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UNITED STATES POLICY TOWARD THE INTERNATIONAL ATOMIC ENERGY AGENCY

GOVERNMENT

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HEARING

BEFORE THE

JOINT COMMITTEE ON ATOMIC ENERGY CONGRESS OF THE UNITED STATES EIGHTY-SEVENTH CONGRESS

SECOND SESSION

ON THE

UNITED STATES POLICY TOWARD THE INTERNATIONAL
ATOMIC ENERGY AGENCY

AUGUST 2, 1962

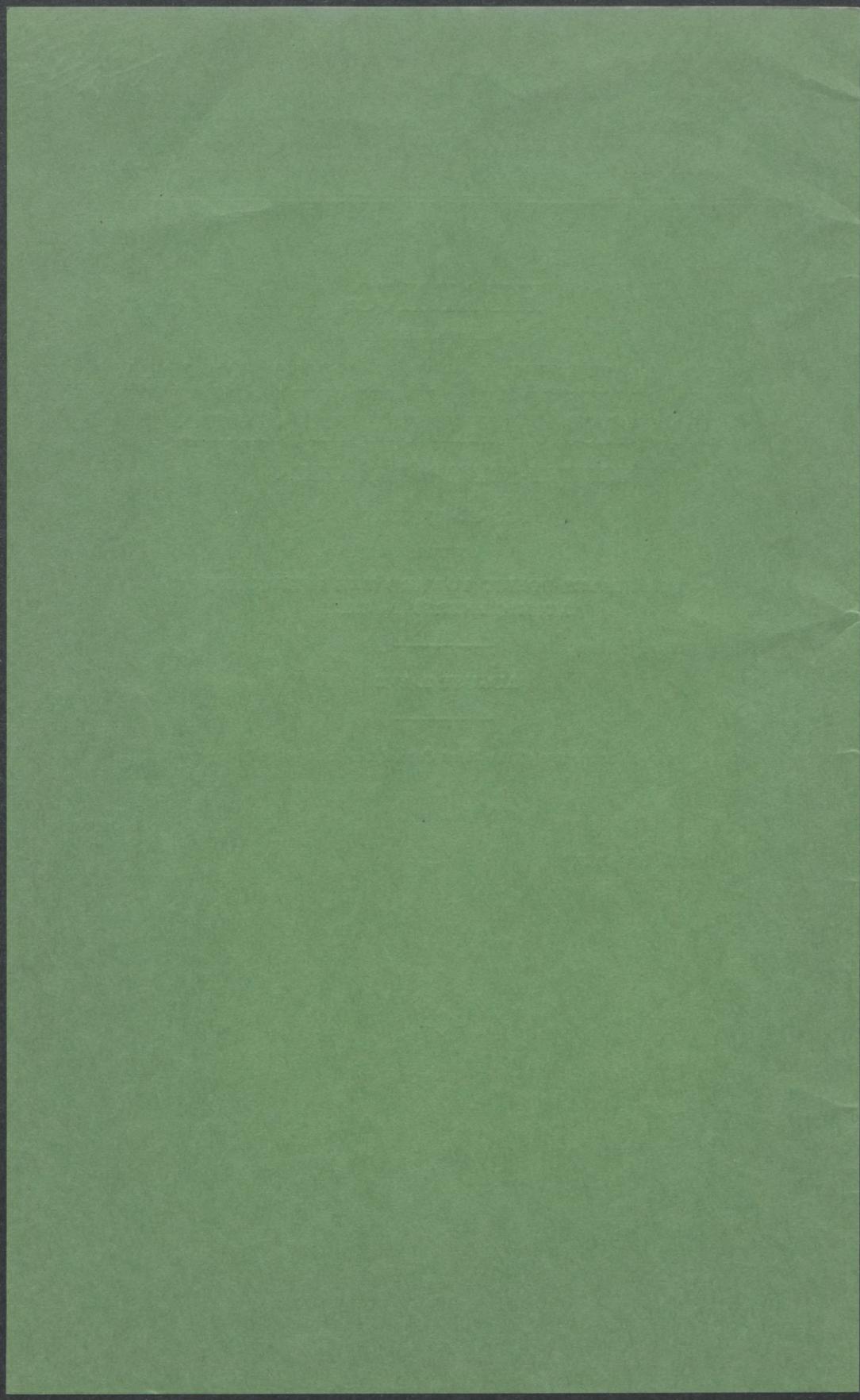
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WASHINGTON : 1962

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U.S. POLICY TOWARD THE INTERNATIONAL ATOMIC ENERGY AGENCY

THURSDAY, AUGUST 2, 1962

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D.C.

The committee met, in open hearing, at 3:20 p.m., pursuant to notice, in room AE-1, the Capitol, Hon. Chet Holifield (chairman of the committee) presiding.

Present: Representatives Holifield, Price, Morris, and Hosmer.

Also present: James T. Ramey, executive director; David R. Toll, staff counsel; Edward J. Bauser, technical adviser, and Jack R. Newman, professional staff member.

Chairman HOLIFIELD. The committee will be in order.

The Joint Committee on Atomic Energy is holding a public hearing today on U.S. policy toward the International Atomic Energy Agency. In May of this year, a report was published by an advisory committee to the State Department which contained a number of specific recommendations for U.S. policy toward the IAEA.¹ The advisory committee was under the chairmanship of Dr. Henry D. Smyth, a distinguished scientist, former member of the Atomic Energy Commission, and currently U.S. representative to the IAEA. Dr. Smyth will be our first witness today, accompanied by other members of the advisory committee. We have then asked representatives of the Department of State and the AEC to comment on the report and plans for implementation of its recommendations. We have also invited Mr. Sterling Cole, a former member and chairman of this committee, and the first Director General of the IAEA, to testify on any recommendations which he may have concerning the IAEA.

It is now almost 5 years since the IAEA was established in Vienna. During that time, according to the report before us, its activities have been competently carried forward and have contributed significantly to the basic goal of promoting the peaceful uses of atomic energy. According to the report, nuclear power is on the threshold of economic attractiveness in a number of areas of the world. We therefore approach the juncture where we must decide now whether the IAEA is to be assigned a major role in U.S. policy for the development of nuclear power abroad and the application of safeguards, or whether these activities will be carried out primarily through bilateral channels.

As a case in point, the committee understands that the Department of State and the AEC have recently held discussions with Indian

¹ The report of the Advisory Committee to the State Department is reprinted as an appendix, p. 37.

authorities concerning a possible power bilateral agreement with India. Such a move would seem to be directly contrary to the Smyth committee recommendations that U.S. support for the IAEA should be increased, especially with respect to nuclear power development and safeguard applications.²

We hope, therefore, to receive an explanation of the report and its recommendations from Dr. Smyth and members of the committee, and then to consider the plans for implementation by the Department of State and AEC.

Following the public hearing, the committee may desire to go into executive session to receive further testimony.

Our first witness this afternoon will be Dr. Smyth, who will be testifying in his capacity as chairman of the advisory committee which prepared the report. The Joint Committee is very pleased to have you with us this afternoon, Dr. Smyth. Please proceed.

STATEMENT OF DR. HENRY D. SMYTH, U.S. REPRESENTATIVE TO THE IAEA

Dr. SMYTH. Thank you, Mr. Chairman. I am always glad to be here, as you know.

I have a very brief statement, which I will read, part of which you have already covered.

Mr. Chairman, I think it is hardly necessary for me to introduce myself to this committee, but I do believe it is desirable to identify the capacity in which I am appearing. I am testifying as Chairman of the Advisory Committee appointed last fall by Mr. Cleveland. I am not testifying in my capacity as U.S. Representative to the International Atomic Energy Agency in Vienna. In other words, my statements will not necessarily reflect the views of the Department of State or the Atomic Energy Commission.

So far as I am aware there were no substantial differences of opinion among the members of our Committee. However, I hope those of my colleagues who are here will not hesitate to correct me if at any time they feel I am misrepresenting the views of the Committee.

Perhaps it would be useful if I outline briefly the report which you have before you.

Though we have followed the usual custom of printing the summary and principal recommendations at the beginning, the organization of the rest of the report departs somewhat from strict logic in the interest of readability and therefore effectiveness.

While our instructions were limited to a study of the IAEA, we concluded that such a study would be more fruitful if set in a larger context. Therefore, the first questions we asked ourselves were:

1. Does atomic energy in its various ramifications occupy a unique position in the science and technology of our day?
2. Do the past and present achievements of the United States in the field of atomic energy give the United States a unique opportunity and obligation to promote the peaceful uses of atomic energy, thereby furthering our general policy of raising the standard of living and achieving stable peace throughout the world?

²For subsequent developments concerning the Indian atomic power project, see AEC letter dated November 5, 1962, reprinted as app. 2, p. 63.

We said "Yes" to these questions for reasons given in the introduction, pages 3 and 4, of our report.

Since the most important peaceful use of atomic energy is as a source of electric power, our affirmative answers to the two questions just cited imply our conclusion that nuclear power will be important in various parts of the world in the near future.

This conclusion is specifically stated in chapter I. The problems arising from such a conclusion are then enumerated including the question of "safeguards" against the diversion of nuclear materials to military uses. The committee then states its conviction that the promotion of nuclear power around the world is to the advantage of the United States.

The balance of this chapter is devoted to an assessment of the IAEA and other means of carrying out an atoms-for-peace program. We conclude that an international agency has many advantages as a means of implementing such a program and that the future development of nuclear power and safeguards will greatly affect the operation of the Agency in Vienna.

Chapter II is a detailed analysis in support of the assessments given in chapter I. It covers three major topics: nuclear power, safeguards, and current activities of the IAEA. Possibly I should call the conclusions on nuclear power and safeguards, page 13, to your attention.

Chapter III makes a number of comments about various aspects of the IAEA.

If I may summarize in my own words, the atoms-for-peace program as advanced in 1953 was a fine idea based on an overly optimistic assessment about the cost of nuclear power. Even 4 years later when the International Agency was finally organized, its task was by no means clear. It has found useful things to do but there will be much more to do in the coming years as nuclear power becomes competitive. Now that technical progress seems to have brought us close to such a point, a review of policy is obviously appropriate.

In assessing the recommendations of the committee, I believe that the U.S. Government must now make clear sharp decisions on three questions:

1. Does the United States want to support the development of nuclear power around the world?
2. How important does the United States consider safeguards?
3. Is the United States really going to use the Agency or are we going to continue to work largely bilaterally or through regional groups?

That concludes my statement, Mr. Holifield. Of course I will answer any questions that you may wish to put, or try to.

Chairman HOLIFIELD. Mr. Hosmer?

Representative HOSMER. No questions.

Chairman HOLIFIELD. Mr. Morris?

Representative MORRIS. No questions, Mr. Chairman.

Chairman HOLIFIELD. On page 1 of the report it is stated that nuclear power is on the threshold of economic attractiveness in a number of technologically advanced parts of the world. Similarly, on page 5, the committee states its opinion that nuclear power is on the verge of becoming of practical importance in various parts of the world. Can you give us examples of parts of the world where you believe nuclear power will soon be economically competitive?

Dr. SMYTH. You have already cited one in your opening statement, Mr. Holifield, and that is in India. Another one that is probable is the Philippines where the International Agency made a study which indicated that nuclear power might be competitive in the rather near future.

Another case where the International Agency made a study was Finland where I think, as I remember it, the time schedule was a little longer but still something worth looking at. There has been a study made in Pakistan by a company brought in by the Pakistan Government which was favorable to nuclear power.

I just received yesterday a study by the Agency of the situation in Pakistan. I am afraid I have had no time to examine it. But perhaps these are a sufficient number of examples.

Chairman HOLIFIELD. On page 2 of the report you have six recommendations by the committee. The second recommendation states, in part—

to that end activities now being conducted under existing bilateral agreements should be transferred to Agency auspices wherever practical.

In line with that suggestion and recommendation, would you also recommend as a corollary that the United States should refrain from entering into new bilateral agreements?

Dr. SMYTH. I think that "wherever practical" is a very important part of that statement, Mr. Holifield. I believe when a situation is being considered it is necessary for the Department of State, in conjunction with the AEC as far as the technical aspects are concerned, to review the whole picture of our relations with the country involved and of the past history of those relations and to consider whether it is possible or desirable to continue a bilateral, or to continue some sort of joint arrangement. I believe that we were quite careful in choosing that language, recognizing that there were cases where it might not be possible to do without a bilateral arrangement.

Chairman HOLIFIELD. As a matter of fact, many of these bilateral agreements are chosen by the foreign nations as preferable and it is sometimes difficult to steer them toward the IAEA because of their own preference.

Dr. SMYTH. This is quite correct.

Chairman HOLIFIELD. Yet we recognize there are things that the IAEA can do that can't be done, possibly, as well by bilateral agreements. But some of these nations feel that bilateral agreements are more advantageous to them and things can be done between two nations that could not be applied to all the nations that are members of the IAEA?

Dr. SMYTH. That is correct. I believe somewhere in the body of the report we make the statement that says that we must recognize that there are disadvantages in dealing through an international agency.

Chairman HOLIFIELD. I think the quandry exists because of the fact that these two parallel methods of dealing with nations on atomic energy matters existed at the same time and more weight was probably given to the bilaterals on both sides than was given to the buildup of the IAEA.

Dr. SMYTH. I believe there were a number of bilaterals set up before the IAEA came into existence, so you have a historical problem as well.

Chairman HOLIFIELD. One of the recommendations of the committee is that a detailed study be made within the U.S. Government of the steps to be taken to further foreign policy objectives in the field of atomic power. Has such a study been started?

Dr. SMYTH. I believe so, but I would rather think you ought to address that question to the members of the State Department and the members of the AEC. Of course, as you very well know, the AEC is making a detailed study of the whole nuclear power situation for other reasons. The results of this study will be very relevant to this particular recommendation.

Chairman HOLIFIELD. Will it be possible to revise the IAEA safeguards document to make it applicable to large power reactors?

Dr. SMYTH. Yes. There are certainly no technical difficulties that I see there. The only problems that I can see there are possible political difficulties of the same kind that occurred in getting the Agency safeguard document adopted originally.

Chairman HOLIFIELD. Mr. Ramey.

Mr. RAMEY. On this previous question about the detailed study of the atomic power program in the international field, has the AEC in their study of the domestic atomic power program had any dealings with your group on the international aspects?

Dr. SMYTH. No, because our group finished its work. We were an ad hoc committee. We finished our work in the spring. Of course, the AEC is fully aware of the problems that we discussed, both directly through Dr. Haworth and through other members of the staff. But there has been no formal discussion between the committee and the AEC, as such.

Mr. RAMEY. Do you think it is possible to have a domestic atomic power program and an international atomic power program in two separate categories? Aren't there a number of inter-relationships so that you are really talking about the same thing?

For one thing, if you are talking about it from an industrial standpoint, it is the same equipment companies in the United States that are manufacturing atomic power plants and equipment for them, whether it is for a domestic program or whether it is for an international program.

Similarly, U-235 as a fuel is manufactured in our domestic situation.

Dr. SMYTH. I think in terms of the technology I would agree that it is impossible to make a distinction. In terms of the arrangements made, I think there might be a distinction. But also in terms, as I have suggested, of the needs of other parts of the world versus the needs of this country, we have to remember that in this country fuel is cheap. We have an extremely efficient power industry. The likelihood of a nuclear powerplant being competitive with conventional powerplants is smaller in this country even in high-cost areas, I believe, than in some of the parts of the world that I have already cited.

Chairman HOLIFIELD. Are there any further questions?

Representative HOSMER. Mr. Chairman, I would like to ask Dr. Smyth, in discussing the safeguards problem as it relates to the IAEA, if the United States cooperates with another nation that is under IAEA

and furnishes fuel for peaceful reactors under some kind of arrangement, and thereafter receives back the spent fuel and the generated new fissionable materials, how do we get around the IAEA coming back into the United States with all its inspectors and try to follow these spent fuel elements and their byproducts through our processing plants which necessarily are not separated out from our military processing plants?

Dr. SMYTH. This is a real difficulty, and it is one of the reasons why we put in that wherever practical. My own feeling is—and now I am speaking just for myself—that this is a temporary situation. As you get powerplants built up around the world, you will get processing plants built up elsewhere, or you may get processing plants built up in this country which are solely for peaceful purposes and therefore we might accept inspection.

Representative HOSMER. That is true enough.

Dr. SMYTH. But there is a real technical problem there.

Representative HOSMER. If the United States supports the development of these peaceful atomic uses throughout the world and actually does assume the burden of leadership, should we not thereby be exempted from suspicion of diversion of the products to nonpeaceful uses?

Dr. SMYTH. This is perfectly logical, but I hardly need to tell the members of this committee that situations are not always decided on a logical ground. May I put it another way, Mr. Hosmer? I have never understood, really, the objection to safeguards and inspection. From the technical point of view, it seems to me that the measures that are necessary to carry out a safeguards program are measures that are entirely appropriate to prudent management of a nuclear powerplant. I would say that part of prudent management would be to call in an outside group occasionally and to have them look over what you were doing, look over your records and see if you were really keeping track of the flow of materials and keeping track of safety problems and things of that sort.

Therefore, I take it, really the only objection to inspection by an international agency is a psychological and political one. I would hope that could be overcome.

Representative HOSMER. Thank you, Doctor.

Chairman HOLIFIELD. Thank you very much, Dr. Smyth.

The Chair might say that other members of the committee are present, Dr. Edward Brady, Mr. Eisenbud, Dr. Hilberry, Dr. Sporn, and Mr. Edward Trapnell. Dr. Leland Haworth, AEC Commissioner, and Mr. Gardner, Deputy Assistant Secretary of State, also participated.

Are there any members of the committee who would like to present a statement? Dr. Brady.

