

October 5, 2005

"Issues in Arms Control"
40th Anniversary Colloquium at Los Alamos National Laboratory
April 13, 1983

(Transcribed by J.A. Hernandez, 10/05/05,
from LA-UR-05-6089, DVD 3 of 3)
Richard L. Garwin

This panel discussion followed prepared presentations by Hans A. Bethe, Richard L. Garwin, Edward Teller, and Donald M. Kerr, all of whom are seated at a table at the front of the auditorium of LANL, for a panel discussion and questions. The session is moderated by David S. Saxon, President of the University of California, 1975-83.

SAXON: Yes?

Q(?): A number of the speakers have alluded very briefly to things they thought would be destabilizing and I would like to ask Don Kerr if he would comment on things which he feels might, let us say, have a very good chance of being stabilizing.

KERR: One of the arguments that has been made about certain defensive capabilities is that they would be destabilizing. The presumption, I think, is that they would be very very effective and, in fact, offer a country the opportunity to launch an attack and defend against the counter attack. I don't believe such systems are likely to exist in any short time. I do believe that there are cases where it would be more stabilizing to have some limited defense capability for our strategic forces, perhaps coupled with some deceptive basing, and that way avoid the cost and numbers of offensive systems, yet be able to assure the ability to carry out U.S. retaliatory policy. There may be other possibilities for stabilizing changes, particularly since, as many as aware, we're investigating not only nuclear weapon systems that might be used as defensive weapons but also non-nuclear approaches to this same problem. Whether or not they will succeed, I don't know. But to some degree they might, through some modest defensive capability, again allow a stable offensive balance at lower numbers of weapons. The most important stabilizing thing, in my view, however, is this question of the eyes and ears, in particular our warning and intelligence satellites and other sensors, and the whole system that provides that information to the national command authority. I think that we have to take every step we can to preserve those assets including possibly negotiating ASAT treaties, other treaties that might occur to us, to provide the opportunity for both the United States government and the Soviet government to be as well informed as possible in order to terminate any possible conflict as soon as they could.

SAXON: Yes, Professor (Robert) Marshak.

MARSHAK: I think that the Director of Los Alamos has certainly presented a very balanced point of view here, and we've heard very different points of view, and I'd like to follow up on some of your ideas. It seems to me that the fact that we now are in a stage, whether it's overall parity or not (I

happen to believe that there is overall parity), but I think that this purpose it's a good approximation. Having reached that point, it is well taken now I think that one has to think about defensive modes in order to move back the offensive capability. Whether its to what you call a saturable level or a lower level, it is something that could be worked out. My question comes to this. How in the present situation where you have the various types of negotiations going on and you see the need, so to speak, for an integrated system of dealing with these problems-- not only in terms of nuclear arms control but certain efforts whether it's anti-tank, anti-conventional modes, and so on-- could you give some features of a blueprint that you would now, see I'd be very interested to see how you move your thinking into the present reality.

KERR: That's a very, very tall order and I'm afraid I can't respond to the question as fully as I would like to. First of all, Prof. Bethe has accurately portrayed some of the institutional reasons why this is difficult. The Laboratory has been trying very hard to overcome some of those institutional problems. We've done so through sponsoring conferences like one we did about a year and a half ago on the future of conflict, in Washington jointly with the Georgetown Center for Strategic and International Studies, where we attempted with many serious political military scholars to join our technical knowledge and discuss what one might prepare to do for the most likely conflicts this country would face in the 80s. We've also participated in some of the joint congressional study groups on United States military strategy and also another study group on arms control in the 80s, bipartisan in both cases, and have brought to those studies our technical knowledge not just in the nuclear and non-nuclear weapons area but also what we've learned in more than two decades of providing technical support to one of our arms control treaties-- namely the Limited Test Ban Treaty-- through the VELA of satellites and their successor systems. There aren't that many opportunities for technical people to interact at the policy level in arms control and weapon system planning. We try to find those that we can enter, and we try to do so standing on what we know technically and not speculating over much about things where we're not well informed. I hope we can continue to do that and become more effective at it. At the same time, our present investigations, for instance, of conventional weapons for the Department of Defense have grown substantially; the DOD is now the largest single sponsor of the Laboratory other than the Department of Energy. And most of our work for them is on properties of high explosives, the application of some of our theoretical and experimental capabilities to problems like armor penetration, and some farther out applications of accelerator technology to possible beam weapons. So that gives you a sense of what we're trying to do at this point in time. Whether it will change in the future depends, I think, in part on our technical credibility and how well we do in terms of entering some of these other circles.

