently re-read that report in the last day, and I am also shocked as was Dr. Teller. I can only say in my defense that I have not spent much time on policy reports, staff papers and things of that sort, and I am not attuned to them and I didn't catch this implication. I should have done so, and I didn't.

Q Who wrote it?

A Dr. Oppenheimer wrote it. I think that probably Dr. Lauritsen and Dr. Bacher and I made minor changes in it but certainly the main draft was written by Dr. Oppenheimer.

Q Dr. Alvarez, how well do you know Dr. Edward Teller?

A I think I know him quite well.

Q Have you worked with him for many years?

A I worked with him at Los Alamos, not as an intimate worker. He was in the field of theoretical physics, whereas I was in the experimental program. But he and I often discussed matters of physics and bomb technology. He was my introduction to Los Alamos technology. He and I rode from Chicago to Los Alamos in the same drawing room when I first went there, and he spent the whole time briefing me on the program.

Q Are you familiar with the work he is now conducting at Livermore?

A Yes, I am in some detail.

Q Do you know other people out at Livermore who also know Dr. Teller and work with him?

A I do.

Q Many people?

A I probably know 100.

Q There has been a suggestion here by some people that Dr. Teller is a hard man to get along with, a hard man to work with. Have you found that to be true?

A I can hardly think of a statement that is further from the truth. I am sure that Dr. Teller would be a hard man to work with if the man above him were trying to stop his program and to put obstacles in his path. Then I am sure he would be a very hard man to work with, because he would fight strongly for what he thought was right. But in any

friendly climate, Dr. Teller is a perfect colleague, scientifically and personally. I can't think of a finer man in almost every respect than Dr. Teller.

Q Would you say that is his reputation and standing among the people who work with him at Livermore?

A I can say that is the uniform opinion of everyone at the Livermore Laboratory and at the Radiation Laboratory in Berkeley. I don't think if I searched the laboratory with a fine tooth comb that I could find anyone who had a bad word to say for Edward Teller.

MR. ROBB: That is all I care to ask, Mr. Chairman.

MR. GRAY: It is now 25 minutes to six. I assume you will have some questions to ask?

MR. SILVERMAN: I think so.

MR. ROBB: Mr. Chairman, I am sure it could be an accomodation to the Chairman if it would be brief, if we could do it now.

MR. SILVERMAN: I hate to incommode the witness but I really think it will be much shorter if we resume tomorrow morning, sir.

MR. GRAY: I think we will recess until 9:30 tomorrow.

(Thereupon at 5:35 p.m., a recess was taken until Friday, April 30, 1954, at 9:30 a.m.)