STATEMENT OF DR. EDWARD L. BRADY, MEMBER, ADVISORY COMMITTEE

Dr. BRADY. It is a great privilege for me to have the opportunity to appear before this committee to present some personal views on matters that I consider to be of great importance in international atomic energy affairs and on the role that the International Atomic

Energy Agency can play in these affairs. Perhaps I should first say that I am not going to dissent in any way with the report of the Advisory Committee on U.S. Policy Toward the International Atomic Energy Agency. I concur in full detail with the content of this report, but I would like at this time to convey my personal perspective on some of the topics discussed in detail in the report.

It is sometimes suggested that the most important function of the International Atomic Energy Agency is the provision of technical assistance to the lesser developed countries. This opinion is fairly widely held among representatives of the member states of the Agency. In discussions that I have held in Vienna with officials of even some of the more advanced countries, as well as the newly developing countries, I frequently found that technical assistance was considered to be the primary reason for the existence of the Agency.

I do not share this view. I believe that the most important task in international atomic energy affairs today is to define and establish the conditions under which international intercourse in atomic energy will be conducted. I believe that the International Atomic Energy Agency can greatly assist its member states in the accomplishment of this task by coordinating and focusing the efforts that will be necessary.

As pointed out in our report, the members of the Advisory Committee are of the opinion that the paramount consideration in an evaluation of the Agency, and to my mind of the U.S. atoms for peace program as a whole, lies in the future of nuclear power. I share the conviction of most of the members of the Advisory Committee that nuclear power is on the verge of practicality in a number of areas of the world. An international commerce, involving the United States as a major participant, is certain to develop. For this commerce to develop and to be carried on in an orderly fashion requires agreement to be reached among the nations on numerous questions.

I would like to list some of these matters, that have already been the subject of International Atomic Energy Agency action. These include measures for assurance against diversion of nuclear materials and equipment to military purposes; codes of safe practices in laboratories, manufacturing plants, and reactor installations; rules for the management of nuclear wastes; liability for nuclear incidents, both on land and on the sea; rules for the transportation of radioactive materials across international boundaries and on the high seas. The action taken by the Agency begins in each case with the assembly of a panel of experts from various appropriate countries, which defines the problems and advises on appropriate measures to be taken. In the deliberations of these panels experts from the United States have invariably played important roles, in some cases, dominant roles. Perhaps I should point out that the Secretariat of the Agency has always been careful not to attempt to arrogate too much authority to itself in these matters.

I should like to repeat, Mr. Chairman, in my opinion the most important function the Agency can serve is to assist the member states to reach agreement on the terms and conditions under which peaceful, orderly nuclear traffic can develop.

While emphasizing the importance of the aspects of the Agency's work just described, I do not wish to derogate in any way the technical

assistance activities. These are important, but in my opinion could be conducted quite adequately by another organization if the Agency did not exist. I would like to reemphasize the point made in the report of the Advisory Committee—we consider technical assistance in atomic energy to be of considerable importance, partly because of the intrinsic significance of atomic energy itself and partly because atomic energy programs in many countries serve as a stimulus for the overall technical development of the country.

Mr. Chairman, there is one further observation that I would like to make on these brief remarks. One of the objectives of U.S. participation in Agency affairs is to demonstrate to the technical community of the world the strength and quality of American nuclear research and technology and the willingness of the U.S. Government to share its extensive knowledge with the rest of the world. You may be interested therefore in my observations of the impression made by the American participation in Agency technical meetings and committees. I believe the uniform reaction of the representatives of other countries is admiration and respect—mixed with varying amounts of envy and wistfulness. There is no doubt in my mind that the United States is universally recognized as the world leader in nuclear science and technology. I do not think that the International Atomic Energy Agency has been essential in the creation of this respect, but I do believe that the way in which the United States has participated in Agency affairs has contributed significantly.

Chairman HOLIFIELD. Thank you very much, Dr. Brady. Our next witness will be Mr. Philip Sporn, another member of the Advisory Committee. Will you come forward, sir?

I know you had a busy day planned for today. You talked to me over the phone. I am happy you are here, sir.

STATEMENT OF PHILIP SPORN, MEMBER, STATE DEPARTMENT ADVISORY COMMITTEE

Mr. SPORN. I am happy I could come here.

Chairman HOLIFIELD. Did you wish to make a statement or are you prepared to respond to the questions?

Mr. SPORN. I have no prepared statement. I would like to say for the record that I have been a member of this Advisory Committee from its beginning, and I participated in its work and deliberations, and it is my opinion that the report that was produced was intended to be, and I hope and believe it is, a highly constructive document.

I would like, if I may, to add to what Dr. Smyth said as to areas in foreign fields where atomic energy is on the verge of becoming attractive. Both great industrial countries; namely, Japan and Italy, come in that category. For the rest, I would only like to make one statement, that I subscribe to the report as a whole. I worked very hard on all of it and some special parts of it. The report does not represent my views. It represents the Committee's views. This means that in some parts at least, if I had had my own way, if I had not had to work, and I hope in harmony, as a member of the Committee, I might have put things slightly differently. These are minor.

On the whole, I subscribe to the report completely and am very proud to have a privilege of playing a part in this.

Chairman HOLIFIELD. You did actively participate in the preparation of the report?

Mr. SPORN. Yes, sir.

Chairman HOLIFIELD. There was, as we looked through it, a discrepancy in regard to your estimate of nuclear power costs in the high-cost fuel areas as compared with other estimates. I think your estimates ran from 1½ to 2 mills per kilowatt-hour higher than the coal-fired powerplant costs in high-cost fuel areas domestically. The Smyth Committee report says that we are at the point where nuclear plants can now be started for completion in 1966 and 1967 which would be competitive. I suppose that is talking about the domestic area.

Mr. SPORN. Yes; it was about the domestic area. There are several other things that need to be said about this, Mr. Holifield. One, this report is dated May 19. I think that is the date on which the report was actually signed by some of the first signers of the report. I think I was the first one. And the afternoon of the morning on which I signed it, I went abroad. Most of the work was completed in March. The testimony that I submitted to the Joint Committee was submitted early in May and some of the information that I developed for the Joint Committee I didn't have with me when I worked on the IAEA Committee.

I would like in that regard to call attention to perhaps some minor but still not insignificant discrepancies in the report which, if I had noticed at the time it went in, I perhaps would have got the Committee or could have got the Committee to change.

For example, on page 1 of the Smyth report we say that nuclear power is on the threshold of economic attractiveness. This I believe to be the truth. But if you come to page 9, in the first paragraph on the second right-hand column, we say that we have reached a stage where nuclear reactors and large-size units can be undertaken for completion roughly in the period 1967 which will be competitive.

There is just enough difference between them so that if I had a chance to have my judgment backed up, I would have delimited slightly the statement on page 9. But this, again, I point out, is a minor point.

Chairman HOLIFIELD. It is a matter of judgment?

Mr. SPORN. Yes, sir.

I also, Mr. Chairman, want very badly to emphasize one point about my 202 statement,³ because there has been some discussion, and late yesterday while I was here on affairs connected with government, very late, a colleague of mine came in and handed me a copy of a release of this committee which I just barely had a chance to glance at. I want to call attention to the fact that in my statement in the 202 hearings, I tried to make quite clear that I was presenting an analysis based on information, judgment, projection made by one of our great atomic technical organizations. My parts in modifying the figures were extremely minor.

There were only two. I carefully listed them. One of them was to correct a gross figure to a net figure on the basis of information furnished that auxiliary losses constituted 5 percent. I therefore corrected cost figures for net values by 5 percent.

The other, and there again I carefully pointed it out, was to correct for what I felt was a slight oversight in the stabilized cost of fuel and for too low a figure on overhead costs. I combined those two in my best judgment to a 5-percent correction. But the overhead figure there

³ See hearings on "Development, Growth, and State of the Atomic Energy Industry," March 1962, pp. 688-692.

represented more than half. So the adjustment that I made in this nuclear manufacturer's projections of costs, and throughout my entire analysis, they were his figures, Mr. Chairman, not mine. I thought I was quite clear about it and mentioned it over and over again.

I think I indicated in any number of places, Mr. Holifield, that I thought that the progress made even on those figures was quite remarkable. I believe that today. I, myself, do not believe that there is any inconsistency of even minor substance between the figures in the 202 statement—at least between by judgment of those figures—and the figures giving an appraisal of the situation with regard to the current status of atomic power in the report of the Advisory Committee to the State Department.

Chairman HOLIFIELD. Of course, our attention was directed toward your testimony which said that nuclear power would not be competitive with conventional power in the period of 1973-78 even in high fuel cost areas. Then in the report here it says that we have reached a stage where nuclear reactors and large-size units can be undertaken for completion roughly in the period of 1966-67 which will be competitive in high-cost fuel areas. There is a difference there of 7 to 11 years.

Mr. SPORN. I think, Mr. Holifield, I was quite a bit more optimistic than the figures I put together, which were not mine by the way, and I so stated. I said in one part that it is a fact, however, that we have made remarkable progress in reducing costs of conventional power and this has come about not only from improvements of the technology of the conventional generating plants, themselves, but also from the progress in mining coal.

But then I said in judging the figures of atomic power a little earlier:

These, particularly the improved fuel and future figures, are I think, indeed very, very striking figures. They are pregnant with a great deal of promise, because it is always possible that some development, not necessarily of a breakthrough nature, will come along that will cut as much as 5 or 10 percent from any one of them.

Again let me say that I took figures that were prepared and given to me by a most competent organization, that not only do I respect but I am sure you do, Mr. Chairman.

Chairman HOLIFIELD. I am sure we both know who you are talking about. The committee is also aware that conditions change.

Mr. SPORN. Yes, sir.

Chairman HOLIFIELD. And that the figures of a company change along with those changing conditions. This is as it should be.

Mr. SPORN. Yes.

Chairman HOLIFIELD. We have had some testimony from two of the large manufacturers this year in which they indicate that by the very factor of building plants in the 400-megawatt range, they believe they can achieve economies which they could never have achieved in smaller plants. This may be one of the technical developments or potential technical developments which may cause a revision downward in the competitive costs of fuel.

Mr. SPORN. I think you might be interested, Mr. Chairman, that in my 202 statement I also made some projections for conventional plants and indicated that I thought that we could currently put together a 600-megawatt conventional unit operating at very high pressures and

temperatures with a thermal efficiency of approximately 40 percent for \$120 per kilowatt. I indicated that I thought that looming in the future, roughly in the next 12 years or so, this could be cut to \$100. Within the last 10 days we have completed a very exhaustive design study and are making some proposals based on that study in which we have put together two 650-megawatt units operating at a pressure of 3,500 pounds per square inch with a thermal efficiency that I mentioned, and our estimated cost is \$108 per kilowatt.

Chairman HOLIFIELD. You are talking about coal?

Mr. SPORN. Conventional plants, yes, sir. So we have cut \$12 off the figure that in May I said could possibly be cut by \$20 in a period of 12 years. I think there is a good possibility that another \$6 or \$8 will be cut much sooner.

On the other hand, there will come a period when the line of progress and the line of possibility will just touch each other, and it won't be possible to go beyond that. At the present time they have not reached that point yet.

Mr. RAMEY. I think it is thought that nuclear power, by being a much younger industry technologically speaking, could make many more advances and cut costs substantially at a greater rate than perhaps your conventional plants could.

Mr. SPORN. Mr. Ramey, I am not sure that is a sound principle to go on.

Mr. RAMEY. There is nothing like competition.

Mr. SPORN. That is right. I believe competition has stimulated both. Again I have indicated that. I am sure, for example, that the rapid development of nuclear power has stimulated development of conventional power and has had an enormous influence on conventional fuel costs. At the same time, these so-called moving targets that I have been talking about have had a most beneficent effect on the designers of our nuclear plants. We have really challenged them, and I think they have come forth in remarkable shape.

Mr. RAMEY. I think one other thing that has worried the committee over the years is that we always sort of looked at the international situation and said, "The grass is greener over there, and we can build plants cheaper over there." That was sort of the basis of Euratom, saying, "If we could just solve things over there, maybe we could get a domestic power industry going, and we really don't have to push on our own domestic atomic power program."

I think it worried us a little bit, that this has been creeping into this IAEA report: If we just support atomic power abroad through IAEA, then we can take it easy on our domestic atomic power program.

Mr. SPORN. That is not what I got out of the report that I had a hand in drafting, and I doubt if any other member of the Committee had in mind such an inference through anything that is in the report, or that the report said anything about slowing down the domestic program. I didn't get that concept at all in anything that I saw. I reread the report early this morning again. I don't think that is so. But this is so, Mr. Ramey. I think that the fuel situation in the country that Dr. Smyth mentioned, and in the two countries I mentioned, Italy and Japan, is certainly much worse than it is in even our highest cost areas.

The Commission and all of you gentlemen are thoroughly familiar with what these are. So it is easier to find currently an application in a foreign country that is excellent business than it is to find it in this country. But there are some spots in this country where that is true, also.

Mr. RAMEY. There are other factors in the foreign scene that don't appear in this country, though. The whole international situation.

Mr. SPORN. Yes.

Mr. RAMEY. There have been other foreign developments, such as in oil, that certainly in the near term have made the Euratom program look less attractive in recent years.

Mr. SPORN. On the other hand, the foreign program, as the committee examined it, was not examined from the standpoint of mere business that our manufacturers could do in foreign countries. It was examined from the standpoint as an instrument of national policy. Again, this is something that this committee has done a lot of work on and is thoroughly cognizant of.

Representative HOSMER. That leaves a question in my mind, Mr. Sporn. The Committee did proceed on the peaceful uses basis as an instrument of national policy to raise living standards and for the general peace and stability of the world?

Mr. SPORN. Yes.

Representative HOSMER. It did emphasize that the most important use of nuclear technology was the production of electricity?

Mr. SPORN. That is right; whereas in many foreign areas we have been discredited with the idea that we were trying to get the bomb use of it into effect.

Representative HOSMER. You mentioned Italy and Japan as prime targets for the use of this peaceful atom for energy. But what about these other countries where the living standards are really bad and where we are trying to do something and where the instability is great? How does that fit into this picture?

Mr. SPORN. I think the report goes into that and has pointed out something like this: The idea of being involved in the atom and atomic energy, which the International Agency has done a great deal to promote, has made it possible in many cases for people of good will, the advanced people, technologically and scientifically, in the smaller countries, who are a very small minority in many cases, to reach positions of influence through which they could begin to do things for these underprivileged people, but also undereducated, underhoused, underfed people, that they could not do without the help of the atom.

The atom, itself, has in it a sort of magic through which you can begin to educate people.

Representative HOSMER. In those cases, it would not rest on the generation of electricity. It would rest on other applications of the atom and to an extent a direct one.

Mr. SPORN. I think the immediate help that would be given in those countries would certainly not be the atomic help but the more basic helps. If it succeeded in doing nothing more than educating a small percentage of the population in the knowledge and understanding to handle a small diesel engine of 100 kilowatts, that might make a great contribution to the welfare, but the atom would have been the agency through which it had been accomplished.

In due course, they might be ready for atomic power. Here again I think the report has indicated clearly that the International Agency has done a remarkable job in going down to some of the smaller countries, making energy surveys, and not plumping automatically for atomic power, because these countries were not ready for it. Their judgments and the kind of people they have sent down have been generally accepted, and this I believe is a great contribution to the foreign policy of the United States.

Representative HOSMER. The existence of the research reactor in Léopoldville is not a good example to refer to?

Mr. SPORN. No, it is not.

Representative HOSMER. But in other countries it has the effect that you mentioned?

Mr. SPORN. Yes. There are people present here who could give you specific details of things that they themselves have found. I have not had that personal experience, but I fully believe the reports they have given me and given the rest of the members of the committee.

Chairman HOLIFIELD. Are there further questions?

If not, thank you, Mr. Sporn, for your appearance today. I know you did it at some inconvenience to yourself.

Mr. SPORN. Thank you, Mr. Holifield.

Chairman HOLIFIELD. Our next witness will be Mr. Harlan Cleveland, Assistant Secretary of State. Mr. Cleveland.

STATEMENT OF HARLAN CLEVELAND, ASSISTANT SECRETARY OF STATE FOR INTERNATIONAL ORGANIZATION AFFAIRS

Mr. CLEVELAND. Thank you, Mr. Chairman.

Chairman HOLIFIELD. We are pleased to have you with us sir. Will you proceed with your statement?

Mr. CLEVELAND. Thank you, Mr. Chairman.

These assorted international organizations to which the United States belongs—we belong to 51 of them in all—are like any other kind of institution. They grow and sometimes they grow in slightly different directions from the original idea. For this reason we have undertaken in the executive branch quite a survey of a number of the large organizations, and it was in this connection, in turn, that the committee headed by Dr. Smyth was appointed last fall.

The International Atomic Energy Agency has had more than its share of the trials of growing up. It has suffered more acute growing pains and greater uncertainties about its future, I think, than any other technical agency in the U.N. family of agencies. So last fall, we felt that the time had come for a general review of the International Atomic Energy Agency, by knowledgeable people who could take a fresh look at the Agency from the combined viewpoints of U.S. foreign policy, of technology, and of administration and finance. That is why the Department of State, in agreement with the Atomic Energy Commission, established the advisory committee under Dr. Smyth's chairmanship.

It has been a stimulating exercise, immensely useful to the U.S. Government. The committee's report gives us a new judgment by competent experts on the prospects for an expansion of nuclear power abroad in the near-term future.

The assessment made in the Smyth report, which is generally endorsed by the AEC, confirms earlier judgment that nuclear power will increasingly play a part in economic development. Dr. Smyth has described it in effect as a postponed optimism on this subject.

The Department of State, which fortunately recognizes some limits on its wisdom, isn't really in a position to make the technical judgment on the extent or speed of nuclear power expansion in various areas of the world. But expert opinion that such growth is likely to occur is very important to foreign policy planning from two points of view.