SAXON: I'm going to take advantage of my position here to ask a question. I have one, and these last two in a way lead to it. We've heard discussion of a development of new defensive methods which would involve on the one hand a massive effort over decades in order to perfect such a system-- many unsolved technical problems-- and on the other hand concern expressed about the destabilization of such systems as they become effective. My question is, is this not the kind of problem which ought to be worked on internationally? We have found examples in the past where it's to our best interest to attack problems together even with the Soviets or the Chinese. This seems to me a case in which maybe it's the world community of scientists that ought to be asked, and this ought to be an international effort which I see no reason why

as we develop these defensive techniques, if stabilization is important, why there is anything which needs to be concealed but rather ought to be revealed to everybody as one goes forward. I'd like to ask Dick.

GARWIN: Well, that's something which I've been proposing for some years and that makes it neither right nor wrong but not new. I think that we ought to work on ...

KERR: I'm not sure which I prefer. (Laughter).

GARWIN: I think we ought to work on these military technologies ONLY openly and jointly. And I go farther than Edward, I think, because I think we shouldn't work on them unless we are willing that the Soviet Union have them as well. Had we done that with MIRV we would not be in the present situation where we feel our land-based forces are vulnerable. That's really a test of whether the government regards this as truly stabilizing or just states that its stabilizing in order to sell the program. If it is truly stabilizing for both sides to have it then let's give it to the Soviet Union, let's get the advantage of getting something in return-- some access to their programs if possible. But if it is truly stabilizing they ought to get it when we do. Now I think that the President is ill-served by a Secretary of Defense who misinterprets his words from the modest interpretation that Edward Teller given them-- namely a hope that something can be done to move from retaliation only-- to "no doubt that we can have leak-tight defense, not only against ballistic missiles but against cruise missiles." As Hans Bethe says it's the bureaucracy that gets in the way. And here at the top of the bureaucracy you have an initiative from the President which is immediately misinterpreted, and I don't very often see Casper Weinberger going back on his public word. So I think it is most unfortunate to make these perhaps carefully considered interventions and have them so grossly distorted in the beginning. While I have the floor, I really do believe that Hans is right that the right thing for this Laboratory and Sandia and for the marvelous initiatives available in the weapons laboratories is to turn to conventional defense, where there is an enormous amount that can be done. And I don't think that Don's proposal-- to earn credits with the Defense Department and maybe we'll move into a more important position-- will do. We ought to go to the President, as many of us as can get to see him, and say, "Mr. President, you have a weak defense because the bureaucracy is doing its thing in every little part, and what you need is to concentrate on the ends, not the programs." (Applause).

SAXON: Edward.

TELLER: In a discussion of this kind (is the microphone working?) I think it is much more important to emphasize the points of agreement than those of disagreement. And I think through our discussion and also now the phase of agreement is obvious. I would strongly advocate to start this international cooperation with those people with whom we have cooperated and with whom we know we can cooperate, and I will not try to discuss in detail or object to anything else, except I would like to tell of an experience which Dick and I have shared in Erice last summer.

The Conference was opened by Zichichi saying, "the politicians have messed everything up. Time for the scientists to take over." I tried to respond by saying, the scientists would be excellent provided they have information. In a situation where secrecy prevails and where the scientists can't talk to each other about the facts, the scientists are no better-- conceivably to

make a crazy statement-- even poorer than the politicians. Remarkably enough there was no objection to that. There were Soviets present. Velikhov was in agreement, everybody was in agreement. We discussed for three days. We could agree about nothing else, but there was a concrete proposal to be signed, let's decrease secrecy. At that point Velikhov stood up and said, if we cannot agree on anything else, to agree on secrecy makes no sense either. (Laughter). It seems to me that there are people with whom it is more easy to collaborate than others.