First, we are concerned that adequate safeguards be maintained to guard against military applications of a proliferating nuclear technology. Second, the prospect of increasing use of nuclear energy for power as well as research makes it important to help the newly developing nations to develop the new technical people who can handle the new technology.

We are seeking to make a practical start on an international program of safeguards, as the committee recommends, looking into the enormously complex question of how best to relate an international agency to the bilateral arrangements which have thus far been the dominant pattern of our international atomic energy program.

It is not, of course, really, as it is often presented, a problem of bilateral versus multilateral. Indeed, as we think it through as a result of the Smyth Committee's report, we come out with the thought that in one way or another we will probably want to ask the IAEA to assume some kind of third party role in relation to our bilateral agreements in the atomic energy field. We have not arrived at a precise formula which would serve this purpose.

In fact, we are persuaded that somewhat different formulas would be needed for different countries, and they would, of course, have to be negotiated on a country-by-country basis. We are therefore not prepared to make a precise statement on this matter at the present time.

In the meantime, the advantage of technical assistance from an international agency has been confirmed by the committee report, especially in cases where the assistance involves functions which many nations consider to be politically sensitive or involves countries which are as a whole politically sensitive. We do not, however, believe that the IAEA or any of the other technical agencies of the United Nations complex should be used as channels for major inputs of financial aid. The IAEA is not a bank. We continue to believe that the international, regional, and national financing institutions are better equipped for this purpose.

Nor do we believe that the United States should increase its proportional financial support of the IAEA. We are now contributing 32.27 percent to the regular budget of the IAEA and 50 percent to the operational budget, and we believe it would not be good policy to assume a greater share than that.

At the same time, we hope that as the agency continues to mature, other members will agree with us on the desirability of expanding its operations, particularly the technical assistance, fellowship and visiting expert programs. The Agency's fellowship program and the visiting experts which the IAEA sends to countries that are newly

experimenting with nuclear energy tend to give a major boost to the rapid expansion of scientific and technical skills across the board. We agree with the advisory committee's recommendation that these activities merit the vigorous support of the United States.

We most explicitly agree that the Agency is the most appropriate instrument for establishing uniform health and safety standards, for working out uniform rules for liability and indemnification for atomic accidents; for developing and publishing international standards for waste management; and for conducting research and calling scientific conferences on problems which require international planning and coordination.

With respect to all these important functions, we believe that the Agency has earned, and will continue to deserve, strong support from the U.S. Government.

Finally, despite the political difficulties that are sometimes involved, which the committee did not go into in any detail, we welcome the presence in this international agency of the Soviet Union. In this way the Agency serves not only as an effective instrument of cooperation between ourselves and our Atlantic partners on the one hand and the newly developing countries on the other, but also as an avenue of communication between the two principal atomic powers, the Soviet Union and ourselves.

As in other large international organizations, our membership in the International Atomic Energy Agency produces periodic political fireworks at the main conferences of the organization. But in between these sometimes grumpy sessions, much work is done by most of the countries of the world working together, with the support of the Agency's secretariat, to build an effective instrument of their common interest in putting the atom to work for peaceful purposes.

With the sense of direction provided by the work of Dr. Smyth and his colleagues, we propose to continue and develop that constructive work, without getting too excited about the occasional thunder and lightning offstage.

Thank you, Mr. Chairman.

Chairman HOLIFIELD. Having been exposed to some of that thunder and lightning, I know what you mean. The report of the Advisory Committee, on page 2, contains several recommendations, Mr. Cleveland. No. 2 is that activities now being conducted on existing bilateral agreements should be transferred to Agency auspices wherever practical.

Does the Department of State agree with this recommendation, and if so, what steps are being taken to phase out existing bilaterals and will any new bilaterals be undertaken with new countries?

Mr. CLEVELAND. The Department of State agrees with the general sense of direction in that recommendation. But as Dr. Smyth said, the operative phrase is "wherever practical." We are now studying the problem of how to do it in the specific kinds of cases that are likely to emerge. It is partly a technical and administrative problem, how to relate the Agency effectively to the bilateral program, and partly a political problem of the relationship with the other country in the bilateral arrangement.

I do think, Mr. Chairman, that it is worth calling attention to one piece of doctrinal progress. The idea used to be that the way to get

the Agency into the safeguards business was to have it be as channel for money, or the channel for fuel supply, or both. I think it is pretty clear that it is not necessary, in order to have the Agency effectively involved as the international inspectorate on the safeguards problem, for the Agency also to be a bank. I think we are at least questioning the assumption that in order to be the international inspectorate the Agency needs to be a channel even for fuel supply.

It is from this series of perceptions that we come to the idea that probably the most rational way to develop practical "safeguards" is to relate the International Atomic Energy Agency to the bilateral agreements—to make it, in effect, a part of the bilateral arrangements that we negotiate with other countries in this field. This is the framework within which the current study is going on.

Mr. RAMEY. That is quite a departure from the original concept of the IAEA. It was sort of to be the fuel supplier or the broker through which everything would be channeled, and in such a way you could thereby prevent diversion of materials and so on.

Mr. CLEVELAND. It is relatively easy in the early stages of thinking up a new institution to develop rather grand ideas as to what it ought to look like. Suppose you were to develop a blueprint now of how Congress really ought to operate, if you were setting it up from scratch. But it doesn't quite operate that way, probably.

Mr. RAMEY. It would have summer vacations.

Chairman HOLIFIELD. We would have shorter hours and summer vacations.

Mr. CLEVELAND. That is absolutely right. It is the air conditioning that does it. It keeps you here all summer.

Chairman HOLIFIELD. In your testimony you indicate that the U.S. support for the IAEA as compared to cooperation through bilateral channels is still under review. This has been going on for about 5 years. When are you going to get to the end of this review?

Mr. CLEVELAND. I think it is fair to say that until this current period, the review that has included the work of the Smyth committee, that the U.S. Government did not put a whole lot of push behind getting the IAEA involved in our bilaterals, and did rather take the line that either everything had to be done either bilaterally or everything had to be done through the Agency, since the Agency was still in its institutional development and in its infancy.

So it was a little hard to imagine all of these functions, the financial and fuel functions and so on, being built up on an international basis. I think that we can now separate ourselves off from some of the earlier and more ideal assumptions, and develop practical relationships with the IAEA, particularly in the safeguards field, and in the field of assistance to the underdeveloped areas, that will make sense case by case. Looking back, a year or two from now, it will look like a lot of progress.

Chairman HOLIFIELD. I asked you a question in regard to whether the State Department would contemplate entering into any additional bilaterals. Looking through the New York Times this morning, it contains an article on page 1 that India is seeking a U.S. atomic plant of 300,000 kilowatts to be built north of Bombay. The article indicated that the State Department was contemplating a bilateral arrangement with India.

India is one of the principal neutral states, and we know that we do not as yet have a bilateral agreement with India. If a bilateral agreement is arranged with India rather than working through the IAEA, would not this be quite a blow to IAEA?

Mr. CLEVELAND. I think you are perhaps jumping a little bit over a fence that we have not quite come to yet but will come to pretty soon.

In the negotiations with the Indians, the matter of how to relate the International Atomic Energy Agency to this bilateral, how to assure adequate safeguards, has not been reached yet. The Indians, as you doubtless know, voted against the IAEA safeguards proposal a couple of years ago when that was carried at Vienna. So it is not clear at the moment what their view, now that there is a specific case, will be. Since that is not clear, it is not possible to say at this point just what our negotiating position will be in the matter.

But there certainly need to be some kind of safeguards arrangements, and the general thrust of policy is to try to develop them to the extent practicable on an international basis.

Chairman HOLIFIELD. Of course, you are somewhat under the compelling point of the preference that India might express in this regard. She might want to go toward the IAEA or she might want to go toward a bilateral, and you might be posed with the choice of making a decision which was most important: participation in a bilateral or nonparticipation and nonfruition of the project.

Mr. CLEVELAND. It is a true negotiating situation because the number of alternatives that India has is also by no means infinite.

Chairman HOLIFIELD. Mr. Toll.

Mr. TOLL. Mr. Secretary, do you leave this choice to the other country in each case, or does the United States have a consistent policy of trying to support the Agency?

Mr. CLEVELAND. We are developing a consistent policy, and this will, as the chairman indicates, tend to become the first specific case in which all of the elements in the equation get put together in a practical situation. I can't predict to you, because I don't know, just how it will come out.

Mr. TOLL. If you leave the choice to the other country each time, wouldn't there generally be a tendency to proceed bilaterally, and this, therefore, tends to undercut the Agency?

Mr. CLEVELAND. I don't think there is any thought at all of leaving the choice to the other country. This is a bilateral situation in which they have some choices to make, but we have some choices to make, too. We are free to attach to this kind of assistance program whatever conditions seem to us to insure the purpose of the exercise. They are free to come to us for assistance or go to somebody else for assistance. This is the framework of the negotiation now.

You asked me how it is going to come out. I will tell you I don't know how it is going to come out.

Mr. TOLL. I would like to ask one or two questions about the financial difficulties that the Agency is in. As you pointed out, the United States has been contributing one-third of the regular budget and one-half of the operational budget. I think the committee and everyone else would agree that the U.S. share should not be increased and

that the job is to get other countries to help pick up some of the tab so this becomes a true world-supported organization.

The United Kingdom has introduced an amendment to amend article 14 of the IAEA statute so that its revenues could be obtained more by assessments upon member states rather than depending upon voluntary contributions. I wonder whether the United States has yet made a policy decision to support the United Kingdom amendment and what the prospects are for getting that passed in the fairly near future.

Mr. CLEVELAND. We rather like the United Kingdom amendment. Obviously, both from the point of view of spreading the financial responsibility for what the Agency does as widely as possible, and from the point of view of reducing the U.S. share, it makes sense to put as much as possible, up to all, of the expenditure of the Agency under the regular assessment budget which is spread to all the countries on the standard percentages, of which ours is 32 and a bit.

The problems are two. First, there is the politics of getting that through an assembly in which most of the members have relatively smaller national budgets than ours, and in which, by the way, most of the countries' contributions to international organizations are a much larger proportion of their total national budgets than in our case.

The other problem is, suppose you were to decide that everything were to be done on a regular budget basis, you then build into the machinery a disincentive to doing anything much more because then it would cost everybody money. There may be situations in which we, from our national interest point of view, would like to see the Agency doing more, and we would be prepared to pay a higher percentage, as has been the case with the voluntary, so-called, operational budget up to this time.

So, it is again a balance of judgment. But to the extent possible we would like to see the principle embodied in the United Kingdom proposal adopted.

Mr. TOLL. I just wonder if you could comment on any of the three questions of Dr. Smyth's at the conclusion of his statement, where he said he believed that the U.S. Government must make clear sharp decisions on three questions.

Do you think the Department of State, for one, will be able to answer these three questions in the near future?

Mr. CLEVELAND. Yes. I think the difficulty is not so much in answering the questions in this general form as in answering the sub-questions that follow. Sure, the United States wants to support the development of nuclear power around the world. But do we want to build into our aid program a preference for nuclear power as opposed to other forms of power in power development? This is a more complex and difficult and interesting question that really has to be looked at in terms of the economic program country by country.

How important does the United States consider safeguards? Very. This is indeed the most important single aspect as we look into the future of the International Agency's program. This is more than any one thing the *raison d'être* of an international agency.

Is the United States really going to use the Agency? Yes, we are going to use the Agency. But whether we will use it in a particular case, given all the conditions in that case, can only be determined

when you look at the case. That is a complicated answer to some simple-looking questions, but Dr. Smyth knows how complicated his questions are.

Mr. TOLL. Thank you.

Chairman HOLIFIELD. Thank you very much, Mr. Secretary.

Mr. CLEVELAND. Thank you, Mr. Chairman.

Chairman HOLIFIELD. Our next witness is Dr. Leland Haworth, Commissioner of the AEC.

STATEMENT OF DR. LELAND J. HAWORTH, COMMISSIONER, ATOMIC ENERGY COMMISSION

Dr. HAWORTH. Thank you, Mr. Chairman.

Mr. Chairman and members of the committee, I wish to say that the AEC is pleased to have the Advisory Committee's report on "U.S. Policy Toward the IAEA" which is before us today and which was prepared under the able chairmanship of Dr. Smyth. We have found that the report has served in certain cases to point up new policy considerations, in other cases to help crystallize our thoughts on specific issues and policies, and in still other cases to reaffirm that our past actions have been sound.

In general, the main thrust of the report is toward a reaffirmation of U.S. policy of strong support for the IAEA, on the grounds that the peaceful uses of atomic energy can and should play an important role in our foreign policy and that support of the IAEA is an effective means for the furtherance of this policy.

The AEC agrees with these conclusions and also agrees that the Agency has, in its first 4 years, served a useful function and contributed significantly to the basic goal of promoting the peaceful uses of atomic energy.

Acceptance of these conclusions requires that future policy of the United States toward the IAEA be soundly based in terms of strengthening the Agency in its purpose of promoting the peaceful uses of atomic energy and of contribution to U.S. foreign policy objectives. It is on the basis of these criteria that we have evaluated and are continuing to evaluate the recommendations set forth in the Advisory Committee's report.

I believe it is fair to say that an analysis of the recommendations in the report reveals that those of the greatest impact fall in the areas of the development of nuclear power and of safeguards against the diversion of material and equipment to military purposes. The report itself in fact, identifies these two subjects as the principal factors affecting the contributions that the Agency can make in the future.

BILATERAL ACTIVITIES AND SAFEGUARDS

We recognize the validity of the Advisory Committee's statements to the effect that one method of encouraging the development of Agency competence is to transfer to it as many as possible of the activities that are now being carried out bilaterally. Basically these activities are the supply of materials and of equipment and the application of safeguards. With respect to supply activities, it should be noted that any of our bilateral partners can at any time utilize the Agency

as a supply channel. There is no bar to this and it has been our policy to encourage them to do so.

Use of the Agency for the supply of materials and equipment automatically carries with it the appropriate Agency safeguards. Additionally, safeguards may be applied to bilateral activities voluntarily placed under the system. The current principles and procedures of the Agency's safeguard system are adequate for the type of assistance that is now generally being provided by the IAEA and through bilateral activities. As the Advisory Committee points out, however, the construction of significant numbers of nuclear powerplants will increase substantially the possibilities of nuclear products from such plants being diverted to military use. There is evident, therefore, a need for continued effort to obtain, as the Advisory Committee describes it, "a uniform worldwide, effective system of safeguards."

Ideally, such a system would be one administered by the IAEA. The IAEA system, however applies only to assistance received through the Agency or to bilateral activities voluntarily placed under the Agency's system. It cannot be regarded as a worldwide system nor should it be confused with disarmament efforts.

Nevertheless, the Agency system provides a means for bringing nuclear facilities under safeguards and could set a highly desirable example of a truly workable international safeguarding system. For these reasons, we regard the Agency's safeguard function to be the most important of its activities and we believe that serious efforts should be made to strengthen and make the safeguard system work.

The United States has continually reviewed the kind of safeguards system which will provide adequate assurance against diversion of nuclear materials at a minimum cost in funds and manpower. Much progress has been made in defining and applying a system which is considerably less complex than those once considered necessary, and additional effort is being devoted to further simplification of safeguard procedures, including consideration of improved instrumentation techniques.

While complete and full use of the Agency as a supplier of materials would be a significant step in strengthening Agency safeguards, many countries have greater confidence in, and preference for, the bilateral channel. Important as it may be to the Agency for it to serve as a supplier of material (a question on which there have been different opinions), it is even more important that Agency safeguards become generally applied. It is, therefore, of great significance, in the interests of strengthening the safeguards function of the Agency, that greater emphasis be given to the voluntary application of IAEA safeguards to bilateral transactions.

NUCLEAR POWER

The Advisory Committee's principal recommendation on nuclear power is that "a detailed study to be made within the U.S. Government of steps to be taken to further foreign policy objectives in the field of atomic power."

This recommendation is made on the basis of the committee's judgment that "nuclear power is on the threshold of economic attractiveness in a number of technologically advanced parts of the world."

Specifically, the report enumerates five ways in which the United States can promote the construction of nuclear power reactors outside the United States and suggests that these possibilities be examined to determine their potential advantages and disadvantages.

In general, the AEC agrees with the committee's premise regarding the approaching economic competitiveness of nuclear power in high-fuel-cost areas. Implicit in this premise is the assumption that nuclear powerplants will be constructed in significant numbers in some countries abroad during the next decade. It now seems clear that this will indeed be likely.

We are, therefore, reviewing the nature of the gap that exists between the current costs of nuclear power and its economic competitiveness in high-cost fuel areas of the world. The nature of this gap will provide a guide as to the type of assistance that might usefully be given to promote the construction of nuclear powerplants and will permit a realistic decision on the desirability of the United States offering such assistance.

While it would not be desirable to endeavor to forecast at this stage what this decision might be, I believe that certain considerations may be stated now without prejudice to the conclusions that may be reached. The AEC is inclined to agree with the Advisory Committee's conclusion that it would not be wise for the United States to promote the construction of experimental power reactors in countries which do not have a well-developed technology, and that any encouragement to be given the construction of power reactors should be toward well-tested types.

With respect to the role which the Agency might play in the encouragement of nuclear power, the Agency cannot be regarded as a potential source of direct financing of nuclear powerplants unless a substantial change is to be made in its fiscal structure. There is clearly, on the other hand, a broad role for the Agency in providing technical advice. The extent to which this technical advice should be supplemented by material or financial assistance by the Agency and by the United States is the main point raised by the committee. If any such assistance were to be provided, I believe one essential requirement would be that its character and level be in keeping with the scope of the Agency's own program and budgetary level. It would not, for instance, be in the interests of either the Agency or the United States for the latter to finance through the Agency the construction of a nuclear plant in a given country at an expenditure level several times larger than the Agency's normal budget.