SAXON: Back there.

NORM LINGER(?): I've heard very little mention of third powers and small powers with rather little at stake perhaps, and I would like Dr. Garwin to comment on the possible advantages or criticisms of small defensive systems against third, fourth, whatever powers, with rather little at stake.

GARWIN: I'm very much against the spread of nuclear weapons, and I think one of the main features of a reduction-- substantial reductions to a thousand warheads and a comprehensive test ban-- would be the leverage that it would give the nuclear nations to oppose further spread of nuclear weapons, especially to people who are irresponsible or to terrorists. But it's likely that they will not attack with ballistic missiles. They will smuggle nuclear weapons; they will make threats; they will attack a limited defense someplace where it doesn't defend. So I really do not believe that it has anything to do with the kind of system that we are talking about now. Typically it requires... it was one of the arguments made. Let me tell you how this works. You want to deploy a system, or somebody says, let's contemplate. And they go to the smartest people around, and they say, "give me arguments for or against." And Jeremy Stone at a recent meeting discussing the MX mostly for the Defense Department said that when he was at Hudson Institute he could think of 20 arguments in a single day. Then you only take the ones for-- the other you forget about-- and you put them in a big long list. You try them. Some of them work, some of them don't work. Never mind whether they are true, but some of them sell and some of them don't. And those are the ones we hear, year after year after year. And the argument that a defensive system if it's good for nothing else will be good against irresponsible nations with few nuclear weapons is one of those. (Laughter)

Q(?): A question which I'll direct to Don Kerr. What do you think that the role of the public's opinion in influencing government policy in these questions should be or actually will be?

KERR: I wish you had asked a politician. I think in an orderly world that the public's expression of opinion can come largely through the way they vote, the way they try to communicate with their elected representatives, and the ways those representatives in turn act when they deal with legislation. It strikes me that one of the problems we have in the current debate depends very much on what Edward had to say, and that those who are forming opinions, groups in the public, are doing so on the basis of inadequate or very poor knowledge. Mainly because our government's policies are such that the specific information that might allow them to make choices is denied them. And so I would argue very strongly that to make our democratic system work and in order for public opinion to inform the political process we should do a great deal to reduce the secrecy that surrounds many military subjects. A case in point is President Carter some years ago made a clear and unclassified statement that the United States deploys and uses surveillance satellites-- in particular, imaging satellites. Yet we have never seen in an

unclassified situation satellite imagery. Yet it would be one of the most convincing things for those of us like me who think in pictures to see the real hardware rather than the artist conceptions that are in the Red Book sitting before Dick Garwin. And so for our process to work, the information has to be better so that citizens can in fact behave responsibly.

(VICTOR) WEISSKOPF: I am not a weapons expert and most of the discussions today were actually dealing with weapons here and there-- defensive and offensive. Of course I could not but agree heartily with what Don Kerr said just now and what Edward Teller also said, that we must have less secrecy so that, I would say, people like me could participate better. But I am worried about such discussions because I think they are not general enough. Edward Teller said this morning that the Russian, the Soviet government is bound and decided to take over the world and make a world Kremlin government. Well that is perhaps true, but is this a constant of nature? He himself said we must try to get to the children of the people who are now in power there. And I believe this is something very important and however we do this because the attitude **It hurts the finger to press all the time. (Laughter)** of the U.S. government, more and more, and I would say in particular the one we have now, is different. It is almost as strong as the other-- namely it is our purpose to destroy the other regime. It is an "evil empire." Now certainly there are many many evil things there and I am the first one to emphasize this with respect to the dissidents and with respect to the way our colleagues are treated over there. That's one thing where history really has changed and that it is no longer possible by force or even by threat of force by armaments to change a hateful regime. The Hitler regime I think was the last one that was possible to change by force. Therefore we have to think not only about new defensive weapons and offensive weapons but about ways and means to deal with that very situation which is the situation which we face-- namely how can we actually get a change in the government on the other side. And some changes also in our government because I think these are necessarily connected. This is a very difficult question and in particular it needs a lot of patience and time because we cannot of course relax our defenses in the meantime. But at the same time, and that is often contradictory, we have to show clearly to the other regime "we are not out to destroy your country." I mean, after all, the other regime has tremendous difficulties-- immensely greater than the ones that we have and the whole West have. As you know just as well in Poland and in Afghanistan and wherever you look and also inside Russia. Now in order to... and also the ideology that has driven them, it has even has even driven them far(?), is decaying under the pressure of these difficulties and under the pressure of time. So I do believe that it is more important even than to speak about our strategic plans for the future-- be they defensive or offensive-- to speak about our (how shall I call "political" is too narrow a word but I will use it anyway) political nonmilitary ways of trying to change the situation. That is how-- and for this we scientists are not necessarily better trained than others-- but to this we also have to contribute and say "there is the important point."
(Applause)

SAXON: I'm going to rule that a comment rather than a question and as a matter of fact I intended in any event to encourage from you comments as well as questions.

(HAROLD) AGNEW: I wanted to support what Dick and Hans have said about the future role of Los Alamos in conventional weapons. But I wanted, perhaps, to challenge Hans's logic on the profit issue. Industry exists ... (Laughter).

SAXON: Just a minute here. That's unfair. You're the only one who has had experience on both sides. (Laughter).

AGNEW: Industry exists to make a profit, and regardless of whether Los Alamos or Livermore or Sandia or industry does the R&D, R&D is a loser. Industry will do the production. The reason Los Alamos should be involved in this particular area is not because they're non-profit, it's because their people are superior. Thank you. (Applause).

Q(?): I'd like to ask a question that's really related to several of the others and it's more of an ad hominem one. One of my unhappy experiences going to Europe in the 50s and 60s was McCarthy behind me. But one of the things that I learned was how much they appreciated the Marshall Plan, but superimposed was the beginning of a "plague on both your houses; better red and dead." Now there are enough people here with European backgrounds and travels and stuff, I'd just like to ask how strong is that feeling now toward our stance and what we are trying to do, or how important will it be in our future activities over there?

SAXON: Any member of the panel prepared to comment. Edward?

TELLER: Just a very small component. There has grown up in Germany, which is one of the most stable of the countries, a badly destabilizing group-- the Greens, the Gruenen-- anti-technology and anti-U.S. I ran into them three years ago at their very beginning when I was giving lectures in Tuebingen all of which were going reasonably well except when I faced the Greens. And I was quite accustomed to being criticized for the hydrogen bomb, for a few other things, but I was there criticized as a Hungarian Jew for something for which I have never been criticized before or after. And that is for murdering the American Indians. (Laughter). Now the Green Party had an enormous write-up in the Press. They were taken very seriously and fortunately in the recent election in Germany they did not do very well. And dangerous to make predictions, they don't seem to be really leading opinion in Germany and I believe that Germany and my general experience is Europe remains open for strongly cooperative possibilities. And this I would like to see exploited as soon as ever possible.

SAXON: Another comment? Yes back there.

Q(?): This is quite a simple question which I'll address if ___ possible to both Dr. Teller and Dr. Bethe. Let us assume the existence of some cost efficient defensive system such as Dr. Teller alluded to. What do you estimate to be the probable Soviet response to an American decision unilaterally to deploy such system?

BETHE: Well if such a system is possible and if the United States would try to deploy it unilaterally, I am afraid that the Soviet Union would take every possible step to negate that system. And there are, of course, many possibilities. If you have, for instance, lasers in space then as Dick Garwin has pointed out they can be attacked by other weapons in space and I do not believe that a space war would remain isolated and would remain a space war. In fact, what would we do if we deploy such weapons in space and then the Russians attacked them, which they presumably would do. Would we consider this grounds for declaring all-out war on Russia? Probably not. Would we consider it as a signal that we can attack any Russian satellites? Possibly yes. And I think even if the grizzly bear doesn't know, I am terribly disturbed by this complete open field for action and counteraction which

would presumably ensue in that case unless, of course, we have a previous agreement. If we had a previous agreement then things might be very different but that would mean a completely different political attitude such as Victor Weisskopf has described-- an attitude of accommodation, of trying to understand each other. Then the deployment of these defensive weapons might not be destabilizing but then we don't need those defensive weapons either.