This is a somewhat obvious example but whether something less is desirable and practicable will require additional study. We will, of course, advise the committee of the results of this study.

CURRENT ACTIVITIES OF THE IAEA

With respect to program activities apart from nuclear power and safeguards, the Advisory Committee's report points up the fact that the Agency's activities have become important and may, irrespective of developments in nuclear power and safeguards, justify continued vigorous U.S. support of the Agency.

Among its principal recommendations, the Advisory Committee calls for the United States to take the lead in securing international agreement that the Agency be recognized as the instrument most appropriate for certain functions including:

1. The establishment of uniform health and safety standards;
2. The provision of technical assistance;
3. The reconciliation of liability and indemnification practices;
4. The conduct of international research projects; and
5. The promulgation of waste management standards.

Additional more specific suggestions regarding these current activities of the Agency are contained in chapter II of the Committee's report.

The United States has been an active participant in Agency activities in these fields. We believe that the areas of standards and codes, health and safety, waste management and liability are particularly well suited for Agency programs.

All involve problems which may transcend national boundaries and on which there should consequently be international action to establish widely acceptable standards and norms. In our past support of Agency activities, for instance, 10 U.S. experts have participated in the panels which the Agency has called together in its health and safety program.

These panels helped to prepare the Agency's Health and Safety Measures, Basic Safety Standards, Regulations for the Safe Transport of Radioactive Materials and other codes and standards.

Other panels carried out reactor hazard evaluations in Switzerland, the Netherlands, Thailand, and the Philipines. Similarly, U.S. experts have participated in all of the Agency's expert panels on waste management and liability questions.

We propose to continue our active support and encouragement of Agency activities in these fields. There has already, in our opinion, been substantial recognition of the Agency as the most appropriate body to carry out these activities internationally and we believe that this recognition will continue to expand.

With respect to the provision of technical assistance, we agree that the IAEA should be recognized as a most appropriate instrument for providing such assistance in nuclear energy. The Advisory Committee itself recognized, however, "that there may well be circumstances in which the bilateral approach may prove a faster and more effective means of furnishing equipment." Similar considerations may hold true for the award of fellowships and the provision of experts.

We feel that the Agency should continue to play an important, but not exclusive, role in this field insofar as the provision of U.S. assistance is concerned.

One factor which limits the U.S. reliance upon the Agency as a mechanism for providing technical assistance is the contribution made to the Agency by other nations for such assistance. The Agency's technical assistance is currently financed from the voluntary contributions of member states and these contributions have consistently fallen short of the target figure. U.S. contributions to these funds have amounted to at least 50 percent of the amounts collected. I might note, however, that in line with the Advisory Committee's recommendations, the United States has supported the Agency's program

of technical assistance by offering 305 cost-free fellowships, by making available 24 cost-free experts for technical assignments and by providing equipment valued at \$433,500 for Agency-approved projects. We believe that this support has helped the Agency and brought credit to the United States. We are gratified at the Advisory Committee's conclusions which support such assistance and which recommended its continuation and expansion.

The research activities of the Agency fall into two categories, those pursued primarily in furtherance of the statutory functions of the Agency, such as health and safety and waste disposal, and those pursued in areas of technical assistance import, such as uses of isotopes in agriculture.

To date the Agency has supported some 120 research contracts. We regard this program to be appropriate and desirable, first, in terms of supporting research which is significant to Agency functions and which is not being done by others; second, in terms of the Agency's position of being able to organize projects which require international coordination; and third, in terms of being able to provide useful activity for laboratories in lesser developed areas.

Additionally, the fact that the Agency has a research program enhances the Agency's ability to attract a competent technical staff and also provides, through personal contact with laboratory and contractor personnel, access to knowledgeable people who can provide advice and guidance for the Agency's programs.

The United States has itself found Agency research projects worthy of special support. Under a joint program with the Agency, the United States has financed 20 research contracts and 12 renewals in a total amount of \$398,220. These contracts have had to pass the test of "being in the programmatic interest of the AEC" before funding is undertaken. In view of the many demands for research money, I believe this to be a fair test to apply in order to insure that the best use possible is being made of the funds available.

The Advisory Committee has made additional specific recommendations with respect to agency activities in the dissemination of information, the use of isotopes and the conduct of study programs upon which I do not believe comment is necessary other than to say that we find them acceptable and will be guided by them in exerting our influence upon the direction of the pertinent Agency programs. Similarly, we find the Committee's suggestions contained in the general comments in chapter III of the report to be valid, and to provide useful guidance in our continuing participation in and support of the Agency.

Finally, Mr. Chairman, may I add further emphasis to the importance which should be attached to the Advisory Committee's conclusions regarding safeguards against diversion to military activities? The more the nuclear power industry develops, the greater the dimensions of this problem become and the more crucial is the application of international safeguards.

We shall do all we can to help maintain the Agency as an effective organization; one which is technically competent, carrying out well-conceived and administered programs, and a desirable instrument through which the United States can carry out its policy in furthering the peaceful uses of atomic energy including international safeguards.

I am firmly convinced that although there may be differences of opinion as to how rapidly nuclear power will come into being around the world, there is no question whatever that it is coming and coming fairly rapidly.

Studies of the total situation of the energy sources of the world show that it is inevitable that nuclear power in some form, either fission power or if it should work out, fusion power have got to reach a very high level within a very few decades.

When this comes about, the problem of the dangers of military diversion could become very great if there is not a safeguard system. I simply cannot conceive of a very high level of nuclear power around the world—I mean of the sort that we are inevitably going to have—without some international system of safeguards.

If we do not have that in being and keep it in being from the beginning we will never be able to establish it after the high level of nuclear power comes into being. I think that is to my mind by all odds the most important and could be a crucial aspect of this whole problem.

Mr. TOLL. Dr. Haworth, the Agency safeguards can be applied in either one of two ways. Either by the materials being furnished through the auspices of the Agency, or in the case of a bilateral agreement, if the two parties to the bilateral consent to Agency safeguards and inspection. There appears to be a tendency to go this second route. I got that impression from Secretary Cleveland's statement.

From a technical point of view, is it easier to apply safeguards when the fuel goes through the Agency than in the case of attaching it to a bilateral agreement?

Dr. HAWORTH. I can't see that there is any great difference either way from a technical point of view. There are differences, of course, from the political and administrative points of view. I don't see any real difference technically.

Chairman HOLIFIELD. As a matter of fact, it may be simpler through the bilateral.

Dr. HAWORTH. I think for administrative and financial reasons rather than technical reasons.

Chairman HOLIFIELD. Yes. Political reasons.

Dr. HAWORTH. Yes, political reasons.

Mr. TOLL. I believe the Agency safeguards document now is limited to 100 megawatts thermal?

Dr. HAWORTH. Yes.

Mr. TOLL. And this will have to be revised in order to make it applicable to most powerplants?

Dr. HAWORTH. That is right.

Mr. TOLL. Is the AEC working on this and going to have some proposed revisions?

Dr. HAWORTH. Yes, we have studies of it. Again I think the principal problems are going to be political and administrative and not technical.

I don't believe that the problems are different in anything but degree for the higher power reactors. It is simply that if something is diverted, it can be more. It is just a quantitative difference.

Mr. TOLL. Are you getting any practical useful information from the experiment of applying safeguards to four U.S. reactors?

Dr. HAWORTH. I am afraid I am not familiar with that in detail. Mr. Wells, could you answer that question?

Mr. WELLS. Mr. Toll, I think it is fair to say that the Agency inspectors have learned something from their first visit to the United States when they have looked at these plants. I think it has been more in the nature of corroborating and affirming some of the problems in applying safeguards. After all, they are very small reactors still.

Mr. TOLL. As I recall, though, the safeguards document, if applied literally to one of the Brookhaven reactors, it would require a large number of inspections during the year because of the highly enriched core of that reactor. Therefore, you can learn by experience the need for revision.

Mr. HUDSON. It is the graphite reactor which is the larger one which would qualify for quite a large number of inspections. But the reactor itself is well under the 100 megawatt thermal ceiling that is established.

The frequency of inspections comes from the large amount of core material.

Chairman HOLIFIELD. I notice that the committee recommends that the staff of the Atomic Energy Commission examine the possibilities for promoting construction of nuclear power reactors outside of the United States in order to determine their advantages and disadvantages of each method of assistance.

Does the AEC have such a study and does it plan to make such a study and, if so, could you make it by the late September conference of the IAEA?

Dr. HAWORTH. We certainly are not very far along in such a study.

Dr. SEABORG. There is a study in connection with the State Department. I doubt that it will be ready in time for the September conference of the IAEA.

Chairman HOLIFIELD. The study that you are on now, will that touch upon that point?

Dr. SEABORG. No, not substantially. That will be devoted essentially to the domestic situation.

Chairman HOLIFIELD. I think that the President has asked that the international impact be considered in his request, did he not?

Dr. HAWORTH. But not quite in this sense. Not in the sense of how we give assistance.

Dr. SEABORG. No, not from the standpoint of the economic situation throughout the world, I believe. It is more from the sense of how this might be an instrument of our foreign policy.

Chairman HOLIFIELD. I find myself unable to draw the line quite clearly in that way but maybe you can.

Dr. SEABORG. Yes. I certainly could picture it being a part of our foreign policy to help in the construction of atomic powerplants for the special reasons that have been enumerated in earlier testimony even in cases where they are not quite economically competitive yet.

Chairman HOLIFIELD. One final question, Dr. Haworth. What progress is being made in applying the IAEA safeguards to the bilateral agreement with Japan?

Dr. HAWORTH. I think Mr. Wells is more up to date than I.

Mr. WELLS. Thank you, Mr. Chairman.

There has been given to the International Agency by the U.S. Government our ideas as to how a tripartite arrangement might be worked out to cover the turnover of the safeguards to Japan. The Agency is studying those suggestions now.

Representative HOSMER. Did the committee take any attitude respecting the conduct of operational activities such as the laboratory near Vienna and so forth, by the IAEA?

Dr. HAWORTH. Yes. This was considered along with the question of the research contracts and things of that sort.

Dr. Smyth, if he is still here, might want to speak a little differently than I.

My remembrance of it is that there was a feeling that the work of the laboratory should be directed at problems that are of concern to the IAEA in its international role. The fact that something happened to be an interesting piece of science did not necessarily qualify for it.

Representative HOSMER. It is from the standpoint of whether it should establish its own laboratories and incidental overhead or conduct these operations primarily through contract?

Dr. HAWORTH. I was trying to speak to the Vienna laboratory, that it was appropriate to have that laboratory but directed to the specific problems of the Agency.

I think there are two or three very good reasons for having the laboratory. One of them is, of course, the fact that the Agency can thereby be assured that particular problems that are vital to it are attacked.

Secondly, it gives the Agency a body of scientists in its own organization on whom it can lean for advice.

And thirdly, it sort of makes the organization as a whole a bit more interesting to scientists even on the Secretariat staff.

Representative HOSMER. You would not suggest a whole string of such laboratories?

Dr. HAWORTH. No.

Mr. RAMEY. I think there is some reference also to cooperation with this Vienna laboratory and a possible training center.

Dr. HAWORTH. Yes.

Mr. RAMEY. Isn't it true that in order to attract staff and maintain a high-level staff you sometimes have to have some sort of what is sometimes called a bootleg research?

At Los Alamos in our weapons laboratory we do a lot of things that you would not think you would necessarily do at a weapons laboratory in order to make the place attractive to scientific personnel.

Dr. HAWORTH. That is always true in any laboratory.

Mr. RAMEY. Probably at Brookhaven also?

Dr. HAWORTH. By definition, Brookhaven does anything.

As a matter of fact, even Los Alamos is not by definition solely a weapons laboratory. But to be serious, this is always true at any laboratory, that you must give the scientists some freedom to pursue things that they find particularly interesting.

They may have turned up something in the course of the programmatic work that they find very stimulating and interesting. It inevitably turns out that the programmatic work itself gets along faster if you allow this, than if you don't.

Chairman HOLIFIELD. You can't compartmentalize the scientific mind very easily, can you?

Dr. HAWORTH. That is correct.

Chairman HOLIFIELD. I think we recognize that point.

Thank you, Dr. Haworth, for your testimony.

Dr. HAWORTH. Thank you.

Chairman HOLIFIELD. Mr. Wells, I believe you are next on the line if you have anything to say in view of your position as Director of the Division of International Affairs. Did you have anything you wished to say?

Mr. WELLS. I don't, Mr. Chairman.

As a matter of fact, I thought I was associated with Dr. Haworth in his presentation and as far as I am concerned I would be glad to let it rest there.

Chairman HOLIFIELD. Thank you.

It is a real pleasure for me to invite to the witness chair the former chairman of this committee, former Congressman Sterling Cole, and also the first Director of the International Atomic Energy Agency.

Mr. Cole, please come forward.

STATEMENT OF STERLING COLE, FORMER DIRECTOR GENERAL OF THE INTERNATIONAL ATOMIC ENERGY AGENCY

Mr. COLE. Mr. Chairman, I assure you that it is not, as you have indicated, the lateness of the day that terrifies me quite as much as these splendid and awesome surroundings in which we meet again, and also the fact that I am sitting on the opposite side of the table from which I used to sit.

Chairman HOLIFIELD. You know progress cannot be denied. We are moving forward architecturally as well as technologically.

Mr. COLE. I do find, however, some reassuring aspects in my appearance here that mollifies this feeling of apprehension that I have and that is to see some friendly faces around the table, even the same old reporter who used to be here years ago is still at work.

Chairman HOLIFIELD. And the same old faces, I might add.

Mr. COLE. And also the fact that I appear here today as a private citizen, a rather unique experience for me in congressional hearings. I cannot refrain from taking this opportunity of saying to you, Mr. Chairman, my delight in seeing you filling the chair which you now fill.

Chairman HOLIFIELD. Thank you.

Mr. COLE. And for which you prepared yourself so diligently for 15 years and more through conscientious and intelligent effort. Your work as chairman of this highly important committee will, I am confident, contribute significantly to its record of constructive development of atomic energy for the security and happiness of mankind.

I am sure it is somewhat of a relief to you to observe that I have no prepared statement. I have jotted down some notes, as testimony has proceeded, however, and previously.

Before engaging in the substance of your hearing, I would like to call to your attention the press release of the Agency which came to my attention just a few days ago, setting forth the record of the first 5 years of its work. I assume that the committee has it. If it doesn't have it, I will leave my copy, but I would like to have it included in the record as indicating to the committee what the Agency has done

outside of these essential activities which has been the subject of discussion principally today.

Chairman HOLIFIELD. It will be received.
(The document referred to follows:)

IAEA 5 YEARS ANNIVERSARY FIFTH ANNUAL REPORT ISSUED

VIENNA, July 26, 1962.—Five years ago on July 29, 1957, the International Atomic Energy Agency (IAEA), the member of the United Nations family dedicated entirely to the promotion of the peaceful uses of nuclear energy, came into being.

By that date, the required minimum number of states (18, including at least 3 of the 5 leading "atomic powers") had ratified the Agency's statute.

During the first 5 years of its existence, the Agency has spent or committed a total of a little under \$28.5 million. Out of this amount, about \$1.7 million came from IAEA's participation in the United Nations expanded program of technical assistance (EPTA). In addition, the Agency received from member states gifts in kind (estimated value over \$1.3 million), such as free fellowships, the services of experts and various nuclear equipment.

Out of these funds a very wide range of activities has been financed. A few of these are given below:

Since the lack of scientific and technical personnel proved to be one of the main obstacles on the way to a faster and a more widespread application of nuclear energy for peaceful uses, IAEA has paid particular attention to its training program. Nearly 1,800 candidates have been selected by the Agency for placement under its fellowship program. In addition, some 1,500 trainees attended the courses carried out with the help of the Agency's two mobile laboratories—1,250 of these in the Far East, 500 in Latin America and 250 in Europe.

Supplementing the fellowships program, lectures by some 50 visiting professors and other teaching staff were organized and 15, mainly regional, training courses held.

The Agency organized nearly 50 scientific conferences, symposia and seminars. These were attended by a total of approximately 5,000 scientists from all parts of the world. In connection with the training courses and the work of experts put at the disposal of member countries, the Agency has provided laboratories with nuclear equipment worth over half a million dollars.

Technical assistance actually given and including the provision of fellowships, experts, equipment, and all kind of training activities, amounted to approximately \$4.5 million, of which \$1.7 million were from EPTA funds.

To promote research IAEA has awarded nearly 140 contracts to scientific institutions in member states.

In 1961 the Agency's own functional laboratory at Seibersdorf, near Vienna, became operational. In addition, laboratory work is being done by Agency staff at the Oceanographic Institute at Monaco.

Preliminary assistance missions, intended to help less developed countries in determining their atomic energy needs and formulating requests for Agency assistance, visited a total of 34 countries.

Requests for the supply of reactor fuel from six countries have been received and approved by the Agency.

In addition, the Agency has been dealing with such diverse problems as the economics of atomic energy, the creation of regulations for the safe transport of radioactive materials, the safe handling of radioisotopes, the safe disposal of radioactive waste and the liability problems involved in the use of nuclear installations on land and at sea. Strong emphasis has been given in particular to the biological and medical aspects of radiation, the creation of international standards and conventions for the prevention of radiation hazards and to as wide as possible a dissemination of knowledge regarding the many peaceful uses of nuclear energy. The Agency's Board of Governors has also approved principles and procedures of safeguards to prevent a diversion for military purposes of assistance given by IAEA to its member states.

ANNUAL REPORT 1961-62

On the fifth year of IAEA activities, the Board of Governors, the Agency's 23 member policymaking body, has just issued its annual report to the general conference, covering the period July 1, 1961-June 30, 1962.

A number of points made in this report are summarized below:

During the year there has been an increase in the interest of member states in undertaking or studying the possibilities of undertaking nuclear power projects with the Agency's help.

An Agency mission made a preliminary survey of the possibility of establishing a demonstration power reactor in Yugoslavia, which might be designed, built, and operated as an international enterprise. Another mission visited Pakistan in January 1962 to evaluate the prospects of nuclear power in that country.

A general review of nuclear power costs, a report on the methods of determining generating costs, and a summary of information on small power reactors being built in the United States of America were issued.

It is estimated that there are at present over 200 research reactors in operation or being constructed throughout the world, 25 of which are in the developing countries. Many reactor centers are experiencing difficulties in finding scientific and technical personnel to make full use of the reactors, operate them safely and plan programs for reactor experiments. The Agency is endeavoring to help overcome these difficulties through its training and technical assistance program.

Three new projects for the supply of reactors and fuel were approved in the period under review, namely, for the transfer of two AGN-211-P-type training reactors and their fuel from the United States to various institutions in Yugoslavia, and of a 5-megawatt pool-type reactor and fuel from the United States to Pakistan. Member states have also offered to supply further quantities of source and fissionable materials to the Agency.

The first practical application of atomic energy in many developing countries is the medical use of isotopes in diagnosis, therapy, or research. Much of the Agency's technical assistance program is, therefore, concerned with this subject. In this connection, 42 fellowships were granted in 1961, experts on medical applications were working in 10 developing member states and medical research under contracts awarded from Agency funds was undertaken in 6 member states, of which 5 were in the developing areas. Special attention is now being paid to research on tropical or subtropical diseases, on which WHO has been asked to give advice. Regional training courses on the medical applications of radioisotopes were organized in the United Arab Republic in 1961 and in Greece in 1962.

In 1962, a regional research contract program was initiated on the efficiency of fertilizer application in rice-growing areas of the world, involving the participation of institutes in Burma, Hungary, Pakistan, the Philippines, Thailand, the United Arab Republic and the Agency's laboratory.

In 1961, fellowships were awarded to 31 scientists in agricultural applications of isotopes.

Agency experts were working in eight developing member states in 1961, and five contracts were awarded from Agency funds in that year for research in agricultural applications of isotopes in four member states.

In January 1962, the Agency's laboratory at Seibersdorf began to distribute, at the rate of one a month, calibrated radioactive solutions of 12 different nuclides. This service will enable laboratories, hospitals, and clinics using radionuclides for medical, biological, and industrial uses to calibrate their measuring instruments. More than 750 requests have been received for 1962 from some 70 institutions in 31 member states.

The relatively rapid growth in the number of nuclear reactors and other installations where radiation hazards may arise, and increasing international concern about the possible effects of ionizing radiation, have continued to make protection against radiation hazards one of the Agency's main concerns.

During 1961 research on radiation effects was in progress under 27 contracts from Agency funds in institutions in 14 member states. The main subjects of research include the mechanism of radiation damage to cells and at the sub-cellular level, means of increasing or changing natural resistance to radiation and the preservation of drugs and biosynthetic products by radiation, the report states.

Special radiation protection guidance and services are now being provided in many forms. The Agency's laboratory carried out environmental contamination studies at the request of four governments and completed and submitted to

UNSCEAR¹ a survey on strontium 90 and caesium 137 in food consumed in Austria. The Agency's staff has also advised the Sudan and the United Arab Republic on setting up equipment for measuring environmental radioactivity.

The report further lists the Agency's work during 1961-62 in nuclear physics and reactor research, hydrology, reactor safety, and its regulatory and legal work regarding basic safety standards, transport regulations, guides, and codes of practice in the safe handling of radioisotopes, control of waste disposal, and civil liability.

On technical assistance the report states that in 1961 total monetary resources available amounted to \$1,824,305 (\$1,015,691 from the Agency's own resources, \$808,614 from EPTA), resources in kind, including the estimated value of fellowships (\$748,771), totaled \$858,771.

The funds allocated to the Agency for 1961-62 from EPTA amount to \$1,500,769, of which \$110,150 are set aside for regional projects, and \$89,900 are being used by the Agency for its program in Africa.

Under the 1961 program, 344 fellowships were awarded in 1961, and 318 under the 1962 program.

In addition, 11 research and special grants were made under the 1961 program to enable advanced research workers to undertake research at leading nuclear centers or to make study tours, and two such grants under this year's program.

Nineteen visiting professors were sent to 11 member states under last year's and 2 were assigned to institutions in member states under the 1962 program. Seven regional or international training courses were held in 1961.

Mr. COLE. I should like to refer to the question of bilaterals. It had always been my understanding that their purpose was to be a temporary function only, to fill the gap until a responsible international authority could be organized and become operative to deal with the question of safeguards. And that when that event occurred, an international authority was created, then bilaterals would gradually fade out of existence.

I was delighted to hear Dr. Haworth say, as I have always felt, that whether it is in 1967 or 1977 or 1997, the day is coming when atomic reactors are going to be plentiful and common throughout the world. We all know each one of those reactors possesses a potential threat to the security of the world. Because of our position in the world, world security is a major responsibility of this Government.

I have always looked upon the question of safeguards from the standpoint of our own national interest, whether it is essential to us as a nation to make sure that this new force should not be used for weapons. An effective safeguards system is the mechanism that is devised to do it. The question at issue is whether the system shall be imposed by a government unilaterally or by governments collectively through legally constituted authority.

We recall that when the efforts to control nuclear energy under the Baruch plan failed after many years of effort by this country it was recognized that because of the nature of this new force, and having confidence that the day would come when there would be countless reactors in the world, it was imperative that some alternative effort be made to find a way to do what the Baruch plan was intended to do but could not because it was not acceptable to all governments. That was one of the main reasons if not the main reason why the Agency was born.

Again I was delighted to hear Dr. Haworth say that in his judgment the safeguards function of the Agency is its most important function, for I share that view. In this respect I am somewhat dis-

¹ United Nations Scientific Committee on the Effects of Atomic Radiation.

appointed with the Smyth committee report, for it referred to safeguards as only one of the functions of the Agency.

In my judgment it is the most important function. When we speak of "safeguards" we must not lose sight of the other aspect of nuclear energy in its international aspects in connection with public health and safety.

Here, too, it is to the national interest of our own people that these reactors which are inevitable throughout the world will be operated in a safe and orderly fashion so that not only our own people will not be exposed to radioactive contamination from abroad but so that we will not someday be called upon as a charitable act of brotherhood to come to the help of and rescue some neighboring or far distant people who might be affected by malfunction of a reactor which might be a very costly operation.

So, both of these functions, the health and safety and the military diversion are of vital importance to our national interest to the extent, in my judgment, where it is justified to use public money to encourage reactor construction and operation to be channeled through the Agency to the end that its safeguards system will be applied and that the health and safety rules will be observed.

Why do I feel so strongly about the application of safeguards through bilaterals?

I don't want to be too extreme in my position, but I can think of nothing that would do more harm to the Agency than for this Government to pursue safeguards through its bilateral route. I do not have reference to the particular project that has been mentioned today, the India project. That is very tempting. India is a friend of this country. It is very tempting for us to make exceptions where special circumstances of the moment may seem to justify. In commenting on bilateral safeguards, I don't refer to any one government, but I do know that once we make an exception for one government it will be impossible not to make exceptions for other governments that might want to go through bilaterals without incurring enmity where we refuse to make an exception to them.

The time to adopt a policy in this regard, it seems to me, is today, before any harmful precedent is created. As between an effective multilateral intergovernmental safeguards system and a national policy based on expediency, the choice is clear even though difficult at the moment, for we cannot have both. The question of whether we are going to use bilaterals for safeguards or going to use the Agency.

Why are bilateral safeguards dangerous in my judgment? There are two main reasons. We all know that uranium today is abundant in the world. We know that the fabricators of uranium are searching for markets the world over. We know that most of the uranium-producing countries have unilaterally and voluntarily imposed national safeguards on their foreign transactions. Therefore, safeguards is an element of limitations on the marketing of uranium.

Because of this volume of uranium, pressures are inevitable from the manufacturers to cause governments to relax safeguard procedures and requirements, so that it will make it easier for them to sell their product. As they are relaxed, then there will not be a uniformity of safeguards. "X" country may say, "Yes, we will carry out our policy to impose safeguards but we assure you, Mr. Country "Z" that our

safeguards requirement will be very nominal, it won't bother you any." Then the principle of reliable safeguards is completely destroyed. By going through the Agency method, you have one single system of safeguards to which the minds, the intentions, the interests of all governments have had an opportunity to express their judgments. Uniformity both as to health and safety, and uniformity as to safeguards is an essential element of safeguard system which, if it is to be effective, must be uniform—if it is to be effective in maintaining security against diversion to nonmilitary purposes and protect public health.

The second reason why in my judgment safeguards by the bilateral route is unwise is that it does not accomplish its purpose of guaranteeing that the nuclear system will not be used for nonmilitary purposes.

Let us assume that we do give substantial assistance to a country in a large power reactor, and apply bilateral safeguards. We may do it again for that same country. Eventually, through our inspection system we find that there has been some cheating, there has been some diversion to nonmilitary purposes. What do we do about it? Just what do we do? We stop all further assistance to be sure, but then it is too late to stop the diversion. We don't send our armies over there to take over the reactor. We have no conceivable way of controlling the continuation of a diversion once we find it has occurred. The only thing we can do is say, "No more help," and report to the public and the United Nations our findings.

Whereas with the Agency there is already machinery in being, a prescribed legal route to follow when a diversion is detected. That is by going to the United Nations Security Council, depending on the nature of the violation, or going to the World Court for a dispute over legal questions. Those are my own notions about bilateral safeguard applications and in my judgment the time to make the decision is now.

Chairman HOLIFIELD. Your point is that this would offer an avenue of correction that you could not get under a bilateral.

Mr. COLE. Yes, through the Agency there is machinery for remedial action after a diversion has been discovered. Through the Agency there is a route through which governments under proper decision of the Security Council of the United Nations and the World Court can impose sanctions and take corrective and salutary action against a country that has been found to violate the safeguard.

Chairman HOLIFIELD. In other words, the United States could not go to the World Court and lodge a complaint or the United Nations if it had a bilateral with the other nations.

Mr. COLE. I assume it could do so but I also fancy that it would not be nearly as expeditious as the machinery that is already established and in existence through the basic statute of the Agency previously formally ratified by all member governments.

Chairman HOLIFIELD. Certainly the inspection from an international agency of reactors scattered throughout the world should be more objective than that of two nations dealing together.

Mr. COLE. It would seem so.

Chairman HOLIFIELD. It would seem that way because it would present a wider viewpoint and the inspectors would not be necessarily a party in interest.

Mr. COLE. I share the same view. Along the line of strengthening the Agency in the safeguard problem which, as I say, to me is the most important of many of the good things that the Agency has done and could do, I have the impression that the time is rather ripe for this Government to renew its negotiations and discussions with other governments which heretofore have been hostile to safeguards.

I have the feeling that those previously hostile governments might now be ready to look more favorably on a responsible international control of nuclear energy.

I would suggest that it might be appropriate for our Government to renew its efforts in the field, although it may perhaps already be doing so.

My last comment, Mr. Chairman, but before mentioning it since it does not have to do with the Smyth Committee report, may I just say how pleased I was that Secretary Cleveland did convene the Smyth panel to give him advice on how best or what to do with the Agency, to strengthen it or to deal with its future, and the selection of the individuals comprising that committee were very fortunate. All of the men have knowledge and understanding in nuclear energy matters, many of them with personal experience with the Agency itself. I think it is a well-constituted committee and I subscribe entirely with the report which the committee has made, except in that one reference to its mild statement of the safeguard function of the Agency.

The other matter which I would like to speak to because I know of the committee's interest in it, although it has a collateral jurisdictional responsibility with the Foreign Relations Committee. That is, that apparently the atoms-for-peace program which this Government had inaugurated some years ago and has executed as a separate instrument of foreign policy no longer exists. We now only give lipservice to it; it is not a distinct entity in and of itself; it has become submerged in foreign aid along with all the other types of foreign assistance which the Government gives.

That, I think, is regrettable and it is now too late to do anything about it short of a Presidential directive. But I would hope that he might see fit to revive and reinvigorate the atoms-for-peace program by setting it apart and distinct as a special type of assistance which this Government gives to other countries.

That, Mr. Chairman, completes my statement. I am afraid I talked longer than I might have if I had written it, and apologize.

Chairman HOLIFIELD. That is a very good statement, Mr. Cole. It will be valuable to our record.

Mr. Hosmer, do you have any questions?

Representative HOSMER. I just want to join the Chair in welcoming Mr. Cole back and giving us the pleasure of receiving the benefit of his wide knowledge, wisdom, and experience.

Chairman HOLIFIELD. Mr. Ramey?

Mr. RAMEY. It would be a pleasure to ask Mr. Cole a question.

Chairman HOLIFIELD. I was deciding in my own mind whether I should let Mr. Toll or you ask the question. It might be more appropriate for Mr. Toll as he served Mr. Cole for a year.

Mr. COLE. For that very reason I am not sure I am ready to be exposed to his questions.

Mr. TOLL. I would be very reluctant to let this opportunity go by without trying to think up a couple of tough questions for my former boss.

On your emphasis on the importance of using Agency safeguards versus bilateral safeguards, might there be a financial saving to the U.S. Government since the Agency would pay for application of its safeguards and under bilateral agreements the United States has to pay for its own inspectors. I wonder what you thought of that angle?

Mr. COLE. I am afraid I must have to rely upon you to refresh my recollection because it is not clear in my memory whether the issue had ever been settled before I left Vienna as to who would pay the cost of inspection under safeguards work which was done by way of bilaterals.

There was an argument whether the Agency should do it or whether the bilateral governments should do it. I don't recall that it was ever settled. It may have been settled.

Mr. TOLL. I agree there was a difference of opinion on this but I think the majority view was that the Agency—and I think the Secretariat has taken this position—should pay for such costs. If that is followed, this provides an additional incentive from the point of view of the United States to apply Agency safeguards.

Mr. COLE. You are quite right, Mr. Toll. If that is the settled policy of the Agency, that the Agency pay for bilateral safeguards, then it is to the financial advantage of the bilateral countries to turn them over to the Agency and thereby avoid those expenses. The announcement that the AEC is considering making an additional charge to foreign customers for the costs of safeguards is an encouraging development and should be adopted.

Chairman HOLIFIELD. Mr. Ramey?

Mr. RAMEY. You mentioned the emphasis on the primary purpose of the Agency to provide for safeguards. You won't say, however, that it didn't have a very large secondary purpose of providing atoms for peace and the positive aspects. A number of us have always feared that this safeguards role might just by itself not permit a going organization and attract scientific personnel, and so on.

Mr. COLE. I am so happy that you brought that out, Mr. Ramey, because certainly at no time would I for a moment give the impression that the positive aspect of the International Agency in the peaceful uses of atomic energy was not of the greatest importance.

To me it is all one coin: the peaceful atom. One way of getting peace is to see that it is not used for war. The other way is to see that it is positively used for nonmilitary purposes.

I appreciate your giving me the chance to clarify that.

Chairman HOLIFIELD. Do you consider that there was a substantial advance in the field of safety of transportation, international regulations or proposals for regulations for transporting these materials from the standpoint of safety and from the health standpoint in the IAEA work?

Mr. COLE. Yes, that is one of the many important activities of the Agency which I didn't mention because of time limitations. There are a variety of problems arising from international standpoint in atomic energy, transport of the material, waste disposal along bound-

aries, legal liability for reactor operations and radioactive transport, and many others, all of which can be and have been treated by the Agency and are included in this press release to which I gave mention.

Those are very valuable functions of the Agency.

Chairman HOLIFIELD. Did you run across a feeling among different nations of preference for bilaterals rather than to deal through the Agency in their relations with the United States?

Mr. COLE. I must confess that my talk with the foreign government people was just the contrary. They said it is easier for them to go to the United States than it is for them to go to the Agency. They say that individually, as responsible government officials, they would prefer to go to the United States because they know that their problem would be treated efficiently, expeditiously, and generously.

But at home, politically, it is not wholesome for them as government officials to become beholden to any one government.

So the comment that was given to me—and it was only conversation—is that the governments would prefer to come to the Agency.

Chairman HOLIFIELD. We have been told, of course, that there was a hesitancy on the part of most of the countries to go the IAEA route. There were, however, some of the neutral nations that were fearful of being accused of placing them under an imperialistic cloak in dealing with the United States and they would prefer dealing with the Agency.

Was there any activity on the part of the Soviet bloc countries in attempting to make any kind of an arrangement through the IAEA?

Mr. COLE. Yugoslavia is the only one that comes to my mind, other than fellowships and rather casual assistance the Agency gave.

Chairman HOLIFIELD. But there were no applications for special nuclear materials?

Mr. COLE. Not from the Soviet countries, except Yugoslavia.

Chairman HOLIFIELD. Did we consummate an agreement with Yugoslavia?

Mr. COLE. Quite recently; I think this year. I am not in a position to comment authoritatively.

Chairman HOLIFIELD. On a research reactor Mr. Toll says we did.

Mr. COLE. May I just say in conclusion that I feel it is so vitally important to our national interests that international atomic help be channeled through the Agency that I feel it is justified that public expenditure from the Public Treasury be called upon to find some inducement to government to pursue that route. There is a way that all governments will be encouraged to go to Vienna for atomic help, and that is to make it financially attractive for them to do so.

That is the reason why they come to America, because they know that either the type of reactor, the type of fuel, or the type of treatment they are going to get from the United States is more favorable than what they can now get from Vienna or from some other government.