TELLER: I'm glad to use the opportunity to try to deflect unique concentration on space wars and star wars. That space is important, "and Hans and I have agreed, as least in one respect, it is extremely important, that space is important is clear; that defense is much more general and can be employed and used in many ways should be equally clear. Now, what would the Soviets do if we deployed unilaterally defensive efforts? The fact is that the Soviets NOW are deploying defensive weapons around Moscow. No secret about it, remarkably enough. Less well known is the fact that they have very widespread research on defensive weapons. And Dick Garwin has mentioned that as soon as there was a leak on x-ray lasers in the American Press, the Soviet Press answered promptly describing in detail what Aviation Week should have said. (Laughter). I believe the response to a poor defense is to be prepared to override it. The response to a good defense is to imitate it. I am therefore very anxious, not just for a defense, but for a good defense. And good defense I hope will bring the reasonable response from the Soviet Union-- reasonable from their point of view-- that we also want to be defended. And if then defense proves stronger in both sides this may turn out to be a stability not based on treaties but on technology and laws of nature. Now there is a slight difference between Hans and me about the laws of nature. According to him such a good defense is excluded; according to me it is not quite excluded and we should look at it.

SAXON: Yes?

(Woman's voice): My question is to all of you because there is an age difference and I want an answer that is not based on hope, not on wishful thinking, but on logic and scientific logic. Please raise your hands if you honestly believe that your grandchildren have a good chance of dying of old age. (Laughter).

SAXON: Other questions? Comments? Over there.

MORY(?) POMGRADS(?): I'm Mory Pomgrads(?). I am a local politician. I thought that Dr. Agnew had a much better political remark here. We do have to have confidence in our leaders and when it comes to these classified items there are many things that we can't know. And I have a great concern about questions that-- or answers to questions-- that essentially go, "well we still have the submarines." And I would ask Prof. Bethe if he can't describe to me the vulnerability-- it would seem to me that if you could knock out silos, perhaps you could knock out communications to submarines. Perhaps you can't answer that in detail. Would you express to me your confidence with regard to vulnerability of our ability?. We talked about eyes, don't knock out eyes, and we talked about ears. I'm bringing up another sense, the tongue. Can we.. do you have confidence that we can communicate to our submarines. Thank you.

BETHE: I have confidence, but I think Dick Garwin knows much more about this than I do.

GARWIN: Well I think it's very important to discuss how limiting secrecy is and how not limiting. I think everybody on this panel has approximately the same access to all this information. We may differ in judgment and wisdom but we just about know all there is to know. (Laughter).

TELLER: I profess (that). I don't. (Laughter)

GARWIN: In the sense of having the library. However. And you can see that total access, if that's a good approximation, still does not settle disputes. So I don't want to delay making decisions until that millennium when everybody has access to all information. It will not solve the problem significantly. Furthermore what we need to do is to make available all the unclassified information which exists and in accessible form. And I do that. I'll give you a paper which is going to be published in International Security called "Defense Against Strategic Submarines." The question of communicating to the submarines is discussed in a paper I published January of 1980, I guess, in International Security titled "Launch Under Attack." And I'm much more favorable toward launch under attack than Don is and I agree with Edward about the necessity of expanding the number of satellites, having decoy satellites, having dark but operable satellites, defining the weapon systems, these observation systems, which are military but they are not weapons in space, so that they are more readily supported by decoys. So one has laser crosslinks and ways to get the information to the ground even if there is a concerted attack on ground stations. The answer to all that is yes, we can communicate with our submarines. Even if the Soviets do everything they can our communication capability to the submarines is going to be about on a par with our ability to communicate with the missiles. This is gradually known in security circles as well, because these matters are not widely available in the sense that Air Force does not go out of its way to explain how can one communicate with submarines. They go out of their way to explain the great communication we have in peacetime, incidentally, with our missiles. But if you imagine communicating with Denspack-- that gone but not much lamented system-- in which you would imagine a hundred silos tilted at crazy angles after a nuclear attack-- some of them stuck 10 meters down farther into the ground, some of them sticking out-- and compare those upended submarines in a plowed over field with communicating with your regular submarines which have been going about their business, it's really a harder problem. So, yes, the answer is communication to submarines is okay-- can be improved because the Soviet Union will no doubt continue to try to attack the means by which we communicate. And if we do... if we work on all these things which are essential until we are satisfied with them in the limited amount of technical horsepower that we have and the limited budget, we'll find that we don't have enough to spend on what in my youth used to be called (and I think we never really understood what it meant) pipe dreams.