You provide that same attractiveness to the headquarters in Vienna and you will see governments going to Vienna and that is where they should go. How it is done and to what extent may be accomplished in a variety of ways. A short while ago President Kennedy offered to dedicate to peaceful uses 55 tons of U²³⁵ of a value of approximately \$600 million—a truly magnanimous offer—enough fuel to support 600

Shippingport reactors capable of generating over 36 million kilowatt's of electricity. This is a most encouraging beginning; only a relatively small subsidy is required to stimulate reactor projects under Agency auspices—a pittance in comparison with our total foreign aid costs.

I do know that if it is to any extent cheaper for them to go to Vienna they will go there.

Chairman HOLIFIELD. Thank you very much for your testimony and your appearance here.

Mr. COLE. It is good to see old friends again.

Chairman HOLIFIELD. The committee is adjourned.

(Whereupon, the committee recessed at 5:15 p.m. Thursday, August 2, 1962, subject to the call of the Chair.)

APPENDIXES

APPENDIX 1

REPORT OF THE ADVISORY COMMITTEE
ON U.S. POLICY TOWARD THE
INTERNATIONAL ATOMIC ENERGY AGENCY

MAY 19, 1962

Department of State
Washington, D.C.

May 19, 1962

The Honorable
Harlan Cleveland
Assistant Secretary of State for
International Organization Affairs,
Department of State,
Washington 25, D.C.

Dear Mr. Secretary:

Transmitted herewith is the report of the Advisory Committee which you appointed to review the policy of the United States toward the International Atomic Energy Agency.

Dr. Leland J. Haworth, Commissioner, United States Atomic Energy Commission, and Mr. Richard N. Gardner, Deputy Assistant Secretary of State for International Organization Affairs, participated in the formulation of the report and its conclusions as individuals; their views, of course, have not necessarily reflected the considered judgment of the Department of State and the United States Atomic Energy Commission to which agencies the recommendations are made. To avoid any misunderstanding of their roles, Dr. Haworth and Mr. Gardner have refrained from signing this report.

Henry D. Smyth

Henry D. Smyth, Chairman

Edward L. Brady

Edward L. Brady

Merrill Eisenbud

Merrill Eisenbud

Norman Hilberry

Norman Hilberry

Philip Sporn

Philip Sporn

Edward R. Trapnell

Edward R. Trapnell

MEMBERS OF THE COMMITTEE

- Henry D. Smyth --United States Representative to the International Atomic Energy Agency. Chairman of the University Research Board, Princeton University. Formerly, Commissioner, Atomic Energy Commission; consultant, Manhattan District Project.
- Edward L. Brady --Assistant Chairman of Chemistry Department and Deputy Manager of Direct Conversion Project, General Atomic Division of General Dynamics Corporation. Formerly, Senior Scientific Adviser, United States Mission to the International Atomic Energy Agency; Scientific Representative in the United Kingdom, Atomic Energy Commission.
- Merril Eisenbud --Professor of Industrial Medicine, New York University. Director, Environmental Radiation Laboratory, New York University. Formerly, Manager, New York Operations Office, Atomic Energy Commission; Director, Health and Safety Laboratory, Atomic Energy Commission.
- Richard N. Gardner --Deputy Assistant Secretary of State for International Organization Affairs, Department of State. Formerly, Professor of Law, Columbia University; private practice of law, New York, N.Y.
- Leland J. Haworth --Commissioner, Atomic Energy Commission. Formerly, Director, Brookhaven National Laboratory; President, Associated Universities, Inc.; Professor, University of Illinois.
- Norman Hilberry --Senior Scientist, Argonne National Laboratory. Formerly, Director, Deputy Director, Argonne National Laboratory; Assistant Professor of Physics, New York University; Associate Project Director, Metallurgical Project, Manhattan Engineering District.
- Philip Sporn --Director and President, Ohio Valley Electric Corporation; Chairman of Research and Development Committee, East Central Nuclear Group. Until December 1961, President of American Electric Power Company and currently member of Executive Committee and Chairman, System Development Committee.
- Edward R. Trapnell --Special Assistant for Public Affairs to the Secretary of the Air Force. Formerly, Special Assistant to the Director General, International Atomic Energy Agency; Special Assistant to the General Manager, Atomic Energy Commission; Associate Director, Information Service, Atomic Energy Commission.

REPORT OF THE ADVISORY COMMITTEE ON U.S. POLICY TOWARD THE I.A.E.A.

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Summary and Principal Recommendations

This Committee has reviewed the history of the International Atomic Energy Agency and of United States participation in Agency affairs, necessarily considering also the objectives and accomplishments of the United States Atoms for Peace Program. We have examined the present technical situation and probable future developments in the field of atomic energy and the role that the Agency might play in these developments.

We have concluded that the International Atomic Energy Agency in its first four years of life has served a useful function in promoting the development of the peaceful uses of atomic energy and has prepared itself for future activities of great significance.

Consideration of the United States Atoms for Peace Program has led us to conclude that the peaceful uses of atomic energy can and should play an important and fruitful role in our foreign policy. In our judgment, active support of the Agency is an effective means for furtherance of this policy.

We believe that various circumstances now combine to give the Agency considerable promise of future usefulness. This opinion is based on our judgment that the development of nuclear power is the key issue in determining the fate of the Agency and that nuclear power is on the threshold of economic attractiveness in a number of technologically advanced parts of the world. We believe that it is to the advantage of the United States to encourage and participate in this development.

We consider it to be of great importance that nuclear power be developed under conditions that dis-

courage the diversion of nuclear materials to military uses. The Agency has already adopted a system of basic principles and procedures which constitute a good start toward the establishment of an adequate system of safeguards for materials and equipment procured under Agency auspices. Maintenance of an adequate world-wide safeguards system requires that transactions taking place under bilateral agreements contain provisions equivalent to those of the Agency or that the Agency be requested to administer its own system of safeguards for these transactions.

We have reviewed the activities of the Agency in technical assistance, dissemination of technical information, conduct of research, establishment of international standards and conventions, evaluation of economic aspects of nuclear power, and other fields. We have concluded that, in general, these activities have been competently carried forward and have contributed significantly to the basic goal of promoting the peaceful uses of atomic energy. Some detailed criticism will be found in the body of the report. On the whole, this Committee has been impressed by the technical competence of the staff of the Agency and by its morale, dedication, and enthusiasm during the difficult formative years just passed. In our judgment, many of the areas in which the Agency has been active are best carried forward by an international organization, and we believe that the Agency has shown its competence to be designated as the appropriate mechanism for these functions.

During its first four years, uncertainties about the course of development of nuclear power and about the strength and usefulness of the newly-

formed Agency engendered a certain amount of caution in United States policy toward the organization. Clarification of the situation in the Agency as well as in nuclear power technology now provides a solid basis for clear-cut policy decisions.

This Committee recommends therefore that:

1. The United States reaffirm and constructively support its policy of furthering the utilization of atomic energy for peaceful purposes throughout the world.
2. The International Atomic Energy Agency be recognized as the most effective means by which the United States can carry out that policy. To that end, activities now being conducted under existing bilateral agreements should be transferred to Agency auspices wherever practical.
3. The United States take the lead in securing international agreement that the Agency be recognized as the instrument most appropriate for carrying out certain important functions in the field of atomic energy. In the opinion of the Committee, these include the following:
 - a. The provision of the best attainable assurance against diversion of material and equipment to military purposes;
 - b. The establishment of uniform health and safety standards;
 - c. The provision of technical assistance;
 - d. The reconciliation of liability and indemnification practices;
 - e. The conduct of international research projects;
 - f. The promulgation of waste management standards.
4. A detailed study be made within the United States Government of the steps to be taken to further foreign policy objectives in the field of atomic power. We believe that such a study will show that an effective program need not be costly.
5. The United States Government continue to support actively the programs of the Agency in the fields listed above by providing financial assistance, by supplying experts for special assignments, and by encouraging competent technical men to serve upon the Agency staff.
6. The United States Government take under advisement various other suggestions contained in the body of this report.

Introduction

The Task of the Committee

Since the enactment of the present Atomic Energy Law in 1954, the Atoms for Peace Program has been used by the Government of the United States to promote the development and world-wide application of the peaceful uses of atomic energy. Various international arrangements have been established to further this objective—agreements with other nations on a bilateral basis, agreements with regional groups of nations, and participation in the International Atomic Energy Agency (IAEA).

The Committee submitting this report was appointed by the Assistant Secretary of State for International Organization Affairs to examine U.S. policy toward the IAEA, to examine the role of that Agency in international atomic energy affairs and its usefulness in promoting the objectives of United States policy, and to make recommendations for future U.S. policy and activities.

The Technical and Political Importance of Atomic Energy

The discovery of the nuclear fission of uranium in the early months of 1939 was the culmination of a decade or more of work on nuclear disintegration carried out in many countries. This work had been pursued in the familiar tradition of science, with free interchange of ideas and information. It was realized that the amount of energy involved in these nuclear events was very large indeed but there was no reason to believe that a new controllable source of energy had been discovered. It had been shown that the vast amounts of energy generated in the stars must come from nuclear reactions but from

reactions that took place under conditions totally different from anything on earth, or anything thought to be attainable.

The practical importance of the discovery of uranium fission lay in the particular nature of the process. It is caused by neutrons and produces neutrons. The key question, immediately apparent in 1939, was whether the number of neutrons produced could be made greater than the number used up. If so, a self-perpetuating chain reaction might be established which would release vast amounts of nuclear energy. If not, the fission of uranium was merely an intensely interesting type of nuclear event of little practical importance.

This key question was not answered before 1940 when the cloak of wartime secrecy descended on this field of investigation in all major countries. In August of 1945, proof that a chain reaction could be made to occur was first revealed publicly in the closing weeks of a long and bitter war by the dramatic explosion of an atomic bomb.

By the fall of 1945 it was universally recognized that a controlled nuclear chain reaction in uranium (first demonstrated in secret on December 2, 1942) makes available on earth a totally new source of energy, the kind of energy that keeps the sun glowing and the stars bright. This was the first new source of energy discovered in 100 years. Nuclear energy, like other forms of energy, can be used for peace or war. Moreover, in the course of its controlled release, radioisotopes are formed which have a great variety of uses in research, in medicine, and in industry.

Since that time the world has been awed by the power and mystery of

this discovery, fearful of the destruction it can cause, hopeful of the benefits it can bring.

Throughout this period the United States has held a position of leadership. The first chain reaction was produced in this country, the first large nuclear reactor, the first weapon. Immediately after the war the United States advanced a generous and far-sighted plan for international control of nuclear energy hoping to insure its use for peace, not for war. The United States has continued to press for the control of nuclear weapons. At the same time the United States has led the world in the technology of peaceful uses of nuclear energy and has made its knowledge available to all nations.

The United States announced the Atoms for Peace Plan in 1953 in the General Assembly of the United Nations. This plan was consistent with our general belief that an improvement in the educational level and standard of living of the lesser developed countries contributes to the stability of the world. Atomic energy has provided a dramatic example of the way in which science and technology can contribute to a nation's welfare. Its exciting promises have called forth the serious interest and the support of most governments, including those of underdeveloped countries. Many programs for scientific and technical education are being stimulated by this interest. But to think of atomic energy as just another aspect of foreign aid is to ignore the facts of science and the realities of

recent history.

The importance of atomic energy in our foreign policy rests on three basic facts: (1) The discovery of nuclear fission and fusion has had, and will continue to have, a greater influence on international affairs and on the way of life in the major industrial nations than any other single scientific discovery of the twentieth century; (2) Nuclear fission, and possibly fusion, together offer better long-range sources of energy than were dreamed possible a quarter of a century ago; (3) The leading position of the United States is more firmly established in this field than in any other field of applied physical science.

Taken in their totality these considerations led to the development of the U.S. Atoms for Peace Program, and are responsible for the enthusiasm with which the announcement of it was welcomed throughout the world. This enthusiasm was exemplified by the universal interest in the first and second Geneva Conferences on the Peaceful Uses of Atomic Energy in 1955 and 1958, surely the largest and most generally cooperative international technical conferences of our time. These considerations also led to the establishment of the International Atomic Energy Agency with headquarters in Vienna. By cooperating in this venture, the nations of the world gave recognition to the industrial, political and psychological importance of atomic energy and expressed their determination to use it for peaceful purposes.

CHAPTER 1

*The Committee's Assessment of Present Conditions and Prospects***Prospects for Nuclear Power and Related International Problems**

Although the development of practical, economic nuclear power plants has been found to be a more difficult and more time-consuming task than was first thought, current appraisals indicate that nuclear power will be commercially attractive in a number of countries in the near future. (The basis for this conclusion is discussed in Chapter II.) The members of the Committee believe that cooperation of the United States with these countries will promote their economic development.

Since we are convinced that international commerce in the atomic industry will increase significantly during the next decade, we believe that it is necessary for the United States to work together now with the other nations of the world to reach agreement on some of the terms and conditions of this trade. A problem of major importance is the control of nuclear materials intended for peaceful uses. Such a system of "safeguards" to prevent diversion to military use is not easy to establish. Many other questions arise: health and safety standards, third party liability in case of nuclear accidents, regulations for transport of radioactive materials across international borders, management of nuclear waste to prevent contamination across national boundaries, etc. We believe answers to these questions to be essential for the orderly development of international trade.

Value of the Atoms for Peace Program

We further believe that the United States has gained and can continue to gain benefit from the Atoms for Peace program. All the world knows that our nuclear military might is great. Knowledge of our development of the peaceful uses of atomic energy, being less dramatic, does not receive the same degree of world attention. We are convinced that it is to the advantage of the United States that the people of the world have an appreciation of the enormous contribution in effort and money made by our government to the peaceful uses of atomic energy. We believe that the Atoms for Peace program has, in the past, helped to foster such appreciation in the many parts of the world.

For these reasons, the members of this Committee share the view that the Atoms for Peace program has contributed significantly to the promotion of U.S. political objectives. This has been accomplished in a rather short period of time and with remarkable economy of means. In our opinion, nuclear power is on the verge of becoming of practical importance in various parts of the world, and expansion of at least some aspects of the Atoms for Peace program (whether under this name or another) over the next few years is inevitable.

Once the Committee had agreed on its general assessment of the prospects for nuclear power and the usefulness of an Atoms for Peace program, we examined the past and pos-

sible future role of the International Atomic Energy Agency. We then examined the advantages of the Agency compared to bilateral or multilateral arrangements and the place of the Agency in the United Nations family of organizations.

The Performance and Cost of the IAEA

In accordance with its general desire to promote the peaceful uses of atomic energy the United States has given vigorous support to the International Atomic Energy Agency. After reviewing the nature of technical and political problems of atomic energy that have an international character and the approaches already taken by the Agency to solve these problems, it is our considered opinion that in its four years of existence, the Agency has performed valuable and unique services for the nations of the world and can in the future continue to increase its value and its scope. The Committee hopes that this report provides some useful guidance as to the Agency's present and potential contributions to the world-wide development of applications of nuclear energy.

Almost every means of promoting our foreign policy requires the expenditure of funds. It is very difficult to compare the effectiveness of dollars spent in different programs. By way of guidance in the present discussion, it should be noted that the annual contribution of the United States to the IAEA runs somewhere between \$2 and \$3 million. For comparison, the operating cost of one of our national Atomic Energy laboratories, Oak Ridge, was \$67.6 million in 1961, our contributions to various international organizations including the United Nations about \$150 million, and our total foreign aid about \$4 billion.

The IAEA vs. Bilateral and Regional Agreements

Because of the difficulties inherent in setting up an international organization, four years elapsed between President Eisenhower's speech to the United Nations in 1953 introducing the concept of an international atomic energy organization and the formal establishment of that organization.

During this four-year period, the United States entered into a number of bilateral agreements with various countries calling for cooperation in the development of the peaceful uses of atomic energy. Also during that period, or immediately thereafter, a number of regional organizations were formed. The United States has now entered into cooperative arrangements with the European Atomic Energy Community (Euratom), the European Nuclear Energy Agency (ENEA) of the OECD, and the Inter-American Nuclear Energy Commission (IANEC) of the Organization of American States.

While the achievements of Euratom have fallen short of its initial target and the Joint U.S.-Euratom power reactor program has not matched the original plans, the Euratom organization has established itself as a vigorous and competent group capable of carrying forward an appropriate atomic energy program in its member countries. The ENEA and IANEC organizations were formed with different terms of reference than Euratom and have also proved to be useful in their more limited spheres of activity.

The bilateral agreements have been more important in laying the groundwork for future developments than in actual achievement. It has frequently been urged that the bilateral agreements be superseded by arrangements through the IAEA.

The Committee feels strongly that the relative roles of the International Agency, arrangements with regional organizations and bilateral agreements must be judged in the whole context of our foreign relations. In making this judgment it must be recognized there are certain disadvantages in dealing through an international organization. Such an organization is often cumbersome and slow. On the other hand, there are functions which are best carried out through an international organization such as the IAEA. In the opinion of the Committee, these include the following: (1) provision of best attainable assurance against diversion of materials and equipment, (2) the establishment of uniform health and safety standards, (3) the promulgation of waste management standards, (4) the reconciliation of liability and indemnification practices, (5) the conduct of international research projects, (6) the provision of assistance to those nations which for political reasons do not wish to become closely associated bilaterally with the nuclear policy of one of the major nuclear powers and (7) other functions which necessarily involve cooperative action of many nations.

The fact that the Agency is uniquely designed to perform such tasks more effectively than other organizations requires a clear-cut definition of its responsibilities in these areas. There must be a positive assignment of these functions, and the capability to discharge them effectively must be built on a program of actual participation in a wide range of activities related to atomic energy. Further, such participation must be sufficiently broad to develop a well-rounded staff able and eager to undertake a variety of tasks, including those for which the Agency is uniquely suitable.