SAXON: Yes?

Q(?): There has been a lot of discussion about space and defense. But seems to me that the people in Europe who are in the streets and the Congress of the United States right now are deliberating over something very different which is a total cessation of nuclear arms or weapon development. I think the basic reason for that is assuming that the whole thing will wither on the vine by the time our grandchildren are around. And that seems to me to be potentially very destabilizing given the verification problems. I guess I'd like each of the panel members to comment on whether this is a viable point of discussion and whether this will become more important in the years to come.

SAXON: This is an invitation to the panel generally. Any of you would care to comment on that?

BETHE: I consider the nuclear freeze not as something that should be taken literally. But I do consider it as an extremely important popular movement expressing the opinion that the arms race has gone far enough; we should stop; we should, of course, in my opinion, we should make whatever small changes are appropriate but on the whole we should stop. In particular, I consider it very paradoxical when it is claimed that in order to negotiate reduction in armaments we have to build up our armaments. It doesn't make any sense to me whatever. I didn't go into the question of what we should do in proposing arms limitations, I only said it has to be different. In my opinion, the very carefully developed SALT-II Treaty was an equitable treaty. It was a treaty which was agreed to by both President Carter and by the Russians. If we could overcome the election propaganda of 1980 and could get back to the SALT-II Treaty, I think we would find the Russians quite prepared to go down-- to do what both the President and most of us would like-- to reduce the levels of the SALT-II Treaty. And it has been shown that this would actually fulfill some of the President's aims better than what has been proposed in the U.S. proposal. But I didn't fully answer what you said. I do not think we should stop all weapons deployment. I do not think we should stop, for instance, the cruise missiles on bombers. I think these are very important to preserve the bomber leg of our triad, and if two legs of our triad are good then (namely submarines and the bombers) then the third leg (namely the missiles) will also be invulnerable because the Russians will know perfectly well that any attack on the land-based missiles will be suicidal. But I think it is important to keep that second leg (namely the bombers) viable and I believe the cruise missiles are important for that purpose. So I do not agree with the freeze movement taken literally but I do agree wholeheartedly with its purpose and if you want to have a popular movement you cannot make the distinctions that I can make here with an educated audience. I cannot expect that all the 220 million Americans will understand the distinctions that you can understand. So therefore I think the freeze movement is a good thing but we shouldn't take it completely literally.

SAXON: Edward?

TELLER: I agree with the freeze movement much more if you assume that it does not mean what it says. (Laughter). Even so, I have to... I do not agree with it, I think it is stabilizing except for one positive point. The freeze movement is in my opinion emotionally based on a very simple fact. Mutual assured destruction is no policy. And as President Reagan has said, we must look for other alternatives, and it is quite clear which one he meant and which one I am supporting, but the reason to look for an alternative, for some way to arrive at mutual assured survival, this I think is something on which we all can agree. There is one point I would like to put in because I am afraid that otherwise it would go uncontradicted and it should not. And that is that our submarine forces are invulnerable. They are. You know why? Because the possibility of finding them and destroying are kept so secret that the Navy does not know it itself. For the short time, 7 years, while I was serving on the President's Foreign Intelligence Advisory Board and we got more information (I got more information) about what the Soviets are doing-- Dick, I am contradicting you that all of us have access to everything. It's simply not true. (If it's there then simply I would not understand it)(?). At least I wouldn't. But in this period I got thoroughly convinced that

there are a number of real possibilities to destroy the submarines. No you see there is a difference between Hans and me which has existed approximately for the past 60 years. (Laughter). And it's not connected with weapons. It is that Hans always was more doubtful about things that one can accomplish in the future like increasing the energy from a cyclotron or whatever else. You see, it's always wonderful to say this cannot be done. Defense cannot be done. Submarines cannot be destroyed. Please be careful and accept all statements it cannot be done with a grain of doubt and restrict them on the statement that the perpetual motion machine cannot be done.

SAXTON: Brief comment Dick.

GARWIN: Yeah, well, I just wanted to respond that maybe Edward doesn't know how much some of the other people know. (Laughter).

TELLER: I know what I don't know.

GARWIN: I'm not sure of that either. (Laughter). Because in this particular case, and this is important. I hate to contradict such an experienced inventive person. I really ought to tell-- this is the opportunity of a lifetime-- the comment that Enrico Fermi made to me one day in 1951, I guess, when Edward had come back to Chicago, his home base (maybe 1950) for one of his visits. And as he left Enrico said admiringly, he said, "You know, Edward is the only monomaniac I know with more than one mania." (Laughter). But in this particular case I studied submarine basing of MX missiles, and I refused to do that unless the Under Secretary of Defense, Bill Perry, would give me and my colleague, Sid Drell, a letter-- an unclassified letter-- asserting that he had given us access to all of the information which would allow us to make up our independent judgment as to whether the submarines were vulnerable or invulnerable. Not the day-to-day Soviet operating capacity, but the technology which was available on their side. Now I may have done this imperfectly. Sometimes I don't do a perfect job. But I do have this letter which I will make available to any of you showing that at least I had access to this information.

SAXON: Last question. Prof. (Robert) Marshak. Or a comment.

MARSHAK: It seems to me that we've reached the point now, this is 1983 and we were here 40 years ago, and right after the war we all hoped to get international control of atomic energy at a time when the Russians didn't have the A-bomb. Now at this point when there is basic parity in the MAD doctrine. MAD is the policy. Dr. Teller is right, it is the policy at this point. But now if we start on a track now for new policy, MAS, mutually assured survival, it seems to me at this point we ought to try again to do a Baruch type plan and that our government should challenge the Russians to join in international negotiations of the type that didn't work in '45 for reasons we think we now understand; for reasons which we could no longer accept on the part of the Russians. And your remark about Velikhov-- you know well that Velikhov is heading a group that is talking to the Americans, that there is an interest in more than just dropping secrecy and I think the way now to pick up on the Russian behavior of the past few decades with Sakharov and Gorki-- the father of their H-bomb is in Gorki in exile. The way to pick it up now is to challenge them to a serious discussion on this next round which is going to take several decades. To argue that we should do it with the NATO alliance at this point-- of course they should be involved-- but that's not the problem. And at this stage in 1983 when so many of these negotiations look as if they are going down the tube, we have

to do something spectacular, significant, and involve the international scientific community.

SAXON: Thank you. I'm not going to be so rash as to try to summarize what we've heard over the last two hours, but I am going to make one general statement which may be more a statement about me than the external world. I'm the kind of optimist that finds the basis for optimism in where we stand at the moment with respect to these terrible threats that face society and the reason is this. If I reflect back on the situation three or four years ago, our people in this country, and to a large extent some of the European countries, were preoccupied almost exclusively with nuclear power as the great threat to the welfare and totally ignoring the question of nuclear weapons. President Carter, following a path which had been started under Nixon, pursued continuously under Republican presidents and Democratic, came to propose agreements and there was absolutely no resonance in this society at all or across the world. If there had been any even a remote echo of a resonance that would now be produced we would have had those agreements. And so with all the dangers, and all the threats, and all the worries, and all the lack of detailed information and knowledge, nonetheless I find in the present circumstance in this concern a renewed concern in the points of view that those of us my age first came to grips with 40 years ago, I find some basis for optimism. I thank you all. Please join me in thanking our speakers. (Applause).

RLG:jah:5278IAC:100505.IAC (1005_IAC Issues In Arms Control.doc)