One method of encouraging the development of Agency competence is

to transfer to it as many as possible of the activities that are now being carried out bilaterally, if they fit properly and usefully into the Agency's program. This requires agreement between both bilateral partners. It is our understanding that it is the policy of the United States to propose to bilateral partners that transfers of materials and equipment and the pertinent safeguards now carried out under bilateral agreements henceforth be transacted through the Agency, thereby obviating the necessity for extension of such agreements. This Committee endorses this policy and recommends its continuation. The Committee hopes that other nations can be persuaded to adopt a similar policy.

It is perhaps desirable to point out that this policy is consistent with the wishes of many nations of the world, which prefer to use Agency mechanisms for assistance rather than bilateral transactions with one of the major nuclear powers, which may carry both the flavor of paternalism and the hint of dependence. Many of the newly developing nations of the world are participants in the Agency. They are proud of their membership, and wish to negotiate through the Agency as equal partners with the major nations of the world. It is important that the Agency foster this attitude and make its operations so efficient and so effective that an increasing number of nations will wish to use its services. It is possible that the U.S. can assist in making the use of the Agency more attractive.

The IAEA in the United Nations Family of Organizations

The IAEA is only one of the members of the UN family of organizations. All of the organizations in the UN system are related to the UN itself and to each other by special agreements which set forth in broad

terms the guidelines for cooperation and coordination of activities. Before the IAEA had developed its program there was constant worry that the other agencies would overlap or usurp activities in the field of peaceful uses of atomic energy which legitimately belonged to the IAEA. In most instances this has proved not to be true. As the IAEA has developed and its program and activities have been established, a successful working relationship has been developed among these organizations. Cooperative and joint ventures have become the rule rather than the exception.

The Committee recognizes that the other members of the UN family have an interest in the uses of atomic energy as they are applied to their various fields of endeavor: agriculture, medicine, industry, education, etc. However, the Committee also believes that the IAEA should be the primary organization charged with promoting the peaceful uses of atomic energy in all fields. Although this has been acknowledged U.S. policy, it is believed that the policy could be more vigorously pursued, particularly when the question arises within the other agencies. The Committee recognizes that it would be impracticable to attempt to delineate specific responsibilities or activities, but it considers that work in the atomic energy field should be concentrated under the IAEA except where it is clearly demonstrated that the "atomic" aspect of the activity is subsidiary to some other aspect. Even in these cases, however, the IAEA should play an important advisory role.

Major Factors in the Future of the IAEA

We have presented the Committee's general assessment of the desirability of continuing support of the IAEA. The implication of our discussion is that such support should continue but we

wish to make clear the major factors considered in reaching such a conclusion. It is not sufficient, in our opinion, to argue that the Agency exists and therefore, we should do what we can to nurture it. The Agency's justification of existence must be that it is able to carry out some of the tasks involved in promoting the world-wide peaceful use of atomic energy more effectively than other possible mechanisms.

In discussing the future of the IAEA we believe that the paramount consideration is the future of nuclear power. All the other peaceful uses of nuclear energy, and there are many, are relatively modest in their demands for money and effort. Furthermore, they are closely associated with other fields such as agriculture, medicine, and the like.

If nuclear power comes into general use, the possibility of illicit manufacture of nuclear weapons will be greatly increased and "safeguards" against the diversion of materials and equipment to military uses will become of major importance.

The future of nuclear power and of "safeguards" are principal factors affecting the contributions that the Agency can make in the future. But the areas in which the Agency has already been active will continue to be important. These include regulatory activities, technical assistance, East-West cooperation and other work designed to promote the peaceful uses of atomic energy throughout the world. The continuing impact of these activities is the third major factor relevant to the future of the Agency and may by itself justify continued vigorous support of the Agency.

In the remainder of this report we will attempt to analyze the future of nuclear power, the problem of safeguards and the importance of the other multifarious activities of the Agency. Our conclusions and recommendations are based on this analysis.

CHAPTER 11

Analysis in Support of Committee Assessment

The Cost of Nuclear Power

During the last fifteen years the published material on the cost of nuclear power has reached vast proportions. There have been government reports, studies by utility groups, studies by private foundations and by international groups including the IAEA. In quality these reports have ranged from fact to fantasy, but as experience has accumulated there has been a marked increase in the reliability of the conclusions and predictions made. Particularly in the last year or two, solid information based on experience has accumulated at an increasing rate and has made it possible to estimate costs with an accuracy approaching that accepted in more conventional engineering estimates.

Several members of our Committee have had many years of experience with cost estimates of nuclear power and have learned to view them with skepticism. To bring our knowledge up to date we listened to the testimony of experts from the AEC, to comments of several members of the Committee, and to other witnesses of competence.* After discussing this testimony the members of the Committee agreed to the assessment presented below.

One of the basic assumptions which led to the establishment of the IAEA was that nuclear power would be of great economic importance in the

*The most recent general review of the nuclear power situation is the report of the "202" hearings before the Joint Committee on Atomic Energy of the U.S. Congress beginning March 20, 1962.

immediate future. Though this assumption in the period 1954-1957 was premature, considerable progress in the development of the technology and in improving the competitive economics of nuclear power has been made in the intervening six year interval. We have reached a stage where nuclear reactors, in large sized units, can be undertaken for completion, roughly in the period 1966-67, which will be competitive in high cost fuel areas--say areas having fossil fuel costs of approximately 40¢ per million Btu. Thus, if the first basic assumption underlying the setting up of IAEA has not as yet become valid, it is, perhaps, close to becoming so.

Furthermore, there are number of technologically-advanced and economically highly-developed nations with high energy demands which can be and will soon begin to use significant amounts of nuclear energy to meet their growing energy requirements. These nations will, at least in the beginning phases of the development of their nuclear energy programs, need help. Broadly speaking, the same is true of the lesser developed nations.

Among the lesser developed countries there are a number now in the process of industrialization which would be well advised to start planning and building at least their first nuclear plants.

There are other smaller nations needing assistance to start their development. Even if nuclear power can as yet not help them, nuclear science is uniquely able to stimulate development of education and to encourage

taking the first steps in applying science and technology to improve standards of living. The latter is a particularly desirable goal to attain among many of the smaller, newly emerging nations which it is in our interest to help.

All this, it is clear, while not envisioning a program of a vast number of nuclear power plants sprouting up overnight around the world, still comes within the special abilities of IAEA to aid and encourage.

In looking beyond the next five years the Committee recognizes that conventional power costs may drop because of technical advances and a plentiful supply of oil. Nevertheless there is at least a good prospect that nuclear power costs may drop more rapidly.

The question of the costs of power from small nuclear plants is more difficult. It is conceded that the cost per kw/hr rises as the total output of the plant decreases. It is further conceded that this differential in favor of large plants is greater for nuclear plants than for conventional plants. Nevertheless, a recent AEC publication gives cost estimates for power from small nuclear reactors that are lower than had been generally assumed. It seems likely that there are remote areas of the world where the cost of conventional fuel is so high that 15-20 mils/kw/hr power from a 20,000 kw nuclear plant may look economically attractive. We believe a continuing exploration of such possibilities would be a highly appropriate undertaking for the IAEA.

It is against the background of the economic and technical situation we have just presented, coupled with the more general considerations discussed in the earlier sections of this report, that the Committee has concluded that it is to the advantage of

the United States to encourage and support the development of nuclear power in various parts of the world. From this point of view it is clearly to the advantage of the United States to support the IAEA with increasing vigor.

Methods of Supporting the Utilization of Nuclear Power

Granted the general desirability and timeliness of the U.S. supporting the development of nuclear power throughout the world, it is necessary to examine methods and costs.

Although the nature of technical and financial assistance which is most appropriate will vary from country to country, the Committee was able to come to certain general conclusions.

Specifically, the Committee concluded that it would not be wise to promote the construction of "experimental" nuclear power reactors in under-developed countries. We believe that the notion of simultaneously stimulating the use of nuclear power in other countries and advancing the technology is illusory. Any reactors that we encourage outside the U.S. should be of well-tested types.

There are several ways in which we can promote the construction of nuclear power reactors outside the United States. One way is to furnish technical advice. A second is to help carry out the special work that is necessary before even a well-tested type of reactor can be adapted to a particular use and location. A third way is to provide or help provide for the architect-engineer services. A fourth way would be to offer fuel at less than commercial prices. A fifth possibility is a capital subsidy in the form of U.S. dollars, material or equipment. Which of these methods

may be preferable will depend on political, economic and technological circumstances.

It is the conviction of our Committee that, in most cases, help under the aegis of the IAEA is preferable to purely bilateral help. We have already given general reasons for using the Agency. There are two other arguments in favor of the Agency: (1) We believe that operations through the Agency will help to obtain an objective, international evaluation of the merits of specific proposals, thereby relieving the U.S. of some of the burdens of carrying out the selection alone. (2) We believe that use of the Agency will maximize the probability of obtaining a consistent inclusive safeguards system, while minimizing the burdens that would be borne by the United States through administration of a bilateral system of safeguards.

In this connection the past activities of the Agency are relevant. One of the useful functions that the Agency staff has carried out has been to examine critically the assumption that nuclear power was a panacea of immediate value to all countries. In this action an objective, internationally recruited staff succeeded in putting nuclear power for under-developed countries in a realistic perspective. Such sober, conservative appraisal by the Agency Secretariat is one of the factors that has led the members of this Committee to have a high regard for the technical judgment and competence of the Secretariat.

This Committee is not able at this time to make a general recommendation regarding the methods of support to be preferred, and we suggest that the staff of the Atomic Energy Commission examine the possibilities listed above in order to determine the potential advantages and disadvantages of each method of assist-

ance. Since political and economic, as well as technological, factors will be important, studies should be made in cooperation with the Department of State and in consultation with the appropriate Congressional committees.

Safeguards

One of the objectives in the minds of many of the founders of the International Atomic Energy Agency was to encourage the expansion of the peaceful uses of atomic energy without expanding the number of countries producing atomic weapons. For this purpose the Agency was to set up a system of control and inspection of nuclear facilities obtained under Agency auspices, and was also to encourage the nations of the world to place their own facilities voluntarily under the Agency system. The technical objective of this system would be to provide a means of detecting the diversion of nuclear materials and facilities within a reasonable length of time after the diversion had occurred.

In addition, the United States and some other Western nations envisioned placing safeguards arrangements called for in bilateral agreements under Agency administration, and we hoped to reach agreement with all Western supplier nations that bilateral transactions be subject to a safeguards system equivalent to that of the Agency, if not actually administered by the Agency.

The hopes for the success of such a system of control were based on the assumption that: (a) the demand for nuclear fuels for power would become widespread, and (b) the supply of uranium fuel for power reactors would continue to be extremely limited and therefore relatively easily controlled.

These assumptions proved to be incorrect. Reduction in the cost of

nuclear power came much more slowly than was anticipated while at the same time large reserves of uranium were discovered in the U.S. and Canada, and deposits of significant size were found in many other parts of the world.

During the first years of Agency life, the safeguards question was a bitterly contested issue in the Board of Governors. After nearly three years of debate in the Board and in the General Conference, a limited but adequate system of controls and inspections was worked out for nuclear facilities procured or substantially assisted under Agency auspices. The United States exerted strong influence to secure Board of Governors approval of this system. Though the actual control of material and the reports required by the system are little more than prudent management would prescribe, the inspection system appears to be difficult for many countries to accept for political reasons.

The members of this Committee subscribe wholeheartedly to the general principle that it is desirable to ensure that none of the materials made available for peaceful purposes through the Agency or by other means should be diverted to military uses. While recognizing the technical, operational and political obstacles to effective administration of Agency safeguards and appreciating the difficulties of securing uniform bilateral adherence, the Committee believes that the United States should continue to take the lead in establishing a uniform world-wide, effective system of safeguards.

It appears to the Committee that heavy pressures are now being exerted against the Agency safeguards system and that these pressures will probably increase in the future. The world production capacity for uranium is

now in excess of foreseeable needs for both military and commercial uses. There is apparently a feeling (unjustified, in our opinion) among some producers that safeguards constitute a hindrance to sales. The desire to sell is strong, and growing stronger, and there is a real possibility that a number of governments of producer countries would not be willing to insist upon safeguards if a customer should refuse to buy on this condition. Such arrangements if made with increasing frequency could lead in a few years to a breakdown of the safeguards system.

Any safeguards system must take into account the special problems that would be created by the widespread distribution of highly enriched U-235 as reactor fuel. The policy of the U.S. Government in this respect must be continually examined in the light of U.S. interest in safeguards.

We have been assured by responsible officials of the Department of State and of the Atomic Energy Commission that safeguards problems are under almost continuous review and that various possibilities are being explored in efforts to maintain effective world-wide safeguards. Because of the importance of this matter, the committee urges these officials to pursue vigorously all possibilities and to maintain unflagging devotion to the basic principle of securing world-wide adherence to an effective system of safeguards.

There is a nightmarish dilemma about all attempts to control atomic weapons. The political acceptability of any system proposed seems to be inversely proportional to its effectiveness. Unquestionably the most effective system ever proposed was the Baruch Plan of 1946. This plan envisaged complete international ownership and control of all steps in the process of going from raw ma-

terials to fuel for reactors or weapons material and included ownership of power reactors and reprocessing plants, responsibility for development of nuclear power, and so on. A technically more limited scheme may still be a useful step forward and yet more acceptable.

Whatever technical arrangements are made for the control of atomic weapons will depend for their success as much on the economic and political circumstances relevant to them as on the technical details of the system. The complete spectrum of actions to be considered ranges from the purely political to the purely technical. Political recommendations are outside the jurisdiction of this Committee, but we do wish to emphasize that the safeguards system set up by the Agency, though technically sound and worthy of vigorous support by the U.S., is only one step along the difficult path leading to control of atomic weapons.

Conclusions on Nuclear Power and Safeguards

As stated at the end of Chapter I the Committee considers the future of nuclear power of basic importance to the future of the IAEA. The question of "safeguards" is closely related. If we do not have nuclear power, safeguards are not of major importance. Up to the present time activity of the IAEA in the field of nuclear power and safeguards has been, necessarily, preparatory. The nature of IAEA activities will be profoundly affected if the Committee's conclusions are correct. For this reason we summarize them here before discussing the other activities of the IAEA and their future importance.

On the basis of the arguments presented in the two previous sections of this report, the Committee has concluded that:

1. Nuclear power plants will be built in significant numbers around the world during the next decade;
2. Vigorous participation in this development is to the advantage of the United States;
3. In most cases such participation is best carried out through the IAEA;
4. Without effective, world-wide controls, either political or technical or both, nuclear products of nuclear power plants can be readily diverted to the manufacture of atomic weapons;
5. The answer to the safeguards problem lies in a vigorous and technically competent international organization.

Current Activities of the IAEA

The first part of this chapter has been devoted principally to a discussion of nuclear power and of safeguards. These were originally envisaged as important activities of the IAEA but have in fact been largely preparatory because of the technical difficulty of developing competitive nuclear power. However, other activities arising from the Statute and elaborated in the Report of the Preparatory Commission have been carried out effectively by the Agency. In general, our Committee believes the Agency has done remarkably well in carrying out these tasks. The Committee has reviewed these activities in some detail and will comment on them in this part of its report.

Standards and Codes. Perhaps the most obviously appropriate activities of the International Agency have to do with health and safety problems arising out of the use of atomic energy in various forms. The ques-

tions involved in setting up appropriate codes and standards are both legal and technical. The Agency has made real strides forward in several areas. For the safe transport of radioactive materials it has drawn up a code in a form which can be either adopted or used as guidance for national or international codes. Similarly, a great deal of work has been done on such matters as liability for nuclear accidents, and health and safety standards. The Agency has not only taken commendable initiative in setting up such codes and in establishing international acceptance of them, but in several cases has engaged or is engaged in relevant research. The Agency laboratory at Siebersdorf is also active in standardizing sources of various radioactive isotopes, a highly appropriate activity for this laboratory.

In the opinion of the Committee, the U.S. should continue to support and encourage the IAEA in these activities which are so clearly beneficial to all countries engaged in atomic energy work and which furthermore can be more effectively pursued under an international rather than under a national aegis.

Health and Safety. The Committee regards activities in the establishment and dissemination of health and safety standards to be a highly appropriate undertaking for the Agency. The establishment of a reasonably uniform world pattern of health and safety standards is inherently a worthwhile objective in furthering the uses of nuclear power. As an example of Agency activities in this field, we may cite an elaborate detailed document on health standards recently submitted to the Board for approval. Prepared by the Secretariat after much discussion with a panel of experts, the document was accepted by the Board as a working paper to be made available to interested parties

but to be further examined as to some technical details.

Waste Management. In the field of radioactive waste management, the Committee supports the concept of an international convention on sea disposals. It also considers that the educational and technical objectives of the Agency's program could be substantially advanced by focusing attention on some short range problems of an engineering type rather than by attempting to consider all problems in a general way. As examples of actual situations that might be studied, the Committee suggests measurement of the level of radioactivity of one of the international rivers of Europe, or the selection of a site for sea disposal.

Liability. It should also be pointed out that the Agency has aided greatly in the continuing proceedings looking toward the adoption of international conventions on legal liability for nuclear incidents, both on land and at sea. The latest move in this direction was taken by the Board of Governors in its March 1962 meeting in which the Board authorized the Director General to issue an invitation to the Member States to participate in a diplomatic conference to consider a draft convention on civil liability for nuclear damage from land-based installations.

Technical Assistance. There is an apparent tendency on the part of many, if not most, of the Member States of the Agency to consider technical assistance to the lesser developed states as the primary reason for the existence of the IAEA. The members of this Committee do not subscribe to this view; on the contrary, they hold the opinion that if technical assistance alone were the justification for the existence of the Agency, perhaps these activities should be turned over to other or-

ganizations and the Agency discontinued.

We do not wish to give the impression that we consider technical assistance unimportant; indeed, up to the present time it is perhaps the most important and most successful activity of the Agency. This importance derives from the fact that many far-sighted responsible authorities in lesser developed countries have seized upon atomic energy as the base upon which to build the technical development of their countries. Atomic energy programs are pointing up the need for technical education in all fields and provide an unparalleled opportunity for the advanced nations to aid the newly developing countries to promote their scientific and engineering education programs.

The Committee believes it to be in the interest of the United States that technical assistance in atomic energy continue to be available to developing countries through the IAEA. Such assistance should, of course, be at a level both in amount and in sophistication suited to the individual needs and capabilities of the recipient countries. In order to ensure that the recipient countries are making best possible use of the assistance provided and in order to assist in coordinating Agency activities with those of other organizations, the Secretariat should maintain close contact with the atomic energy programs of all member states, especially those of the recipient nations. This contact should consist of reports from responsible authorities, of follow-up missions along the lines of the preliminary assistance missions, or of the assignments of experts who would keep the Agency informed of progress.

The technical assistance program of the Agency has consisted of the provision of fellowships for advanced training, of exchange professorships

for research, of special experts for various purposes, of equipment and grants to implement research and training programs, and of assistance in the organization of special courses. All these types of activities have been successfully carried on by the Secretariat and are worthy not only of support by the United States but of encouragement to expand.

(a) Fellowships. The fellowship program deserves special mention. Over one thousand fellowships have been granted, and the representatives of many member states have frequently pointed out the great importance they attach to this activity and their high regard for the way the program has been administered. The Committee is of the opinion that the grant of U.S. financed fellowships to the Agency (so-called Type II fellowships) should be continued, and possibly expanded. It is recognized that in some countries there may be difficulties in finding useful employment in "atomic energy" research and development for returning fellows and that the Agency, therefore, must exercise judicious selection procedures. In offering fellowships, the United States should take into consideration the fact that broad training of a fellow may sometimes be of greater value in promoting the application of atomic energy in his home state than mere specialized training. For example, a year of general study in advanced physical chemistry may prove to be of greater value than a year of specialized study of the chemical technology of reactor materials.

(b) Visiting Experts. One of the forms of technical assistance in which the United States has been particularly active is the provision of special experts to serve as consultants to the Agency and to individual member states. Indeed, some of the members of his Committee have gained experience with the activities of the

Agency through serving in this capacity. The Committee holds the opinion that this form of technical assistance is a particularly effective means of aiding and influencing the newly developing atomic energy and technical education programs of the recipient states. For this reason we recommend that the U.S. practice of providing cost-free experts to member states through the Agency be not only continued but expanded.

(c) Equipment Grants. The Committee noted that the amount of money available for the Agency's program of equipment grants has been relatively small. However, various members of the Committee have learned from personal contact with a number of the recipients that the equipment has been of crucial importance, and it is believed that this is generally true. The struggles of some very competent scientists in the newly developing countries to obtain money for even a few of the most basic items of research are well known to members of this Committee. In view of this, it is the Committee's opinion that the equipment grant program could justifiably be expanded. At the same time, the Committee noted that there may well be circumstances in which the bilateral approach may prove a faster and more effective means of furnishing equipment.

(d) Appropriate Fields. In addition to its consideration of the mechanisms of technical assistance, the Committee also discussed the subject matter with which the assistance should be concerned. In the opinion of the Committee, the most important subject for technical assistance is the improvement of the means of providing advanced scientific and technological education in the recipient countries. Achievement of this goal will have far-reaching consequences throughout the society of the country

assisted. Therefore, the provision of experts, grants of equipment, and awards of fellowships should in the majority of instances be concentrated around the educational needs of the recipient countries.

(e) Use of Isotopes. In addition, it is the opinion of this Committee that most attention in the newly developing countries should be focused on the manifold uses of isotopes. "Atomic Energy" in most of these countries has found its first practical use in the form of an application of radioisotopes to medical or agricultural problems. Medicine and agriculture are fields in which all countries have both needs and competence. Numerous applications of isotopes in medicine and agriculture have already appeared; in many cases equipment is relatively simple and cheap. This Committee recommends, therefore, that the United States continue its policy of encouraging the Agency in the promotion of applications of isotopes in agriculture and medicine and that even greater emphasis be placed in the future on these matters. (This is not to say that nuclear power needs should be neglected, but is a reflection of our appraisal that in the majority of the newly developing countries nuclear power is not of immediate urgency.)

(f) Research Aid. One means of providing technical assistance that will undoubtedly prove to be of steadily increasing importance is the placement of contracts for research in laboratories of the lesser developed countries. The Committee regards the past practice of the Agency as commendable but believes that in the future greater care should be taken to place research contracts where most can be accomplished, taking into consideration both the needs of the laboratory and the scientific merit of the proposed research. Projects that would seem particularly appro-

priate for this activity are those which require international planning and coordination, such as for example, the transport of radioactive material by international rivers, studies of natural radioactivity distributions throughout the world, studies of the use of radioactive materials to reduce or eliminate damage from internationally distributed insect pests, etc.

IAEA Research. The Committee recognizes that funds available to the Agency for its own research are, and will probably continue to be, of limited magnitude and that there is therefore some question of the desirability of the Agency's continuing a research function at all, since its share of the total funds devoted to nuclear research and development is small. The members of the Committee do not support this view; on the contrary, we believe that the research activities authorized by the Statute and by the actions of the Board of Governors are an important function of the Agency and that consideration should be given to enlargement of their scope. Limited as the research funds may be, they are adequate for the carrying out of very significant research programs if the selection of problems and laboratories is carefully made. In making the selection, the Agency should not, in the opinion of the Committee, place research contracts in the more advanced countries unless there are special reasons for doing so. In all cases, before granting a contract to a research institution in an advanced country, the Agency should determine whether the government or private sources in the country or elsewhere would be prepared to undertake the project at their own expense. In this way research of direct value to the Agency and research supported as part of the technical assistance program can supplement each other.

In its discussions, the Committee

examined briefly the program initiated by Mr. John A. McCone (then Chairman of the USAEC) of support of the Agency's research program through the financing of Agency and AEC-approved proposals which have programmatic interest to the United States. It is the Committee's opinion that U.S. funds can be advantageously used, both to obtain good results and to provide support to establishments that might otherwise be unable to conduct useful research. The Committee therefore favors the continuation and expansion of the present program of supporting through the IAEA projects which are of interest to the U.S.

Study Program. As has already been mentioned, the Agency has made several studies of nuclear power costs. Specifically, studies have been made of the possible economic advantage of nuclear power in particular countries. The Committee believes that such activities have been useful and should be continued vigorously.

Information Program. The Committee is of the opinion that the Agency's program of scientific meetings has been extremely good as topical conferences and that these conferences are being increasingly well run. The Committee discussed the question of a Third International Conference on the Peaceful Uses of Atomic Energy and agreed that if such a conference is to be held it should be sponsored by the IAEA. The Conference, in the Committee's view, should be reduced in size, scope and length over the previous two conferences, but should still be sufficiently attractive to warrant attendance by participants not only of high scientific and technical standing but also of top economic and political responsibility in the nation they represent.

On the whole, the Committee be-

believes that the Agency's publication program has been good. The proceedings of technical meetings and the Journal of Plasma Physics and Thermonuclear Fusion have maintained high technical standards. On the other hand, the Review Series has not maintained consistency in the technical level of its content nor

in its direction toward a specific audience level. In addition, it has not been well distributed. The Committee believes that, in place of this publication, the Agency might consider commissioning articles for publication in reputable scientific journals with the Agency distributing reprints of the articles.

CHAPTER 111

*Some General Comments on the IAEA***Administrative Questions**

Board of Governors and General Conference. In the opinion of the Committee the expenditures for meetings of these two bodies are disproportionate to their activities. Meetings of the Board have been reduced somewhat in the recent past, however, and the Committee noted that there is reason to hope for further improvement in this situation. With respect to the General Conference, the Committee suggests the possibility of the Agency substituting for the usual full-scale General Conference which undertakes general debate and overall review of the Agency's activities a meeting limited to those items upon which annual action by the General Conference is required. Such restricted meetings would call for delegations of very limited size from Member States and would reduce expenditures on the part of both the Agency and the Member States. The full-scale conference might then be held every other year, or every third year. The Committee also recommends that occasional meetings of the General Conference be held elsewhere than Vienna. This recommendation is of course dependent on the host country supplying a subsidy.

Recruitment of Personnel. A well-qualified staff is one of the more important factors in ensuring the success of the Agency and its activities. To this end, the Committee recommends that the AEC and the Department of State make every effort to encourage highly capable United States citizens to apply for positions with the Agency. Every effort should be made to enable

such people to stay with the Agency several years without endangering their professional future.

Organization. The Committee believes the Secretariat of the Agency may need reorganization in the interests of efficiency. We understand that the new Director General, Dr. Eklund, is looking into this question. The Committee does not feel it appropriate to make any specific recommendations.

East-West Cooperation

It is frequently stated that one reason for the IAEA is to provide opportunities for East-West contacts in areas where political controversy might be expected to be minimal.

The Committee examined this argument in the light of the history of the Agency and its potentialities in the future. While it is true that there has been much political controversy in the Board of Governors and General Conference, peaceful uses of atomic energy is an area well suited to East-West cooperation. We believe there are a number of substantive issues, perhaps even including safeguards, where the interests of the U.S., U.S.S.R., and indeed the rest of the world coincide and where cooperation is possible. Such cooperation has certainly occurred in many of the scientific conferences arranged by IAEA, perhaps most successfully in that on thermonuclear power at Salzburg in September 1961. We believe that cooperative work in such fields as waste management and world-wide measurement of natural radioactivity is possible and desirable. In summary,

the Committee believes the East-West contacts in the Agency have been valuable and may become more so.

Political Argument in the IAEA

The Committee recognizes that it is not possible to keep IAEA meetings of the Board of Governors and the General Conference entirely free of political argument and propaganda. Nevertheless, we do believe that an unnecessarily large fraction of the time of these bodies has been consumed by such activity. Nor can we honestly say that the U.S. and its friends are blameless in the matter of political controversy. The Committee believes that political issues can and should be minimized. The Committee urges that the U.S. make a strong effort to remove from debate various issues that are substantively unimportant to the Agency. Debate in the Board of Governors or General Conference should not repeat the arguments aired in the United Nations. In particular, discussion of the relations to the Agency of intergovernmental and non-governmental organizations has been out of all proportion to their importance. The Committee urges that measures be adopted to remove from debate the issue of consultative status for non-governmental organizations and recommends that the Department of State consider the possibility of accepting all organizations accepted by the United Nations, or of entirely eliminating "consultative status." The Committee believes that "consultative status" has no appreciable substantive value either to the organization seeking it or to the Agency itself.

Enlargement of the Scope of the Agency

It has been suggested that the Secretariat of the Agency is competent to function in wider fields of science

than atomic energy narrowly interpreted. The Committee looks with favor on the exploration of the prospects of Agency expansion into related fields of science where it has resources and knowledge that might be put to use. The Committee believes there may be many areas into which the Agency could so expand without undue conflict with other organizations, but the Committee has not had time to study the problem sufficiently to justify specific suggestions.

Seibersdorf Training Center

The IAEA Laboratory, now coming into full operation, is located adjacent to an atomic energy center of the Austrian Government. A suggestion has recently been made that the two laboratories might set up an international training center under the sponsorship of the IAEA. This suggestion first reached the Committee at its next to last session but aroused favorable interest. The Committee sees much to commend the idea and hopes that it will be explored.

Future Planning

The IAEA is now considering the preparation of a long-term program for the Agency's activities. This Committee endorses this objective and recommends that great care and attention be taken in this work.

Prior to the completion of the long-term program, however, immediate consideration should be given to the participation of the Agency in the UN Decade of Development (UNDD), a program approved by the 16th General Assembly of the United Nations. The contribution that the IAEA can make to the economic development of the less developed countries is considerable and will increase. Under the UNDD, special emphasis will be placed on the development of overall country

plans and programs, and various components of the UN family of organizations are already active in this endeavor. Steps should be taken to ensure that experts provided by the IAEA participate in missions now being undertaken, so that atomic energy, in its various aspects, can be worked into the overall develop-

ment plans of a particular country at the earliest possible moment.

Also, as the resources of the UN Special Fund and the Expanded Program of Technical Assistance increase, the IAEA should be prepared to undertake pre-investment activities that may be desirable.

APPENDIX 2

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25 D.C.*Nov. 5, 1962*

Mr. John T. Conway, Executive Director
Joint Committee on Atomic Energy
Congress of the United States
Washington, D. C.

Dear Mr. Conway:

This is to summarize the current status of matters relating to possible cooperative arrangements with India in connection with the Indians' interest in procuring American designed and fabricated reactors for the Indian Tarapur Atomic Power Project.

As you know, the Government of India has selected International General Electric to design, manufacture, construct and put into initial operation the Tarapur Atomic Power Station, which is to consist of two 190 MW(e) boiling water reactors, subject to satisfactory arrangements being concluded with the United States Government on financing, fuel supply, safeguards and related matters.

Discussions have been held with representatives of the Indian Government on these matters with the objective of reaching conclusions at the earliest possible time.

With respect to the role the International Atomic Energy Agency might play in connection with the application of safeguards in a cooperative arrangement with India, the Indians have been advised that this question is under study by the United States Government and that our discussions with them are subject to the conclusions which we reach on this matter, which we will communicate to them as soon as possible. It has, of course, been made clear to the Indians that the United States requires safeguards on any special nuclear materials or equipment to be transferred abroad which are consistent with those presently incorporated in our bilateral agreements for cooperation with other countries and those envisioned by the Statute of the International Atomic Energy Agency.

Sincerely yours,

A. A. Walls, Director
Division of International Affairs

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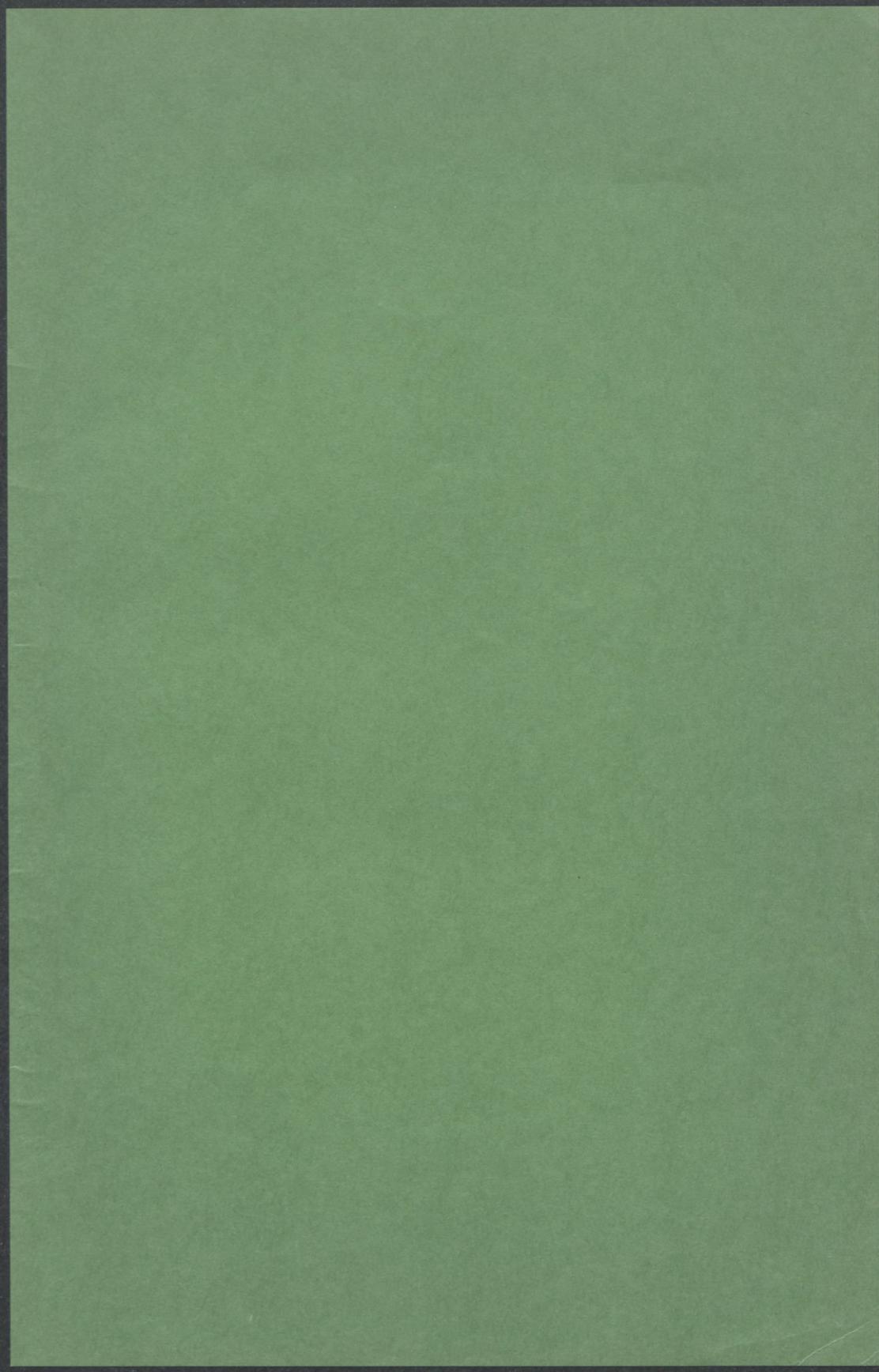
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UNITED STATES POLICY TOWARD THE INTERNATIONAL ATOMIC ENERGY AGENCY ❖ 1962